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Mohamed Arouri, Mathieu Gomes, Kuntara Pukthuanthong

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Mohamed Arouri
Université Côte d'Azur, Nice, France

Mathieu Gomes
Université Clermont Auvergne, Clermont-Ferrand, France

Kuntara Pukthuanthong
University of Missouri

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Abstract

We contribute to the corporate social responsibility (CSR) literature by investigating whether the CSR of acquirers impacts mergers and acquisitions (M&A) completion uncertainty. Using arbitrage spreads following initial acquisition announcements as a measure of deal uncertainty, we document –for an international sample of 726 M&A operations spanning the 2004-2016 period– a negative association between arbitrage spreads and acquirers' CSR. Specifically, we show arbitrage spreads are reduced by 1.10 percentage points for each standard deviation unit-increase in the acquirer's CSR score. Findings are qualitatively similar when we focus on individual CSR dimensions (environmental, social, and governance). Our results suggest the CSR of acquirers is an important determinant of the way market participants assess the outcome of M&As worldwide.

Keywords: Corporate Social Responsibility (CSR), Mergers and Acquisitions (M&A), Risk Arbitrage

JEL Classification: G34, M1

1. Introduction

Enormous amounts of money flow each year as a result of mergers and acquisitions (M&A, henceforth) transactions. In 2016, for example, no less than 48,736 M&A transactions took place worldwide, representing an aggregate value of $3.6 trillion, according to the Institute for Mergers, Acquisitions, and Alliances (IMAA)[1]. These substantial capital flows, coupled with M&As' potential ability to create synergies but also conflicts of interest, render the study of M&As important to academics and practitioners. However, not all M&As attempts turn out to be successful, which raises the issue of completion risk, i.e., the risk that a deal may not be consummated. A deal can fail for a variety of reasons including shareholder opposition, regulatory intervention, financing problems or internal target resistance (Parker, 2005). In other words, the outcome of a M&A bid depends on the assessment and opinion of many of an acquirer's stakeholders[2]. As a result, the way a company treats its stakeholders should play a role in the expected outcome of M&A deals.

A firm's policies and behaviors towards its stakeholders are often referred to as corporate social responsibility (CSR, henceforth). Interest in CSR has been strongly increasing for the past two decades, as evidenced by the constantly growing share of companies adopting CSR reporting[3] and the similarly growing role played by Socially Responsible Investment (SRI) funds[4]. The substantial increase in CSR awareness has fueled an important

[1] Source: https://imaa-institute.org/

[2] There is no common consensus as to what the concept of a stakeholder means, with hundreds of different definitions existing in the literature (Miles, 2012). According to Freeman (1984), stakeholders are "any group or individual who can affect or is affected by the achievements of the organizations objectives", i.e. shareholders, customers, employers, NGOs, governments, communities, etc.

[3] King and Bartels (2015)'s KPMG survey documents that 73 percent of surveyed companies worldwide issued CSR reporting in 2015 (a 32 percentage point increase relative to 2005), and that CSR reporting was undertaken by 92 percent of the world's largest 250 companies.

[4] According to the US SIF Foundation's 2016 Report on Sustainable and Responsible Investing Trends in the United States, more than one out of every five dollars under professional management in the United States – $8.72 trillion or more– was invested according to SRI strategies as of year-end 2015. This represents a 33-percent increase since 2014.

body of academic research on the financial consequences of CSR. Recent studies show that CSR impacts the market value of firms (Buchanan et al., 2018; Fauver et al., 2018; Ferrell et al., 2016; Gao and Zhang, 2015; Jiao, 2010; Lins et al., 2017; Servaes and Tamayo, 2013), the cost of capital (El Ghoul et al., 2011; Dhaliwal et al, 2014; Martínez-Ferrero et al., 2016; Ng and Rezaee, 2015), the financial risk of companies (Kim et al., 2014; Diemont et al., 2016) and the value of cash holdings (Arouri and Pijourlet, 2017; Cheung, 2016; Ghaly et al., 2015). However, existing research work has yet to achieve consensus, and whether shareholders' interests are consistent with those of other stakeholders is still an open question that deserves further empirical analysis.

In this study, we specifically examine whether the CSR of acquirers impacts the uncertainty preceding M&A deal completion, and thus contribute to the thin literature studying CSR in the M&A context. Indeed, while there is considerable research focusing on M&A on the one side, and on the relationship between CSR and capital markets on the other side, the association between CSR and M&A is scarcely analyzed. This is surprising as M&A operations offer an excellent platform to better understand the financial impacts of CSR activities. Unlike day-to-day operating decisions, M&As potentially create positive synergies but also substantial financial and operational risks that may affect all stakeholders (Burns and Collett, 2017). Identifying the determinants of M&A uncertainty is therefore crucial for both shareholders and other stakeholders.

There are reasons suggesting CSR should have an impact on deal-related uncertainty. On the one hand, proponents of stakeholder theory (Donaldson and Preston, 1995; Freeman, 1984; Porter and Kramer, 2006) suggest that ethical behavior and profit are not mutually exclusive and that acting in all stakeholders' interests ultimately benefits shareholders. According to this view, high CSR companies should benefit from stronger stakeholders

commitment thanks to an increased reputation for delivering on their implicit contracts[5]. Indeed, strong CSR attributes should reduce the probability of a breach in implicit contracts and firms that have high CSR should therefore receive stronger stakeholders' support (i.e., from employees, capital providers, and authorities). This is especially important within the context of unsettling events such as M&As. As a result, M&As conducted by high-CSR acquirers should embed less uncertainty than operations initiated by low-CSR acquirers, and this lower uncertainty should result in reduced completion uncertainty. On the other hand, the neoclassical paradigm (Friedman, 1970; Jensen, 2001; Levitt, 1958) views CSR-related expenditures as a waste of valuable resources resulting in benefits enjoyed by non-financial stakeholders at the expense of shareholders. Following this view, M&As conducted by high-CSR acquirers should be characterized by more uncertainty than operations initiated by low-CSR acquirers because of increased risk of shareholder opposition and reduced access to capital.

In this paper, we contribute to the open debate on the capital market consequences of CSR activities and evaluate these two opposite views by empirically assessing the impact of acquirer's CSR on M&A completion uncertainty, proxied by arbitrage spreads, using an international sample of 726 deals spanning the 2004-2016 period. Our measure of acquirer's CSR comes from ASSET4 – Thomson Reuters ESG Research Data. Our main findings offer strong evidence that M&A completion uncertainty is negatively related to the CSR of acquirers. Indeed, we find that a one-standard deviation increase in the acquirer's CSR score reduces the deal's arbitrage spread by 1.10 percentage points. Results are qualitatively similar

[5] Corporations represent a nexus of implicit and explicit contracts between shareholders and stakeholders (Coase, 1937; Fama and Jensen, 1983; Shleifer and Summers, 1988). Explicit contracts refer to those contracts that have legal binding whereas implicit contracts have no legal binding. For implicit contracts, firms can miss their promise without being sued by other stakeholders. The value of implicit contracts depends on trust. High-CSR firms tend to have the reputation of being trustworthy and reliable; and are therefore expected to commit to implicit contracts (Kristoffersen et al., 2005; Liang et al., 2017).

when we focus on individual CSR dimensions (environmental, social, and governance). Our evidence is robust to a battery of sensitivity tests, including alternative proxies of completion uncertainty, alternative sample specifications, and various approaches to address potential endogeneity. Our findings support arguments in the literature in favor of stakeholder theory.

To the best of our knowledge, our paper is the first international study that examines the effect of CSR on M&A completion uncertainty. Our paper is related to the literature that analyzes CSR within the M&A context[6]. The paper closest to ours is Deng et al. (2013), who study a sample of US merger deals and find that M&A operations by high CSR acquirers take less time to complete and are less likely to fail than M&A operations by low CSR acquirers. They also show that high CSR acquirers realize higher merger announcement returns, higher announcement returns on the value-weighted portfolio of the acquirer and the target, and larger increases in post-merger long-term operating performance. We advance this strand of the literature in several ways. First and foremost, while Deng et al. (2013) focus on US transactions, we take an international perspective. This international perspective is particularly important when studying the M&A-CSR link. Indeed, from a firm perspective, the motivation underlying the adoption of CSR is not straightforward. As Liang and Renneboog (2017) argue, it is not clear whether firms "do well by doing good", or "do good by doing well". In addition, the authors emphasize that CSR is not necessarily a purely voluntary initiative and that CSR adoption depends on legal rules, institutional arrangements and societal preferences. As such, to study the impact of CSR, it is important to consider firms across different countries. What's more, the volume of North American deals[7] as a proportion of global M&A activity has fallen from 90.2% of global M&A activity (in US$ value) in 1985 to

[6] See, for example, Aktas et al. (2011), Bereskin et al. (2018), Boone and Uysal (2018), Deng et al. (2013), Gomes and Marsat (2018), and Liang et al. (2017).
[7] Deals in which the target firm was located in North America.

51.3% in 2016[8]. This trend towards increased internationalization of corporate combinations raises the need to take an international perspective when studying M&A. We exploit the richness of our M&A dataset and study our research question in an international framework. Second, as Fransen (2013) highlights, it is important to examine the various dimensions of CSR separately rather than only focus on the concept as a whole. Therefore, in addition to the overall CSR, we also analyze the environmental, social, and governance dimensions individually. Third, while Deng et al. (2013) analyze the impact of CSR on the observed probability of completion and time to completion, we use a related and intuitive measure of completion risk, i.e., arbitrage spreads. In finance, most research studies rely on *ex post* risk instead of *ex ante* risk as the latter is more difficult to estimate. The *ex ante* risk is an opinion about risk formed at the time the decision is made and thus incorporated by investors in their decision-making calculations. The *ex post* risk is often a biased proxy of *ex ante* risk as the latter may reflect fears of adverse events that did not materialize (Jorion and Goetzmann, 1999). Fortunately, the M&A process offers a framework in which *ex ante* completion risk is readily observable through arbitrage spreads. The arbitrage spread is the difference between the offer price (to be paid in cash and/or in acquirer's stock) and the market price of the target immediately following the M&A announcement. This spread provides us with an excellent proxy for *ex ante* uncertainty as it conveys market expectations regarding a deal's expected outcome (Jindra and Walkling, 2004). In this sense, it gives us insight into what the market thinks of the chances of a deal succeeding. Using arbitrage spreads as a measure of completion risk allows us to evaluate directly how market participants perceive CSR in the M&A context and to examine whether investors actually price the impact of CSR on M&A risk.

[8] Source: https://imaa-institute.org/

Fourth, we explicitly control for target's CSR in additional tests to make sure the impact of acquirers' CSR on deal uncertainty does not depend on target's CSR performance.

Also related to our study is Liang et al. (2017) who investigate the impact of acquirers' engagement in employee issues in the M&A context. Our study differs from theirs in two important ways. First, while Liang et al. (2017) analyze M&A wealth effects, we focus on M&A completion uncertainty. Second, we do not focus only on employee relations but consider all dimensions of CSR (environment, social, and governance).

Finally, our study also contributes to the literature on the determinants of merger arbitrage spreads by showing that the CSR attributes of acquirers matter in explaining the cross-sectional variance of arbitrage spreads.

The remainder of this article is organized as follows. Section 2 presents the concept of risk arbitrage, the related literature, and motivates how an acquirer's CSR activities may impact M&A completion uncertainty. Section 3 describes the data and provides summary statistics for the different variables we use. Section 4 presents empirical results, and Section 5 concludes.

2. Risk arbitrage, corporate social responsibility, and M&A uncertainty

This section serves three purposes. First, we review previous research studies on M&A and risk-arbitrage. Second, we discuss the main findings of research works on CSR. Finally, we relate the two previous literatures and motivate how CSR can be expected to impact M&A uncertainty.

2.1. M&A and risk-arbitrage

When an acquisition bid is announced, the market stock price of the acquiring firm usually goes down while the market stock price of the target firm usually adjusts upward without exactly reaching the level of the offer price (to be paid in cash and/or stock of the acquiring firm). The difference between the target stock price immediately following the acquisition announcement and the offer price is called the speculation or arbitrage spread. Arbitrage spreads are theoretically set conditional on the features of a particular acquisition and anticipating the outcome of the offer. While the bid price provides information about the bidder's valuation of the target, the arbitrage spread conveys information about the market's pricing of the target conditional on the existence of the bid (Jindra and Walkling, 2004). The arbitrage spread can therefore be seen as a result from wagers on the expected outcome of the operation by market participants: the greater the perceived risk of failure, the wider the arbitrage spread.

Risk arbitrage (sometimes called merger arbitrage) –for which investors seem to have been regaining interest recently[9]– is the investment strategy aimed at profiting from this spread. In the case where the bid is successful, the arbitrageur pockets the arbitrage spread. However, if the deal fails, the arbitrageur suffers a loss usually much greater than the profit realized if the deal succeeds. For risk-arbitrageurs, the appropriate positions to undertake depend on the deal consideration structure. In cash bids, the acquirer offers to exchange cash for the target's equity. In this case, the arbitrageur simply purchases the target company's stock and earns the arbitrage spread if the offer eventually succeeds. In stock bids (all-stock or stock-and-cash deals), the arbitrageur still purchases the target company's stock but also sells short a given amount of the acquirer's stock.

[9] https://www.bloomberg.com/news/articles/2016-04-27/hedge-fund-investors-have-fallen-in-love-with-merger-arb-again

Several reasons have been suggested to explain risk arbitrage returns. Larcker and Lys (1987) view risk arbitrage returns as a compensation for the cost of acquiring valuable private information while Mitchell and Pulvino (2001) see them as a compensation for providing liquidity, especially in bear markets. Generally speaking, the main risk in merger arbitrage is completion risk, i.e., the risk that the deal ultimately fails. Other risks relate to the uncertainty surrounding the deal terms and the time to consummate the deal (Brown and Raymond, 1986). As risk arbitrage profits are considered a reward for bearing these risks, any change in these risks will also affect the arbitrage spread (Baker and Savoglu, 2002).

Researchers have attempted to explain the cross-sectional variations of arbitrage spreads and to find their determinants. Jindra and Walkling (2004) are the first to explore this subject. They analyze a sample of 362 US cash tender offers spanning the 1981-1995 period and find that arbitrage spreads are significantly associated with various bid and offer characteristics. They also show arbitrage spreads are positively related to offer duration and negatively related to the magnitude of price revisions. Branch and Wang (2008) analyze a comprehensive sample of 1,223 announced deal attempts occurring between 1995 and 2005 and find characteristics such as bid premia, arbitrageurs' involvement and target's relative size have an impact on arbitrage spreads. More recently, Jetley and Ji (2010) investigate the decline of risk-arbitrage returns over the 1990-2007 period and find that all-cash transactions are usually associated with narrower spreads because these transactions are less risky.

2.2. Corporate Social Responsibility

There are two conflicting views regarding CSR: the shareholder view and the stakeholder view. The shareholder view is rooted in neoclassical economic theory according to which the sole responsibility of managers is to maximize profit (Friedman, 1970) while social and

environmental issues should be resolved by the market itself, within the boundaries of what is permitted by regulation and, falling that, by the government. In the same vein, Levitt (1958) criticizes beyond-compliance actions by firms and considers that the only responsibilities of businesses are "to obey the elementary canons of everyday face-to-face civility and to seek material gain". According to this view, CSR-related expenditures are seen as a waste of valuable resources that should instead be employed to maximize firm value. In this case, benefits that other stakeholders get from CSR activities come at the expense of shareholder wealth, resulting in a wealth transfer from shareholders to other stakeholders.

The stakeholder view claims that "corporate success and social welfare are not a zero-sum game" (Porter and Kramer, 2006), and that CSR-related activities increase stakeholders' support towards a firm's operations and therefore ultimately benefit shareholders. As pointed out by Deng et al. (2013), this view is closely related to contract theory (Coase, 1937) according to which a firm is a nexus of explicit and implicit contracts between shareholders and other stakeholders (Shleifer and Summers, 1988). Implicit contracts are not legally binding and there is no explicit cost involved in not honoring them (Kristoffersen et al., 2005). Therefore, they carry a high amount of uncertainty and their value is thus contingent on stakeholders' expectations regarding the firm's willingness to honor its commitments (Cornell and Shapiro, 1987).

CSR activities are often associated with a stronger reputation (Martinez-Ferrero et al., 2016) and a stronger commitment to honor implicit contracts (Deng et al., 2013). This stronger reputation in turn can increase the ability to attract financial capital (Cheng et al., 2014), the appeal to current and potential employees (Fombrun et al., 2000; Branco and Rodrigues, 2006) and customer loyalty (Fombrun et al., 2000). It can also lead to more attractive contract terms with strategic partners, mainly as a result of improved trust (Barney

and Hansen, 1994) and the ability to price products and services less aggressively (Fombrun et al., 2000).

Trust is particularly important in the context of uncertain event like M&As. These events are likely to unsettle key stakeholders because they challenge the continuity of existing long-term relationships between the firm and stakeholders and can in some cases require stakeholders to renegotiate their contracts with the new combined entity (Deng et al., 2013). As a result, a firm's reputation for honoring its implicit commitments to stakeholders is a key determinant of a combination's success. This also explains why firms considering alliance projects are more attracted by prospective partners perceived as trustworthy (Shah and Swaminathan, 2008).

2.3. CSR and uncertainty surrounding M&A deals

According to the stakeholder view, strong CSR attributes should reduce the probability of a breach in implicit contracts and therefore increase stakeholders' support towards a firm. Also, a firm's commitment to explicit and implicit contracts with key stakeholders plays an important role in the wealth gains of acquiring firms' shareholders (Shleifer and Summers, 1988; Rhodes-Kropf and Robinson, 2008; Masulis et al., 2016; Liang et al., 2017). As a result, acquirers' shareholders should be less likely to oppose deals conducted by high-CSR firms. In addition, target's stakeholders could also protest and lobby against a takeover conducted by an acquirer perceived as socially irresponsible (low-CSR acquirer), potentially convincing the board to consider alternatives to the takeover (Liang et al., 2017). In addition, negative reputation spillovers from the acquirer resulting from a low CSR commitment would decrease the value of the target firm relative to other acquirers without a negative reputation (Boone and Uysal, 2018). The target firm should therefore be more inclined to oppose a M&A

attempt coming from a low-CSR bidder. Finally, high-CSR acquirers could also enjoy a better reputation among regulators (Hong and Liskovich, 2015), reducing the risk of regulatory intervention during the M&A process. Therefore, mergers and acquisitions conducted by high CSR acquirers should embed less uncertainty than operations initiated by low CSR acquirers. This fact has been validated empirically in the US context. Indeed, Deng et al. (2013) find that mergers initiated by high-CSR acquirers take less time to complete and are less likely to fail than mergers initiated by low-CSR acquirers. They emphasize the fact that "high CSR acquirers effectively reduce the conflicts of interests between shareholders and other stakeholders by improving the welfare of both parties", leading to faster integration. Similarly, Hawn (2013) focuses on emerging markets and studies the importance of CSR in the expansion of multinational companies through corporate acquisitions and finds that strong CSR (by acquirers) leads to faster deal completion, implying that CSR advantage actually overcomes home country disadvantage. This is a fundamental point as arbitrageurs must not only predict the outcome of a transaction but must also estimate the time to completion. Indeed, if a deal takes significantly longer to complete than anticipated, the rate of return will decline to uneconomic levels. As a result, strong CSR by the acquirer can be expected to reduce M&A uncertainty. Increased stakeholders' support should also reduce acquisition-related uncertainty through the channel of deal financing. In cash transactions, the ability to finance the purchase of the target may in certain circumstances create substantial risks to deal completion. As noted by Paulson (in Parker, 2005), while all buyers are confident about their ability to raise the money at the time of announcement, a rise in interest rates, an earnings decline in either the target or the acquirer, or a declining stock market may all cause financing difficulties. A strong CSR could limit this problem through its negative effect on the cost of capital resulting from a large relative size of the firm's investor base and low perceived risks

(El Ghoul et al., 2011; Dhaliwal et al., 2014; Martinez-Ferrero et al., 2016). This reduction in financing risk could in turn lead to lower uncertainties and narrower spreads.

In contrast to this view, the advocates of the shareholder view suggest that CSR-related activities benefit other stakeholders at the expense of shareholders. In this context, mergers and acquisitions could be perceived as benefiting other stakeholders at the expense of shareholder wealth, thereby leading shareholders to vote against the deal proposal and delaying (or even blocking) completion. In addition, according to the agency view of CSR (Jensen, 2001), managers cannot maximize more than one objective function at the same time. Jensen (2001) claims that without a single and clearly stated corporate objective – which should be shareholder wealth maximization – self-interested managers have greater latitude to pursue their own interests at the expense of shareholders'. Also, the over-investment hypothesis of Barnea and Rubin (2010) argues that managers may seek to overinvest in CSR-related activities for their private benefit. They could indeed strategically commit themselves to socially responsible activities aimed at gaining stakeholders' support to ultimately strengthen their own position within the firm (entrenchment strategy). This behavior is detrimental to shareholder wealth, and such firms should therefore exhibit a higher cost of capital, reducing their financing capabilities and weakening their acquisition power. These features should lead to a higher uncertainty surrounding deal completions.

The nature of the impact of CSR on M&A uncertainty is therefore an empirical question. We address this question in the remainder of this paper.

3. Data

3.1. Sample selection

Our sample consists of international bids (successful and unsuccessful) announced between 2004 and 2016. The initial sample of deals comes from Thomson Financial's Securities Data Company (SDC) Platinum database. Our final sample includes all bids that meet the following five selection criteria: (1) the deal value disclosed in SDC is greater than $1 million, (2) the acquirer initially owns less than 50% of the target firm and seeks to acquire more than 50% of the target firm, (3) the acquirer and target are publicly traded and have financial data available from the Thomson Reuters Datastream database, (4) the acquirer is rated by ASSET4, and (5) bids have standard terms, i.e., they do not feature contingent claims in the form of embedded options. These restrictions result in a final sample of 726 deal offers.

3.2. Measure of arbitrage spread

Arbitrage spreads are computed one day after the offer announcement date (Jetley and Ji, 2010). For cash deals, risk arbitrage involves buying the stock of the target after the merger has been announced and in this case, the arbitrage spread is computed as follows:

$$\mathrm{ArbSpread}_{\mathrm{cash,t}} = \frac{\mathrm{P_{offer}} - \mathrm{P_{target,t}}}{\mathrm{P_{target,t}}} \quad (1)$$

where $\mathrm{ArbSpread}_{\mathrm{cash,t}}$ is the arbitrage spread for a cash deal on trading day t, $\mathrm{P_{offer}}$ is the price in cash offered by the acquiring company for each share of the target company's common stock and $\mathrm{P_{target,t}}$ is the closing price of the target company's common stock on trading day t.

For stock deals (i.e., mergers in which target shareholders receive shares of the acquiring firm), risk arbitrage involves buying one share of the target firm and short selling a given number of shares of the acquiring firm according to the exchange ratio (i.e., the number of shares of the acquiring firm's common stock offered in exchange for one share of the target firm's common stock). In this case, the arbitrage spread is computed as follows:

$$\mathrm{ArbSpread}_{\mathrm{stock,t}} = \frac{\mathrm{P_{acquirer,t}} \times \mathrm{ER} - \mathrm{P_{target,t}}}{\mathrm{P_{target,t}}} \quad (2)$$

where $\mathrm{ArbSpread}_{\mathrm{stock,t}}$ is the arbitrage spread for stock deals on trading day t, $\mathrm{P_{acquirer,t}}$ is the closing price of the acquiring firm's common stock on trading day t, ER is the exchange ratio i.e., the number of shares of the acquirer's common stock offered to the target's common shareholders in exchange for one share of the target's common stock and $\mathrm{P_{target,t}}$ is the closing price of the target company's common stock on trading day t.

3.3. Measure of a firm's CSR

To proxy for CSR, we use the data provided by ASSET4 Thomson Reuters ESG Research Data. The ASSET4 ESG database has a reputation as one of the most diligent and trustworthy sources for CSR data (Stellner et al., 2015). It includes 5,000 global publicly listed companies and provides history up to fiscal year 2002 for close to 1,000 companies. The overall rating is based on approximately 700 individual data points, which are combined into over 250 key performance indicators (KPIs). These KPI scores are aggregated into a framework of 18 categories grouped within 4 dimensions (Economic, Environmental, Social, and Governance) that are integrated into a single overall score using equal weighting. In year t, a firm receives a

z-score for each of the pillars, benchmarking its performance against the rest of the firms based on all the information available in fiscal year t-1 (by construction, this variable is lagged by one year). The resulting percentage is therefore a relative measure of performance, z-scored and normalized to be comprised between 0 and 100%. We follow Cheng et al. (2014) and Stellner et al. (2015) and compute a firm's overall CSR score by averaging the scores assigned to the environment, social, and governance dimensions. In this study, we use for each deal the last available ASSET4 ESG score before the announcement date.

3.4. Other variables influencing arbitrage spreads

To investigate the relation between acquirer's CSR and arbitrage spreads and make sure our CSR measure does not proxy for other known factors that influence arbitrage spreads (Branch and Yang, 2003; Branch and Wang, 2008; Cornelli and Li, 2001; Hoffmeister and Dyl, 1981; Jennings and Mazzeo, 1993; Jetley and Ji, 2010; Jindra and Walkling, 2004; Walkling, 1985), we include several firm and deal-related controls in our regressions. Specifically, we include the bid premium, the target's cumulative return prior to deal announcement, abnormal trading volume around announcement, acquirer size, target size, the target's market-to-book ratio, the acquirer's Tobin Q and previous market-adjusted return. We also include variables that can be thought of as being related to the propensity of firms to invest in CSR activities such as firm age, financial performance (return on asset), or other investment/expenses potentially linked to CSR due to limited resource availability such as capital expenditures, R&D expenses, and advertising expenses (Campbell, 2007; Shane and Spicer, 1983; Sun and Gunia, 2018; Teoh et al., 1999; Withisuphakorn and Jiraporn, 2016). Finally, we include a set of deal-specific characteristics (cash dummy, hostile dummy, cross-border dummy, diversifying dummy, toehold dummy and multiple bids dummy). We winsorize all financial variables at the

1% and 99% level[10]. Table A1 in the appendix provides the full description, calculation method and predicted sign of the relationship with arbitrage spreads for the control variables.

4. Empirical Analysis

4.1. Distribution of the sample and arbitrage spreads

Table 1 shows the yearly-partitioned distribution of deals and arbitrage spreads for our sample of 726 deals over the 2004-2016 period. The majority of deals are clustered in more recent years with about 70% of offers taking place in or after 2010. The percentage of deals associated with negative arbitrages spreads ranges from 11.11% in 2005 to 38.10% in 2010. Over the whole sample period, the number of cases with negative arbitrage spreads accounts for 24.93% of our observations. Among the 726 deals, 529 deals (73%) were eventually successful and the remaining 197 deals (27%) ultimately failed. In terms of deal structure, 57% of deals involve a cash-only payment while the remaining 43% are cash-and-stock or stock-only offers. The number of hostile bids is relatively low with only 47 observations (3.6%). Finally, our sample comprises 286 cross-border deals (39%).

[Insert Table 1 about here]

Our sample is geographically diverse with 45 countries involved. Table 2 shows a detailed distribution of deal offers across countries along with their values for the top 20 target and acquiring countries based on the number of deal offers. Not surprisingly, the United States are by far the most active market over the sample period, both as an acquirer and as a target, with 294 offers as acquirer (totaling $2,437 billion) and 325 offers as target (totaling $2,647 billion). Australia, Canada, France, Japan and the UK are the other main countries involved in

[10] To check whether our results are robust to the inclusion of outliers, we also conduct our tests without winsorizing. Results are similar and are available upon request.

deal attempts, both as acquirers and targets (with these countries cumulatively totaling $1,185 billion as acquirers and $962 billion as targets).

[Insert Table 2 about here]

4.2. Summary statistics results

Table 3 reports summary statistics related to our set of variables. The mean and median arbitrage spreads are 3.70% and 2.20% respectively, with a standard deviation of 7.10%. The average acquiring firm in our sample has a CSR score of 59.90% and a market-to-book ratio of 3.20. The average premium offered for the target is 34.30%. Correlations among these explanatory variables are reported in Table 4. None of our variables are highly correlated, ruling out potential multicollinearity issues. Interestingly, the correlation between arbitrage spreads and acquirers' CSR scores is significantly negative. In addition, we see that arbitrage spreads are positively correlated with the bid premium, and negatively correlated with the target's cumulative returns and acquirer size. These facts are in line with what we described above.

[Insert Table 3 about here]

[Insert Table 4 about here]

4.3. Multivariate analysis of the link between CSR and M&A uncertainty

As discussed in the introduction, despite increased academic interest in CSR and a large volume of research on M&A, we still know very little about how CSR relates to M&A risk. The purpose of our study is to address this gap in the literature by empirically examining the link between acquirers' CSR and M&A arbitrage spreads. To assess the impact of acquirers'

CSR on M&A perceived uncertainty, we regress the arbitrage spread on a measure of acquirer's CSR and the set of control variables previously described. Our main model is as follows[11]:

$$ArbSpread_i = \beta_0 + \beta_1 AcqCSR_i + \beta_k \sum Controls_i + \gamma + \vartheta + \varphi + \varepsilon_i \quad (3)$$

where $AcqCSR_i$ is the acquirer's CSR score and Controls is a vector of control variables (introduced in section 3.4. and described in Table A1 of the appendix). γ, ϑ, and φ represent year, industry, and country fixed-effects, respectively[12]. In order to better assess how the CSR of acquirers impacts the arbitrage spread, we test the overall CSR score as well as the scores for each ASSET4 CSR dimensions, namely Environment, Social, and Governance. AcqCSR is the acquirer's overall CSR score in column 1 of Table 5, the acquirer's environmental score (AcqENV) in column 2, the social score (AcqSOC) in column 3, and the governance score (AcqGOV) in column 4. To address potential endogeneity concerns, we perform Ramsey's (1969) Regression Specification Error Test (RESET) for omitted variables. Results fail to reject the null hypothesis of no omitted variable, and therefore suggest our model does not suffer from this misspecification.

Table 6 presents our results. In column 1, we run our main model using the overall ASSET4 CSR score as our CSR measure. The coefficient associated with AcqCSR is negative and statistically significant at the 1% level. This suggests that arbitrage spreads are negatively related to the acquirer's CSR. More precisely, the coefficient associated with the acquirer's

[11] In unreported tests, we also specify a model including a squared CSR term to account for potential non-linearity in the relationship between CSR and arbitrage spreads. We find no evidence of non-linear association.
[12] Using country and year dummies assumes that whatever is going on in a given year affects all of the countries the same. To make sure this assumption is acceptable, we also run our model using country-year fixed effects. Results are similar under this specification and are available upon request.

CSR, AcqCSR is -0.046 (t-statistic = -2.92). Descriptive statistics presented in Table 3 report that the standard deviation of AcqCSR is 0.240. Therefore, the regression coefficient implies that arbitrage spreads are reduced by 1.10 percentage points for each standard deviation unit-increase in the acquirer's CSR score.[13] For a target valued at $100 million, a one-standard deviation increase in acquirer CSR would result in a $1.1 million decrease in the arbitrage spread's dollar-value, which can be seen as the completion uncertainty expressed in terms of potential market capitalization, or the amount to be monetized by risk-arbitrage investors. This 1.10-percentage point reduction amounts to approximately 30% of the average arbitrage spread (3.73%), making it economically significant. In addition, we also test scores for each individual CSR dimension, namely Environment, Social, and Governance. Results are presented in columns 2 to 4 and show that each CSR dimension is negatively related to arbitrage spreads at usual significance levels (5%). In terms of economic interpretation, results imply that an increase of one standard deviation in the acquirer's environmental, social, and governance performance, are associated with a reduction in arbitrage spreads of 0.84, 0.92, and 0.75 percentage points, respectively[14].

Coefficients associated with control variables are mostly in line with what we expected. Similar to Jindra and Walkling (2004), we find that the bid premium is positively linked to arbitrage spreads, whereas target's cumulative price return and deal hostility decrease arbitrage spreads. An increase in target's share price before the announcement as measured by cumulative price return can be an indicator of shifts in ownership distribution, which is associated with increased speculative activity, the accumulation of shares in more neutral

[13] 1.10 percentage points represents the product of the coefficient associated with acquirer's CSR reported in column 1 of Table 5 and the standard deviation of acquirer's CSR reported in Table 3 or -0.046 multiplied by 0.240, respectively.

[14] In additional tests, we replace AcqCSR by a dummy variable taking the value of one for high CSR acquirers (i.e., acquirers with a CSR score located above the median of our sample). Results remain strong and robust. They are available upon request.

hands, and therefore a decrease in arbitrage spreads (Jindra and Walkling, 2004). Hostile deals are often associated with multiple bidders, target resistance and a higher likelihood of bid revision, thereby decreasing spreads (Jennings and Mazzeo, 1993). In contrast to Jindra and Walking (2004) who find abnormal volume and toehold are negatively related to arbitrage spreads, we find they are insignificant. In a recent study, Buehlmaier and Zechner (2017) study how returns of merger arbitrage spread are determined by content of media and find that the bid premium, acquirer's size and cash flow, and target's size and market-to-book ratio do not significantly impact arbitrage spread. In contrast to Buehlmaier and Zechner (2017), we find that the bid premium, target's size and market-to-book ratio are positively associated with arbitrage spreads while acquirer's size is negatively linked to arbitrage spreads. As target's size and valuation increase, so do target's resources to oppose the attempt (Hoffmeister and Dyl, 1981) and because the probability of takeover success therefore decreases, arbitrage spreads should be wider as a result. Regarding acquirer size, larger acquirers might be able to hire prestigious underwriters whose expertise allows them to estimate the offer price maximizing the probability of success, thereby decreasing arbitrage spreads. In addition, large acquirers may enjoy an easier access to capital, reducing deal financing uncertainty and therefore reducing arbitrage spreads. Although some coefficients associated with our controls may differ in terms of statistical significance from those available in the extant literature, the signs of these coefficients are consistent with those predicted by theory. The difference in statistical significance between our results and the extant literature is mainly due to sample differences including period, countries, and model specifications. Our sample period is from 2004 to 2016 covering 45 countries, Jindra and Walking (2004)'s sample is from 1981 to 1995 covering only US firms, and Buehlmaier and Zechner (2017) focus on US firms from 1999 to 2009. In addition, cash deals, and deals

involving multiple bidders appear to be associated with narrower arbitrage spreads, again confirming the expected association. Acquirer proxies of management quality (Tobin's Q and previous market-adjusted return) as well as other acquirer characteristics (ROA, CAPEX, Cash flows, R&D, advertising and age) do not appear to have an influence. The cross-border nature of deals does not seem to impact arbitrage spreads. Overall, our results suggest that more socially responsible firms are perceived by the market as more capable of successfully and timely completing mergers and acquisitions[15].

To confirm this interpretation and make sure the findings of Deng et al. (2013) are robust across countries, we follow their methodology and analyze the impact of CSR on the probability of deal completion using Probit regression in which the dependent variable is a dummy variable that equals one if the deal is completed and zero otherwise. Results are reported in Table 6 and show that the probability of completion increases with the acquirer's CSR score. Analyzing individual dimensions, we report that environmental performance (column 2) and social performance (column 3) are both positively associated with the probability of deal completion while governance (column 4) has no impact. Overall, these results suggest that CSR affects the likelihood of deal completion and that market participants anticipate this as evidenced by smaller merger arbitrage spreads.

[Insert Table 5 about here]

[Insert Table 6 about here]

[15] To further control for country or institutional factors, we also run our model focusing on US deals only. Results are not materially different under this specification and are not reported due to limited space. They are available upon request.

4.4. Robustness tests

4.4.1. Alternative measure of M&A uncertainty

Arbitrage spreads are usually computed one day after deal announcement. However, following Branch and Wang (2008), we also test the arbitrage spread two days after announcement in order to allow the market more time to absorb the deal-related information fully. Results are reported in column 1 of Table 7 and confirm the negative relationship between acquirers' CSR and M&A uncertainty, albeit at a slightly lower level of significance (5%).

4.4.2. Accounting for the financial crisis

Our sample comprises various deals initiated during the 2007-2009 financial crisis. It is therefore possible that our results could be biased by particular behaviors characterizing periods of economic distress. In addition, if the impact of CSR on firms is more salient during periods of market stress (Lins et al., 2017), including deals announced over this crisis period could results in misestimating the impact of CSR on arbitrage spreads. In this sub-section, we control for this potential issue by removing from our sample all deals announced during the financial crisis period as defined by the National Bureau of Economic Research (NBER), i.e., ranging from December 2007 to June 2009. There are 56 deals in our sample that were announced during this period. We remove them and re-estimate our model. Results are presented in column 2 of Table 7 and confirm the negative and statistically significant (at the 1% level) relationship between acquirer's CSR and M&A uncertainty.

4.4.3. Removing financial firms

Several papers (Jindra and Walkling, 2004; Deng et al., 2013) exclude financial firms from their investigations as financial industries have different reporting policies and are subject to different regulations. To make sure our results are not biased by the inclusion of financial firms, we remove deals involving financial firms and re-estimate our model. The exclusion of financial industry deals reduces the sample size by 122 deals. Results are reported in column 3 of Table 7. Again, acquirer's CSR appears to bear a negative and statistically significant relationship with arbitrage spreads, confirming our previous conclusions.

4.4.4. Excluding negative arbitrage spreads

In this sub-section, we remove from our sample the deals that exhibit negative arbitrage spreads. Negative arbitrage spreads may be less intuitive to understand. In fact, they occur as a result of increased speculation regarding the possibility of an offer price revision by the current bidder, or an expected higher offer coming from a competitive bidder. This, in turn, could bias our results by adding to the conditional pricing of the deal an extra layer of speculation on top of the assessment of completion risk. Removing these deals reduces our sample to 545 deals. Results are reported in column 4 of Table 7, and confirm our previous findings. Indeed, the association between acquirer's CSR and arbitrage spreads remains negative and statistically significant (at the 1% level).

4.4.5. Excluding US deals

The US are the largest covered country and US deals account for a significant proportion (33%) of our sample (237 out of 726 deals). In order to address a potential sample bias and make sure our results are not driven by the US, we remove these US deals from our sample.

The exclusion of those deals reduces the sample size to 489 observations. Results are reported in column 5 of Table 7. Again, acquirer's CSR appears to bear a negative and statistically significant relationship with arbitrage spreads (at the 1% level).

[Insert Table 7 about here]

4.4.6. Accounting for target's CSR

Recent studies show that CSR similarity between acquirer and target can have an impact on M&A operations. For example, Bereskin et al. (2018) find that firms that are similar in terms of CSR are more likely to merge and that these mergers are associated with greater synergies, superior long-run operating performance, and fewer goodwill impairments. Lee et al. (2018) reach similar conclusions focusing on human capital relatedness while Boone and Uysal (2018) show similar findings by analyzing the environmental dimension. Target's stand-alone CSR could also have an influence on arbitrage spreads. Indeed, as shown by Cumming et al. (2016), manipulation (which can be thought of as the negative of CSR) by target insiders can increase the risk of deal withdrawal. In light of these elements, target's CSR policies could also play a role in driving deal completion uncertainty. In order to make sure our results are not biased by the omission of target's CSR data, we include target's CSR score in our model:

$$ArbSpread_i = \beta_0 + \beta_1 AcqCSR_i + \beta_2 TarCSR_i + \beta_k \sum Controls_i + \gamma + \vartheta + \varphi + \varepsilon_i \quad (4)$$

where $AcqCSR_i$ is the acquirer's CSR score, $TarCSR_i$ is the target's CSR score and Controls is a vector of control variables (introduced in section 3.4. and described in Table A1 of the appendix). γ, ϑ, and φ represent year, industry, and country fixed-effects, respectively. The

additional requirement of having CSR data for both the acquirer and target reduces our sample size from 726 to 404 deals. Results are presented in Table 8 and confirm our previous findings in that acquirer's CSR remains negatively related to arbitrage spreads at conventional statistical significance levels while target's CSR does not seem to have an impact[16].

[Insert Table 8 about here]

4.4.7. Accounting for endogeneity

One could argue that endogeneity could be a concern in this context. First of all, our dependent variable, i.e., the arbitrage spread, includes the offer price made by the acquirer and it could be argued that the acquirer's bidding behavior might be correlated with its CSR characteristics. We alleviate this concern by 1) including the bid premium in our model and 2) showing that the bid premium is not correlated with CSR as evidenced in Table 4[17].

Another potential concern would be that of CSR being a proxy for management quality. To address this omitted variable concern, we explicitly include proxies of management quality in our regression, namely Tobin's Q and previous market-adjusted return (Deng et al., 2013; Lang et al., 1989). To make sure CSR does not proxy for other financial characteristics and does not result from the availability of limited resources (Sun and Gunia, 2018), our model also includes measures of performance (ROA), investment (CAPEX and R&D), and advertising expenses.

[16] We also tried replacing target's CSR by the CSR difference between acquirer and target. Results are similar in that only acquirer's CSR impacts arbitrage spreads. They are available upon request.

[17] To confirm this fact in a multivariate context, we also regress the CSR of acquirers on the bid premium and the list of controls included in equation 3. The absence of association between CSR and the bid premium is confirmed.

One could also argue that managers may opportunistically invest in CSR activities in order to improve their odds of being successful acquirers, raising the issue of reverse causality. However, because acquiring CSR capabilities is a lengthy and complicated process, investing in CSR for the sole purpose of increasing the probability of deal completion would probably be a valid consideration for frequent acquirers only. In order to address these concerns, we repeat our analysis excluding serial acquirers from our sample[18]. Specifically, we follow Billett and Qian (2008) and define serial acquirers as firms that acquire at least two targets within any five-year horizon. There are 114 such firms in our sample and their exclusion therefore reduces our sample to 612 observations. We report the results in Table 9. We see that the removal of serial acquirers does not alter our previous conclusions in that CSR scores (overall and by dimensions) are negatively related to arbitrage spreads.

[Insert Table 9 about here]

To further address potential endogeneity problems, we also estimate instrumental variable regressions (two-stage-least-squares or 2SLS). In the first stage, we estimate ordinary least square regressions to predict the value of AcqCSR, AcqENV, AcqSOC and AcqGOV, i.e., we regress our CSR measure on explanatory variables used in Equation 3 and on two instrumental variables. For the choice of instruments, we base our work on Ioannou and Serafeim (2012) who show that CSR is determined by both country and industry characteristics. More precisely, a firm's CSR is impacted by a time-invariant component associated with its membership in the country-industry pair, and a time-varying component at the country level (Cheng et al., 2014). In other words, a firm's CSR is impacted by the CSR of

[18] Removing serial acquirers also solves the potential issue of deals dependences within the same firms.

other firms within the same industry-country pair, and by the CSR of other firms in the same country over time. We follow Cheng et al. (2014), Arouri and Pijourlet (2017), and Gomes and Marsat (2018), and use as instruments the country-year mean of CSR scores and the country-industry mean of CSR scores, computed using the entire ASSET4 ESG database. To further support our choice of instruments, in each 2SLS regressions we perform the following two tests: (1) a Cragg and Donald (1993) instrument relevance test to ensure the relevance of our instruments (i.e., high correlations between the instruments and adjusted CSR), and (2) a Sargan (1958) overidentification test to investigate the exogeneity of our instruments (i.e., no significant correlation between the instruments and the residuals in the arbitrage spread regressions)[19]. Results are presented in Table 10.

[Insert Table 10 about here]

In the first-stage regressions reported in columns 1, 3, 5 and 7, we see that both instruments are statistically significant, which seems to validate their use. In the second-stage regressions, we substitute the predicted values of our CSR measures for the actual CSR scores and report results in columns 2, 4, 6 and 8. These results confirm our previous findings in that the predicted values of our CSR measures for overall, environment, social, and governance performance are negatively associated with arbitrage spreads at usual significance levels.

[19] In unreported results, we control for potential self-selection bias by following the Heckman (1979) two-stage procedure. Indeed, Firms with certain characteristics could choose to become high-CSR firms. Specifically, in the first stage, we run a Probit regression in which the dependent variable is equal to one if the firm's CSR is higher than the sample median and zero otherwise and the independent variables are the instrumental and control variables used in Tables 6 and 10. In the second stage, we estimate an ordinary least square (OLS) regression of arbitrage spreads on acquirer's CSR, the inverse Mills ratio and the control variables used in Table 6. Results remain qualitatively similar, indicating that self-selection bias is unlikely to affect our findings.

4.5. Discussion

Overall, our results suggest that high CSR by the acquirer tends to reduce the uncertainty surrounding mergers and acquisitions and leads to narrower arbitrage spreads. In accordance with the stakeholder view, one could explain this fact by arguing that strong CSR attributes possibly reduce the probability of a breach in implicit contracts, and increase stakeholders' support towards a firm. More specifically, this reduction in M&A perceived uncertainty may come from four sources. First, we argue that target firms' stakeholders are less likely to oppose the acquisition attempt if it comes from a socially responsible firm, because of the increased reputation associated with corporate social performance (Martinez-Ferrero et al., 2016)[20]. Indeed, a M&A attempted by a socially irresponsible firm could lead target's stakeholders to protest and lobby against the takeover, and this lobbying pressure could in turn potentially convince the board to consider alternatives to the takeover (Liang et al., 2017). In addition, negative reputation spillovers coming from a low-CSR acquirer would potentially decrease the value of the target firm relative to other acquirers with better CSR credentials (Boone and Uysal, 2018), and the target firm should therefore be more inclined to oppose a M&A attempt coming from a low CSR bidder. Strong CSR by the acquirer should therefore lead to a reduced probability of target resistance. Second, we also explain the impact of CSR on M&A uncertainty by the reduction of conflict-of-interest risk between shareholders and other stakeholders, which facilitates the acquisition process and leads to faster integration (Deng et al., 2013). Indeed, a strong CSR performance is often associated with a stronger commitment to explicit and implicit contracts with key stakeholders (Deng et al., 2013; Liang et al., 2017). This stronger commitment to explicit and implicit contracts has

[20] This result is confirmed within our sample. Using Fortune's World's most admired companies ranking, we find that firms present in the index feature a CSR score which is 17% higher on average, compared with firms which are not present in the index. Results are not reported for the sake of brevity but are available upon request.

an impact on the wealth gains of acquiring firms' shareholders (Shleifer and Summers, 1988; Rhodes-Kropf and Robinson, 2008; Masulis et al., 2016; Liang et al., 2017). As a result, acquirers' shareholders should be less likely to oppose deals conducted by high CSR firms. Third, we argue that CSR reduces M&A completion uncertainty through its impact on deal financing, as empirical studies have shown that a strong CSR commitment leads to a lower cost of equity capital (El Ghoul et al., 2011; Dhaliwal et al., 2014; Martínez-Ferrero et al., 2016), a lower cost of debt (Goss and Roberts, 2011; Oikonomou et al., 2014)[21], and an easier access to finance (Cheng et al., 2014). As a result, M&A operations conducted by high-CSR firms should embed less financing uncertainty. Fourth, a strong CSR commitment could potentially improve a firm's image among regulators (Hong and Liskovich, 2015) and reduce the probability of regulatory intervention during the M&A process.

We also show that the negative impact of acquirer's CSR on deal uncertainty does not depend upon the CSR credentials of target firms.

Finally, our study interestingly complements the findings of Deng et al. (2013) in that we find the negative link between CSR and M&A completion risk holds internationally. Our study confirms this reduction in M&A completion risk associated with strong CSR is priced by market participants before deal conclusion, ruling out a potential anomaly in the conditional pricing of targets.

5. Conclusion

In this paper, we conduct the first international study on the impact of Corporate Social Responsibility (CSR) on Mergers & Acquisitions (M&A)completion uncertainty as measured by

[21] Our sample also confirms this relationship. High CSR acquirers (see definition in section 4.1.) have a weighted average cost of capital that is 2.1 percentage points lower on average than Low CSR acquirers. Results are not reported for the sake of brevity but are available upon request.

arbitrage spreads. We rely on the literature on CSR and develop two competing views (shareholder view vs. stakeholder view) about the effect of an acquirer's CSR on M&A uncertainty. The shareholder view suggests that high-CSR acquirers should face higher uncertainty when conducting acquisitions; as a result, M&As undertaken by high-CSR acquirers should be characterized by wider arbitrage spreads. In contrast, the stakeholder view predicts that high-CSR acquirers should be more capable of quickly and successfully completing M&As; therefore, M&As undertaken by high-CSR acquirers should be characterized by less uncertainty and narrower arbitrage spreads.

Using an international sample of 726 deals announced between 2004 and 2016 and controlling for other determinants previously identified in the literature, we find that deals conducted by firms with strong CSR are associated with lower uncertainty as evidenced by narrower arbitrage spreads. This empirical result is consistent with the stakeholder view. In addition, we also examine the individual impact of each CSR dimension (Environment, Social, and Governance) and find that performance in all dimensions is negatively associated with M&A uncertainty. Our results demonstrate robustness in terms of alternative measures of arbitrage spreads as well as different sample specifications. In addition, we show that the negative impact of acquirer's CSR on deal uncertainty holds regardless of the CSR performance of the target. We also show our results are not affected by endogeneity bias.

Overall, our findings contribute to the M&A and CSR literatures by showing how CSR influences the way markets assess the expected outcome of M&As. We show that CSR is an important determinant of the perceived risk surrounding M&A operations.

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Appendix

Table A1: Description of variables

Variable	Description	Expected sign
ArbSpread	Arbitrage spread one day after announcement. It is computed for cash and stock deals as per equations 1 and 2, respectively.	
Bid premium	Following Jindra and Walkling (2004), we compute the bid premium as follows: **Bid premium = (offer price – average price before bid) / average price before bid**. Average price before bid is computed from t – 30 to t – 10 relative to the announcement date.	+
CumRet	Following Jindra and Walkling (2004), we measure cumulative return as the target's stock price return from t – 42 to t – 1 relative to announcement date.	-
AbnVol	Cumulative abnormal trading volume around acquisition announcements using Lakonishok and Vermaelen's method (1990): $\text{AbnVol} = \sum_{t=t-1}^{t+1} \frac{\text{Volume}_t}{\text{Normal volume}}$ where normal volume is the average trading volume between t – 50 and t – 25 relative to announcement date.	-
TarSize	Natural logarithm of target's market value	+
AcqSize	Natural logarithm of acquirer's market value	-
TarMTB	Market-to-Book ratio of the target.	-
AcqQ	Tobin's Q of the acquirer.	-
AcqAR	Acquirer's buy-and-hold abnormal return estimated using 200 trading days of return data ending 11 before deal announcement (as in Deng et al., 2013). Given our international dataset, the market return used is the return on the primary stock market of the country in which the firm's headquarter is located (as in Liang et al., 2017).	-
AcqROA	Return on asset of the acquirer.	+/-
AcqCAPEX	Acquirer's capital expenditures scaled by total assets.	+/-
AcqCF	Acquirer's cash flow (FFO) scaled by total assets.	+/-
AcqLev	Acquirer's debt-to-total assets ratio.	+/-
AcqRD	Acquirer's research and development expenses scaled by total assets.	+/-
AcqAdv	Acquirer's advertising expenses (from Factset) scaled by total assets.	+/-
AcqAge	Acquiring firm's age	+/-
Cash	Dummy variable that takes the value of one when the form of consideration is cash-only, and zero otherwise.	-
Hostile	Dummy variable that takes the value of one when the takeover attempt is considered hostile, and zero otherwise.	+/-
Cross border	Dummy variable that takes the value of one when the deal involves a target and an acquirer coming from two different countries, and zero otherwise.	+
Diversifying	Dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise.	+
Toehold	Dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise.	-
Multiple bids	Dummy variable that takes a value of one if there is more than one acquirer and zero otherwise.	-

Table A1 reports the description of the control variables used in our multivariate regressions as well as the sign of their predicted relationship with arbitrage spreads. All variables whose timing is not mentioned are the latest available data before deal announcement.

Table 1: Average speculation spreads over the sample period

Year	Number of deal offers	Average arbitrage spread (%)	% of cases with negative arbitrage spreads	Number of successful deals	Number of cash deals	Number of hostile deals	Number of cross-border deals
2004	6	10.90	16.67	1	1	1	1
2005	9	2.88	11.11	7	5	0	4
2006	36	3.28	30.56	26	21	4	16
2007	40	3.24	37.50	30	24	4	25
2008	39	5.14	23.08	25	25	5	18
2009	28	4.89	21.43	21	15	2	11
2010	63	2.34	38.10	48	33	3	27
2011	68	3.61	29.41	56	47	4	25
2012	84	4.43	15.48	68	54	1	33
2013	64	3.94	23.44	49	40	0	21
2014	88	3.28	25.00	65	50	2	35
2015	152	4.50	20.39	104	74	17	54
2016	49	2.62	20.41	28	28	4	16
Total	726	3.73	24.93	529	417	47	286

Table 1 reports average arbitrage spreads and number of deal offers over the sample period. See Equations (1) and (2) for the calculation of the arbitrage spread. Our sample includes 726 deal offers announced between January 1, 2004, and December 31, 2016. Arbitrage spreads are computed one day after deal announcement.

Table 2: Deal offers by acquirer and target countries

Acquirer							Target						
	Domestic deals		Cross-border deals		All deals			Domestic deals		Cross-border deals		All deals	
	#	Value (US$M)	#	Value (US$M)	#	Value (US$M)		#	Value (US$M)	#	Value (US$M)	#	Value (US$M)
USA	237	2,048,496	57	388,791	294	2,437,287	USA	237	2,048,496	88	598,475	325	2,646,970
Canada	41	61,768	27	131,666	68	193,435	Australia	49	80,546	35	76,904	84	157,450
UK	24	77,719	43	349,085	67	426,804	Canada	41	61,768	31	111,584	72	173,352
Australia	49	80,546	6	147,598	55	228,143	UK	24	77,719	39	423,701	63	501,420
Japan	27	77,115	27	60,472	54	137,588	Japan	27	77,115	2	17,234	29	94,350
France	10	12,629	21	186,019	28	198,648	France	10	12,629	7	23,108	17	35,737
Germany	7	62,678	17	109,898	24	172,575	South Africa	9	3,422	3	4,183	12	7,605
Switzerland	5	67,400	13	56,193	18	123,593	Switzerland	5	67,400	7	62,194	12	129,593
Spain	3	3,109	13	63,011	16	66,120	Netherlands	2	7,624	9	137,087	11	144,712
South Africa	9	3,422	2	2,309	11	5,732	Germany	7	62,678	2	9,488	9	72,166
Netherlands	2	7,624	7	40,514	9	48,138	Sweden	1	60	8	56,864	9	56,923
China	0	0	8	12,798	8	12,798	Italy	3	67,250	4	11,773	7	79,022
Ireland	0	0	7	48,768	7	48,768	Spain	3	3,109	4	27,150	7	30,259
Italy	3	67,250	3	14,007	6	81,257	Ireland	0	0	6	105,426	6	105,426
Hong Kong	2	7,396	3	5,405	5	12,800	Israel	0	0	5	2,833	5	2,833
India	2	4,006	3	1,400	5	5,405	South Korea	3	7,916	2	6,504	5	14,420
Norway	2	1,741	3	4,648	5	6,389	India	2	4,006	2	3,600	4	7,606
South Korea	3	7,916	2	13,891	5	21,809	Norway	2	1,741	2	4,650	4	6,391
Singapore	0	0	4	13,373	4	13,373	Taiwan	4	3,356	0	0	4	3,356
Taiwan	4	3,356	0	0	4	3,356	Brazil	1	1,143	2	4,149	3	5,292
Brazil	1	1,143	2	10,540	3	11,683	Hong Kong	2	7,396	1	1,472	3	8,868
Other (15)	9	27,147	18	109,918	19	137,066	Other (22)	8	27,088	27	81,925	35	109,012
Total	440	2,622,462	286	1,770,302	726	4,392,764		440	2,622,462	286	1,770,302	726	4,392,764

Table 2 reports descriptive statistics on all attempted domestic and cross-border deals along with information on deal values. The deal offers are listed by country of origin of the target and acquirer. The data are obtained from the SDC database. Reported values are denominated in US dollars (not adjusted for inflation). # indicates the number of deals.

Table 3: Summary statistics

	Observations	Mean	Q1	Median	Q3	Standard Deviation
ArbSpread	726	0.037	0.001	0.022	0.071	0.080
AcqCSR	726	0.599	0.391	0.635	0.821	0.240
AcqENV	726	0.577	0.234	0.667	0.905	0.323
AcqSOC	726	0.587	0.290	0.662	0.877	0.308
AcqGOV	726	0.633	0.450	0.723	0.855	0.267
BidPremium	726	0.343	0.175	0.300	0.455	0.329
CumRet	726	0.080	-0.030	0.060	0.175	0.208
AbnVol	726	24.513	3.430	14.603	39.796	67.942
TarSize	726	7.085	5.857	7.236	8.351	1.854
AcqSize	726	9.210	8.162	9.172	10.310	1.467
TarMTB	726	2.037	1.152	1.915	3.255	15.849
AcqQ	726	1.755	1.267	1.700	1.896	0.767
AcqAR	726	0.147	-0.055	0.001	0.156	1.925
AcqROA	726	0.062	0.022	0.059	0.099	0.084
AcqCAPEX	726	0.043	0.010	0.026	0.055	0.059
AcqCF	726	0.102	0.050	0.096	0.139	0.082
AcqLev	726	0.240	0.108	0.215	0.343	0.175
AcqRD	726	0.021	0.000	0.000	0.024	0.043
AcqAdv	726	0.002	0.000	0.000	0.000	0.014
AcqAge	726	55.844	22.000	38.000	79.000	48.842
Cash	726	0.574	0.000	1.000	1.000	0.495
Hostile	726	0.065	0.000	0.000	0.000	0.246
Cross border	726	0.394	0.000	0.000	1.000	0.489
Diversifying	726	0.186	0.000	0.000	0.000	0.389
Toehold	726	0.081	0.000	0.000	0.000	0.273
Multiple bids	726	0.103	0.000	0.000	0.000	0.305

Table 3 reports summary statistics for our sample. The sample consists of 726 deal offers initiated between January 1, 2004 and December 31, 2016. ArbSpread represents the arbitrage spreads one day after announcement. See Equations (1) and (2) for the calculation of the arbitrage spread. AcqCSR is the acquirer's overall CSR score. AcqENV is an environmental score. AcqSOC is a social score. AcqGOV is a governance score. BidPremium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. AcqQ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. All financial variables are winsorized at the 1% and 99% level.

Table 4: Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	ArbSpread	1.000																									
2	AcqCSR	**-0.136**	1.000																								
3	AcqENV	**-0.135**	**0.888**	1.000																							
4	AcqSOC	**-0.115**	**0.906**	**0.844**	1.000																						
5	AcqGOV	-0.070	**0.581**	**0.214**	**0.272**	1.000																					
6	Bid premium	**0.169**	0.042	0.030	0.046	0.020	1.000																				
7	CumRet	**-0.150**	0.004	0.039	-0.004	-0.034	**0.189**	1.000																			
8	AbnVol (x100)	-0.071	**0.122**	**0.092**	**0.098**	**0.106**	**0.256**	0.007	1.000																		
9	AcqSize	**-0.133**	**0.407**	**0.390**	**0.400**	**0.202**	-0.033	0.053	-0.017	1.000																	
10	TarSize	0.053	**0.236**	**0.196**	**0.215**	**0.154**	**-0.350**	-0.071	**-0.151**	**0.381**	1.000																
11	TarMTB	0.068	0.010	-0.007	0.012	0.023	0.021	0.012	-0.056	**0.078**	0.042	1.000															
12	AcqQ	0.044	-0.032	**-0.110**	-0.058	**0.115**	**0.121**	0.026	-0.027	**0.148**	0.060	**0.151**	1.000														
13	AcqAR	-0.020	-0.038	-0.033	-0.015	-0.046	**-0.084**	**0.146**	**-0.088**	-0.037	0.027	0.068	0.007	1.000													
14	AcqROA	0.024	**0.107**	**0.103**	**0.096**	0.056	**0.077**	0.032	0.048	**0.244**	**0.207**	**0.088**	**0.381**	**-0.082**	1.000												
15	AcqCAPEX	**0.089**	-0.009	-0.014	-0.033	0.034	**0.101**	0.026	0.008	**-0.211**	**-0.127**	-0.036	0.051	-0.017	**0.077**	1.000											
16	AcqCF	0.066	**0.159**	**0.109**	**0.121**	**0.160**	**0.182**	0.023	0.046	**0.092**	0.028	**0.089**	**0.449**	-0.044	**0.405**	**0.347**	1.000										
17	AcqLev	-0.045	0.051	0.068	0.041	0.010	**-0.211**	**-0.111**	-0.043	0.029	**0.136**	0.044	**-0.147**	**0.099**	**-0.139**	0.005	**-0.179**	1.000									
18	AcqRD	-0.039	**0.079**	**0.085**	**0.090**	0.006	**0.102**	**0.093**	-0.015	**0.127**	0.017	**0.147**	**0.433**	0.028	**0.200**	**-0.120**	**0.325**	**-0.170**	1.000								
19	AcqAdv	-0.022	-0.011	**0.093**	0.052	**-0.201**	0.021	-0.018	0.042	0.024	0.011	-0.023	-0.015	-0.018	0.020	0.018	0.032	**-0.086**	**0.081**	1.000							
20	AcqAge	-0.054	**0.349**	**0.373**	**0.382**	**0.085**	0.014	0.000	**0.102**	**0.301**	**0.156**	-0.046	**-0.118**	-0.010	0.019	**-0.136**	-0.033	0.041	0.045	**0.102**	1.000						
21	Cash	**-0.247**	**0.167**	**0.245**	**0.200**	**-0.077**	**0.211**	**0.109**	**0.227**	**0.225**	**-0.245**	-0.008	0.054	0.036	0.071	**-0.088**	**0.106**	-0.043	**0.132**	**0.075**	**0.148**	1.000					
22	Hostile	-0.062	-0.031	-0.036	-0.038	0.003	**-0.086**	-0.006	**-0.089**	-0.005	**0.076**	-0.022	0.018	0.034	0.001	-0.033	-0.043	0.072	-0.013	-0.019	-0.015	-0.023	1.000				
23	Cross border	**-0.083**	**0.153**	**0.226**	**0.212**	**-0.104**	0.071	**0.082**	0.054	**0.193**	**0.079**	0.010	0.029	0.041	**0.114**	-0.051	0.056	-0.055	0.047	**0.084**	**0.159**	**0.238**	**0.074**	1.000			
24	Diversifying	-0.039	0.039	0.045	0.050	-0.007	-0.020	0.002	0.037	-0.018	-0.023	0.004	-0.014	-0.069	-0.047	**-0.083**	**-0.082**	0.059	0.008	-0.061	0.030	0.025	0.018	0.035	1.000		
25	Toehold	**-0.078**	-0.006	0.035	0.000	-0.059	**-0.088**	-0.050	-0.026	-0.023	-0.072	-0.058	**-0.078**	0.006	-0.020	0.054	-0.053	0.053	**-0.079**	-0.008	0.018	0.011	**0.127**	0.059	0.013	1.000	
26	Multiple bids	**-0.118**	-0.032	-0.060	-0.048	0.041	**-0.074**	**0.148**	-0.029	-0.067	-0.007	-0.056	**0.076**	0.048	**0.078**	0.020	0.051	-0.031	-0.015	-0.030	-0.007	0.036	**0.131**	0.032	-0.011	0.048	1.000

Table 4 reports correlation coefficients between variables for our sample. ArbSpread represents the arbitrage spreads one day after announcement. See Equations (1) and (2) for the calculation of the arbitrage spread. AcqCSR is acquirers' last available CSR score before announcement. AcqENV is an environmental score. AcqSOC is a social score. AcqGOV is a governance score. Bid premium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. AcqQ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. All financial variables are winsorized at the 1% and 99% level. Bold denoted significance at the 5% level or lower.

Table 5: Acquirer's CSR and arbitrage spreads

	Dependent variable: ArbSpread			
	(1)	(2)	(3)	(4)
	CSR	Environment	Social	Governance
Constant	0.083**	0.088**	0.078*	0.098**
	(2.07)	(2.20)	(1.92)	(2.48)
AcqCSR	-0.046***	-0.026**	-0.030**	-0.028**
	(-2.92)	(-2.13)	(-2.31)	(-2.29)
Bid premium	0.082***	0.081***	0.082***	0.080***
	(6.64)	(6.56)	(6.65)	(6.50)
CumRet	-0.057***	-0.055***	-0.058***	-0.056***
	(-3.83)	(-3.69)	(-3.85)	(-3.74)
AbnVol (x100)	-0.008	-0.009	-0.009	-0.008
	(1.22)	(-1.42)	(-1.43)	(-1.21)
AcqSize	-0.006**	-0.007***	-0.007**	-0.008***
	(-2.09)	(-2.62)	(-2.42)	(-3.17)
TarSize	0.008***	0.008***	0.008***	0.008***
	(3.74)	(3.69)	(3.69)	(3.60)
TarMTB	0.001**	0.001**	0.001**	0.001**
	(2.08)	(2.03)	(2.08)	(2.10)
AcqQ	0.002	0.002	0.003	0.005
	(0.52)	(0.50)	(0.60)	(1.07)
AcqAR	0.010	0.009	0.010	0.010
	(0.83)	(0.74)	(0.88)	(0.87)
AcqROA	-0.012	-0.003	-0.005	-0.005
	(-0.20)	(0.05)	(-0.08)	(-0.08)
AcqCAPEX	0.100	0.110	0.102	0.093
	(1.23)	(1.35)	(1.26)	(1.14)
AcqCF	0.093	0.073	0.080	0.071
	(1.22)	(0.97)	(1.06)	(0.95)
AcqLev	-0.001	-0.001	-0.002	-0.003
	(-0.03)	(-0.06)	(-0.08)	(-0.15)
AcqRD	-0.090	-0.099	-0.087	-0.111
	(-0.89)	(-0.97)	(-0.85)	(-1.10)
AcqAdv	-0.134	-0.042	-0.070	-0.196
	(-0.45)	(-0.14)	(-0.24)	(-0.65)
AcqAge	0.001	0.001	0.001	0.001
	(1.28)	1.03	(1.15)	(0.61)
Cash	-0.025***	-0.024***	-0.025***	-0.026***
	(-3.60)	(-3.38)	(-3.53)	(-3.71)
Hostile	-0.015*	-0.015*	-0.015*	-0.013*
	(-1.73)	(-1.76)	(-1.75)	(-1.74)
Cross border	-0.006	-0.005	-0.005	-0.007
	(-0.94)	(-0.78)	(-0.83)	(-1.15)
Diversifying	0.004	0.004	0.004	0.003
	(0.47)	(0.51)	(0.47)	(0.33)
Toehold	-0.012	-0.011	-0.012	-0.011
	(-1.15)	(-1.06)	(-1.15)	(-1.06)
Multiple bids	-0.022**	-0.023**	-0.022**	-0.020**
	(-2.25)	(-2.36)	(-2.33)	(-2.13)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
Observations	726	726	726	726
Adj-R^2	0.175	0.170	0.171	0.171

The dependent variable represents the arbitrage spread one day after announcement. See Equations (1) and (2) for the calculation of the arbitrage spread. AcqCSR is the acquirer's overall CSR score in column 1, the environmental score in column 2, the social score in column 3 and the governance score in column 4. Bid premium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. $AcqQ_i$ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. Regressions include country, industry and year fixed effects. All financial variables are winsorized at the 1% and 99% level. T-statistics are in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 6: Acquirer's CSR and likelihood of deal success

	Probit regression			
	(1) CSR	(2) Environment	(3) Social	(4) Governance
Constant	-1.917**	-1.891**	-1.886**	-1.908**
AcqCSR	0.354**	0.347**	0.325**	-0.018
	[9.34]	[9.10]	[8.88]	[-0.49]
Bid premium	0.166	0.177	0.159	0.167
	[4.36]	[4.65]	[4.18]	[4.40]
CumRet	-0.300	-0.296	-0.294	-0.298
	[-7.62]	[-7.52]	[-7.47]	[-7.56]
AbnVol (x100)	0.005**	0.005**	0.005**	0.005***
	[0.13]	[0.13]	[0.13]	[0.14]
AcqSize	0.253***	0.244***	0.245***	0.257***
	[6.42]	[6.21]	[6.22]	[6.53]
TarSize	-0.172***	-0.172***	-0.172***	-0.171***
	[-4.36]	[-4.37]	[-4.37]	[-4.36]
TarMTB	0.010	0.010	0.010	0.010
	[0.26]	[0.26]	[0.26]	[0.26]
AcqQ	-0.138	-0.132	-0.134	-0.131
	[-3.50]	[-3.37]	[-3.40]	[-3.33]
AcqAR	-0.388*	-0.387*	-0.388*	-0.393*
	[-9.87]	[-9.84]	[-9.87]	[-9.98]
AcqROA	-1.532	-1.481	-1.477	-1.667
	[-38.96]	[-37.67]	[-37.58]	[-42.35]
AcqCAPEX	2.183	2.161	2.167	2.151
	[55.52]	[54.97]	[55.12]	[54.64]
AcqCF	1.981	1.898	1.899	2.147
	[50.37]	[48.29]	[48.29]	[54.54]
AcqLev	0.005	-0.001	-0.001	-0.007
	[0.14]	[-0.02]	[-0.01]	[-0.17]
AcqRD	2.387	2.353	2.361	2.230
	[60.71]	[59.87]	[60.05]	[56.63]
AcqAdv	4.979	4.964	4.991	4.214
	[126.62]	[126.27]	[126.96]	[107.04]
AcqAge	0.001	0.001	0.001	0.001
	[0.02]	[0.02]	[0.02]	[0.02]
Cash	0.265**	0.252**	0.262**	0.280**
	[6.97]	[6.63]	[6.88]	[7.38]
Hostile	-1.445***	-1.446***	-1.446***	-1.439***
	[-36.74]	[-36.80]	[-36.79]	[-36.56]
Cross border	0.001	-0.002	-0.002	-0.007
	[0.00]	[-0.05]	[-0.04]	[-0.18]
Diversifying	-0.034	-0.038	-0.038	-0.032
	[-0.86]	[-0.96]	[-0.96]	[-0.81]
Toehold	0.297*	0.300*	0.301*	0.295*
	[7.57]	[7.64]	[7.67]	[7.49]
Multiple bids	-1.060***	-1.061***	-1.062***	-1.048***
	[-26.97]	[-26.99]	[-27.01]	[-26.63]
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
Observations	726	726	726	726
Pseudo-R^2	0.223	0.223	0.223	0.223

Table 7 reports the results of Probit regression. The dependent variable is a dummy variable that equals one if the deal is completed and zero otherwise. AcqCSR is the acquirer's overall CSR score in column 1, the environmental score in column 2, the social score in column 3 and the governance score in column 4. Bid premium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. AcqQ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. Regressions include country, industry and year fixed effects. All financial variables are winsorized at the 1% and 99% level. The numbers in brackets are marginal effects expressed in percentage points. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 7: Sensitivity Analysis

	Dependent variable: ArbSpread				
	(1)	(2)	(3)	(4)	(4)
	Arbitrage spread (t+2)	Ex-crisis	Ex-Financial	Ex-Negative spreads	Ex-US
Constant	0.085**	0.083**	0.085*	0.135***	0.089
	(2.10)	(2.06)	(1.77)	(3.50)	(1.41)
AcqCSR	-0.038**	-0.051***	-0.054***	-0.043***	-0.067***
	(-2.32)	(-3.09)	(-2.95)	(-2.74)	(-3.37)
Bid premium	0.075***	0.084***	0.073***	0.049***	0.099***
	(6.05)	(6.59)	(5.23)	(3.89)	(6.38)
CumRet	-0.062***	-0.048***	-0.060***	-0.058***	-0.038**
	(-4.12)	(-2.92)	(-3.63)	(-3.89)	(-2.08)
AbnVol (x100)	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.33)	(-0.80)	(-0.79)	(-1.36)	(-1.10)
AcqSize	-0.006**	-0.006**	-0.006*	-0.006**	-0.007*
	(-2.10)	(-1.97)	(-1.84)	(-2.09)	(-1.92)
TarSize	0.008***	0.008***	0.008***	0.007***	0.010***
	(3.08)	(3.77)	(3.30)	(3.46)	(3.59)
TarMTB	0.001*	0.001**	0.002***	0.001	0.001**
	(1.71)	(2.41)	(2.76)	(0.76)	(2.06)
AcqQ	0.002	0.004	0.001	0.002	0.005
	(0.40)	(0.88)	(0.30)	(0.40)	(0.81)
AcqAR	0.012	0.008	0.008	0.001	-0.012
	(1.01)	(0.66)	(0.66)	(0.09)	(-0.82)
AcqROA	-0.018	-0.021	-0.016	-0.050	-0.044
	(-0.29)	(-0.34)	(-0.24)	(-0.82)	(-0.60)
AcqCAPEX	0.085	0.105	0.125	0.082	0.088
	(1.03)	(1.28)	(1.46)	(1.00)	(0.99)
AcqCF	0.104	0.080	0.102	0.120	0.122
	(1.35)	(1.03)	(1.22)	(1.57)	(1.31)
AcqLev	0.012	0.005	0.001	0.005	0.023
	(0.59)	(0.23)	(0.02)	(0.24)	(0.86)
AcqRD	-0.114	-0.016	-0.082	0.100	-0.129
	(-1.11)	(-0.14)	(-0.78)	(0.93)	(-0.89)
AcqAdv	-0.006	-0.323	-0.138	-0.340	-0.179
	(-0.02)	(-1.04)	(-0.47)	(-1.11)	(-0.75)
AcqAge	0.001	0.001	0.001*	0.001	-0.001
	(1.26)	(1.63)	(1.92)	(1.32)	(-0.07)
Cash	-0.026***	-0.025***	-0.023***	-0.036***	-0.023**
	(-3.69)	(-3.48)	(-3.13)	(-5.12)	(-2.45)
Hostile	-0.019*	-0.018*	-0.022*	0.017	-0.002
	(-1.89)	(-1.72)	(-1.68)	(1.21)	(-0.15)
Cross border	-0.007	-0.003	-0.010	0.003	-0.013
	(-1.06)	(-0.53)	(-1.42)	(0.40)	(-1.58)
Diversifying	0.005	0.004	0.010	0.001	0.010
	(0.63)	(0.49)	(1.08)	(0.05)	(0.87)
Toehold	-0.003	-0.009	-0.015	-0.016	-0.005
	(-0.28)	(-0.82)	(-1.23)	(-1.37)	(-0.48)
Multiple bids	-0.022**	-0.029***	-0.023**	0.003	-0.026**
	(-2.24)	(-2.84)	(-2.18)	(0.24)	(-2.21)
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	726	670	604	545	489
Adj-R^2	0.164	0.187	0.183	0.238	0.194

In column 1, our dependent variable is the arbitrage spread two day after announcement. See Equations (1) and (2) for the calculation of the arbitrage spread. In column 2, we restrict our sample to the non-crisis period. In column 3, we restrict our sample to non-financial firms. In column 4, we restrict our sample to deals exhibiting positive arbitrage spreads. In column 5, we restrict our sample to non-US deals. Control variables are the same as in Equation 3 and coefficients associated with them are not reported for the sake of brevity. Regressions include country, industry and year fixed effects. All variables are winsorized at the 1% and 99% level. T-statistics are in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 8: Acquirer's CSR and arbitrage spreads (accounting for target's CSR)

	Dependent variable: ArbSpread			
	(1)	(2)	(3)	(4)
	CSR	Environment	Social	Governance
Constant	0.111*	0.117*	0.104	0.134**
	(1.70)	(1.80)	(1.54)	(2.05)
AcqCSR	-0.056**	-0.023**	-0.042**	-0.037*
	(-2.29)	(-1.97)	(-2.10)	(-1.93)
TarCSR	-0.002	-0.017	0.013	0.006
	(-0.08)	(-1.09)	(0.77)	(0.32)
Bid premium	0.183***	0.182***	0.183***	0.183***
	(7.31)	(7.27)	(7.30)	(7.30)
CumRet	-0.107***	-0.106***	-0.108***	-0.107***
	(-4.43)	(-4.37)	(-4.44)	(-4.41)
AbnVol (x100)	-0.001*	-0.001**	-0.001*	-0.001**
	(-1.92)	(-2.01)	(-1.77)	(-2.00)
AcqSize	-0.010**	-0.012***	-0.010**	-0.012***
	(-2.11)	(-2.72)	(-2.31)	(-2.79)
TarSize	0.012**	0.014***	0.011**	0.011**
	(2.46)	(2.86)	(2.30)	(2.42)
TarMTB	0.001	0.001	0.001	0.001
	(1.25)	(1.21)	(1.25)	(1.26)
AcqQ	0.003	0.003	0.004	0.006
	(0.35)	(0.42)	(0.44)	(0.77)
AcqAR	0.022	0.018	0.023	0.024
	(1.21)	(1.00)	(1.25)	(1.29)
AcqROA	-0.107	-0.095	-0.110	-0.101
	(-1.03)	(-0.92)	(-1.05)	(-0.97)
AcqCAPEX	-0.042	-0.030	-0.030	-0.064
	(-0.30)	(-0.22)	(-0.22)	(-0.47)
AcqCF	0.120	0.087	0.120	0.089
	(0.98)	(0.72)	(0.98)	(0.74)
AcqLev	0.004	0.002	0.003	0.001
	(0.15)	(0.08)	(0.11)	(0.02)
AcqRD	0.013	0.017	0.036	-0.020
	(0.07)	(0.09)	(0.19)	(-0.11)
AcqAdv	-0.145	-0.043	-0.056	-0.273
	(-0.24)	(-0.07)	(-0.09)	(-0.44)
AcqAge	0.001	0.001	0.001	0.001
	(0.70)	(0.56)	(0.67)	(0.23)
Cash	-0.020*	-0.018*	-0.021**	-0.021**
	(-1.94)	(-1.76)	(-2.01)	(-2.07)
Hostile	-0.009	-0.010	-0.011	-0.009
	(-0.56)	(-0.61)	(-0.66)	(-0.56)
Cross border	-0.014	-0.013	-0.011	-0.017*
	(-1.51)	(-1.40)	(-1.24)	(-1.82)
Diversifying	0.007	0.007	0.006	0.006
	(0.55)	(0.54)	(0.49)	(0.46)
Toehold	0.004	0.008	0.004	0.005
	(0.23)	(0.52)	(0.23)	(0.33)
Multiple bids	-0.015	-0.017	-0.015	-0.013
	(-1.09)	(-1.23)	(-1.12)	(-0.94)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
Observations	404	404	404	404
Adj-R^2	0.196	0.191	0.195	0.192

The dependent variable represents the arbitrage spreads one day after announcement. See Equations (1) and (2) for the calculation of the arbitrage spread. AcqCSR is the acquirer's overall CSR score in column 1, the environmental score in column 2, the social score in column 3 and the governance score in column 4. TarCSR is the target's overall CSR score in column 1, the environmental score in column 2, the social score in column 3 and the governance score in column 4. Bid premium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. $AcqQ_i$ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. Regressions include country, industry and year fixed effects. All financial variables are winsorized at the 1% and 99% level. T-statistics are in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 9: Acquirer's CSR and arbitrage spreads (removing serial acquirers)

	Dependent variable: ArbSpread			
	(1)	(2)	(3)	(4)
	CSR	Environment	Social	Governance
Constant	0.077*	0.081*	0.069	0.095**
	(1.75)	(1.84)	(1.55)	(2.18)
AcqCSR	-0.051***	-0.032**	-0.033**	-0.026*
	(-2.80)	(-2.30)	(-2.19)	(-1.95)
Bid premium	0.095***	0.094***	0.095***	0.092***
	(6.68)	(6.64)	(6.66)	(6.49)
CumRet	-0.064***	-0.063***	-0.065***	-0.063***
	(-3.76)	(-3.65)	(-3.77)	(-3.65)
AbnVol (x100)	-0.001	-0.001	-0.001	-0.001
	(-1.31)	(-1.50)	(-1.42)	(-1.39)
AcqSize	-0.006*	-0.008**	-0.007**	-0.009***
	(-1.86)	(-2.22)	(-2.11)	(-2.97)
TarSize	0.008***	0.008***	0.009***	0.008***
	(3.29)	(3.27)	(3.27)	(3.11)
TarMTB	0.002**	0.002**	0.002***	0.002**
	(2.56)	(2.51)	(2.59)	(2.53)
AcqQ	0.003	0.003	0.003	0.006
	(0.63)	(0.54)	(0.71)	(1.16)
AcqAR	0.013	0.012	0.014	0.014
	(1.02)	(0.92)	(1.09)	(1.07)
AcqROA	-0.020	-0.004	-0.012	-0.010
	(-0.29)	(-0.05)	(-0.18)	(-0.14)
AcqCAPEX	0.127	0.136	0.130	0.119
	(1.38)	(1.47)	(1.40)	(1.28)
AcqCF	0.069	0.053	0.058	0.048
	(0.84)	(0.64)	(0.69)	(0.58)
AcqLev	-0.007	-0.008	-0.009	-0.009
	(-0.32)	(-0.36)	(-0.40)	(-0.39)
AcqRD	-0.107	-0.120	-0.105	-0.120
	(-0.95)	(-1.06)	(-0.92)	(-1.06)
AcqAdv	0.041	0.161	0.122	-0.021
	(0.11)	(0.42)	(0.32)	(-0.05)
AcqAge	0.001	0.001	0.001	0.001
	(0.84)	(0..61)	(0.67)	(0.22)
Cash	-0.022***	-0.021**	-0.021***	-0.023***
	(-2.75)	(-2.57)	(-2.69)	(-2.87)
Hostile	-0.011	-0.013	-0.012	-0.009
	(-0.85)	(-0.94)	(-0.88)	(-0.69)
Cross border	-0.007	-0.006	-0.006	-0.008
	(-0.96)	(-0.81)	(-0.87)	(-1.08)
Diversifying	0.006	0.006	0.006	0.004
	(0.62)	(0.65)	(0.63)	(0.46)
Toehold	-0.011	-0.010	-0.011	-0.009
	(-0.88)	(-0.81)	(-0.90)	(-0.69)
Multiple bids	-0.019*	-0.021*	-0.020*	-0.018*
	(-1.79)	(-1.90)	(-1.86)	(-1.67)
Year fixed-effects	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes
Country fixed-effects	Yes	Yes	Yes	Yes
Observations	612	612	612	612
Adj-R^2	0.165	0.161	0.160	0.158

The dependent variable represents the arbitrage spread one day after announcement. See Equations (1) and (2) for the calculation of arbitrage spreads. AcqCSR is the acquirer's overall CSR score in column 1, the environmental score in column 2, the social score in column 3 and the governance score in column 4. Bid premium is the percentage difference between the offer price and the target's average price between t-30 to t-10 relative to announcement date. CumRet is the cumulative target's stock price return from t – 42 to t – 1 relative to announcement date. AbnVol is abnormal trading volume around acquisition announcements (from t-1 to t+1). AcqSize is the acquirer's market value. TarSize is the target's market value. TarMTB is the targets' market-to-book ratio. AcqQ is the acquirers' Tobin's Q. AcqAR is the acquirers' market-adjusted return. AcqROA is the acquirer's return on asset. AcqCAPEX represents the acquirer's capital expenditures scaled by total assets. AcqCF is the acquirer's cash flow scaled by total assets. AcqLev is the acquirer's debt-to-asset ratio. AcqRD is the acquirer's research and development expenses scaled by total assets. AcqAdv is the acquirer's advertising expenses scaled by total assets. AcqAge is the acquiring firm's age. Cash is a dummy variable that takes a value of one for purely cash-financed deals, and zero otherwise. Hostile is a dummy variable that takes a value of one for hostile bids, and zero otherwise. Cross border is a dummy variable that takes a value of one when the acquirer and the target are not in the same country, and zero otherwise. Diversifying is a dummy variable that takes the value of one if the acquirer and the target have different first two-digit standard industrial classification codes and zero otherwise. Toehold is a dummy variable that takes a value of one if the acquirer holds at least 5% of the target shares prior to the announcement and zero otherwise. Multiple bids is a dummy variable that takes a value of one if there is more than one acquirer and zero otherwise. Regressions include country, industry and year fixed effects. All financial variables are winsorized at the 1% and 99% level. The numbers in brackets are marginal effects expressed in percentage points. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 10: Instrumental Variables Estimations

	CSR		Environment		Social		Governance	
	First stage	Second stage	First stage	Second stage	First stage	Second stage	First stage	Second stage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.090	0.123***	0.311**	0.074**	0.046	0.077**	0.036	0.057**
	(0.97)	(3.85)	(2.51)	(2.02)	(0.42)	(2.02)	(0.45)	(2.20)
AcqCSR_adj		-0.064**		-0.022**		-0.034**		-0.053***
		(-2.03)		(-1.99)		(-2.05)		(-3.29)
Country-year CSR	0.498***		0.303***		0.397***		0.429***	
	(4.21)		(2.45)		(3.54)		(4.80)	
Country-industry CSR	0.528***		0.508***		0.477***		0.648***	
	(6.07)		(5.61)		(5.43)		(7.54)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-stage Cragg and Donald test	*p*-value < 0.001		*p*-value < 0.001		*p*-value < 0.001		*p*-value < 0.001	
Sargan overidentification test		*p*-value = 0.637		*p*-value = 0.639		*p*-value = 0.872		*p*-value = 0.859
Observations	726	726	726	726	726	726	726	726
R^2	0.528	0.311	0.535	0.294	0.567	0.297	0.727	0.306

Table 10 presents our two-stage least square estimations. In the first stage, CSR scores (overall, environment, social, and governance) are regressed on two instruments, which are the country-year mean of CSR scores and the country-industry mean of CSR scores, computed using the entire ASSET4 ESG database. AcqCSR_adj is the predicted value of the overall CSR score in column 2, the environment score in column 4, the social score in column 6 and the governance score in column 8. Control variables are the same as in Equation 3 and coefficients associated with them are not reported for the sake of brevity. Regressions include country and year fixed effects. T-statistics are in parentheses. ***, ** and * denote significance at the 1%, 5% and 10% level respectively.