

Impacts of Corporate Social Responsibility on the Corporate Optimum Risk: Evidence of Mergers and Acquisitions

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Abstract

This paper investigates whether corporate social responsibility reduces deviations from the firm's optimal risk-taking within the mergers and acquisitions (M&A) framework. Using two risk-taking measures and a sample of 10,647 transactions between 1991 and 2020 in public firms worldwide, we find that pre-M&A Environment Social and Governance (ESG) acts as a control mechanism to reduce deviations from optimal risk-taking. ESG reduces post-M&A excessive risk-taking but also limits excessive risk avoidance. A more robust ESG performance is associated with smaller deviations from optimal risk-taking levels, although integration complexity and managerial opportunism nurture deviations from the optimum risk-taking. These findings are consistent with the "stakeholder" view of ESG activities.

Keywords

ESG, Excessive Risk-Avoidance, Excessive Risk-Taking, M&A

1. Introduction

Risk-taking is fundamental and inevitable for a firm to grow (John, Litov, & Yeung, 2008). However, what drives a firm to optimum risk-taking remains a tangled issue. Indeed, every firm that wants to grow its operation and create value in the long term must accept taking risks; however, avoiding risks exposes firms to competitive vulnerability and opportunity costs (McGrath, 2001). More specifically, firms' willingness to engage in a relatively high level of risk-taking decisions lets them seize profitable opportunities despite uncertainty (Lin, Officer, & Shen 2018). Therefore, empirically, risk-neutral corporations can easily secure long-term success in contrast to risk-averse firms (John et al., 2008; Wang & Poutziouris,

2010). A large body of literature documents that agency conflicts resulting from a separation of ownership from control can foster deviation from optimum risk-taking.

Further, several studies provided empirical support and demonstrated that agency conflict is a significant motive of managerial risk-taking behavior, which adversely affects corporate growth and value creation (e.g., Jensen, 1986; Coles et al., 2006; Masulis, Wang, & Xie, 2007; Lin et al., 2018). Agency conflicts can hence negatively affect corporate risk-taking in two main ways: first, conflict of interests between corporate managers and shareholders can prompt managerial excessive risk avoidance, which may affect the corporate potential for growth and end up destroying corporate value (Lin et al., 2018). The motive behind such excessive risk-avoidance behavior is linked to uncertainty regarding risk-taking, which might lead managers to lose their incentives (Jensen, 1986; Coles et al., 2006).

Therefore, the fear of the potential damaging surprise from risk-taking choices prompts them to excessively avoid taking risks to minimize related undesirable impacts (Coles, Daniel, & Naveen, 2006). That is, to protect their job and other personal gains, managers tend to remain conservative and avoid risky investments, regardless of their potential net present value (Lin et al., 2018). This behavior can also be explained by managers having less diversified assets than owners, and their welfare being based on the firm's existence (Coles et al., 2006). Managers can thus easily let corporate opportunity forgo to protect their main source of wealth.

Second, agency conflict also encourages managerial opportunism, leading to excessive risk-taking (Harjoto & Laksmana, 2018). Opportunism leads managers to consider a corporate investment as a significant source of their economic interests, rather than maximizing the firm stock value or the firm value creation (Lang et al., 1989; Coles et al., 2006). Managers take excessive risks to serve their interests even at shareholders' expenses (Masulis et al., 2007). Managerial overconfidence may also lead to excessive risk-taking. Indeed, overconfident managers overestimate their abilities to create value from an investment and underestimate its riskiness (Roll, 1986). They end up taking an excessive risk that does not increase corporate value, but instead reduces or destroys it. Accordingly, previous empirical studies highlighted that excessive risk-taking also negatively affects corporate growth and value creation (e.g., Harjoto & Laksmana, 2018; John et al., 2008).

As a firm's risk-taking culture promotes growth and helps seize opportunities, mergers and acquisitions (M&A) stand as one of the firm's fastest growth strategies. M&A helps firms gain rapidly developed knowledge and techniques, promoting faster growth (Piesse et al., 2013). Two firms gain the ability and opportunity to create better value when working together rather than apart (Cartwright & Schoenberg, 2006; Laamanen, 2007). However, although M&As can be a corporate game-changing (helping to increase corporate growth and value faster), the risk associated with their failure is a significant threat to corporate sustainability and survival (Lin, Peng, & Kao, 2008; Deloitte, 2019). Bringing firms together

through M&A is among the most complex strategic risk-taking decisions an organization can undertake (Clark & Mills, 2013). Also, unrelenting evidence points to M&A's high failure rates (Boubakri et al., 2019): about 50% - 80% (Sally, 2007; Cartwright & Schoenberg, 2006).

Although M&A continues to be a popular and fastest corporate growth strategy, unrelenting evidence shows that the risk associated with M&A is a significant concern, especially to the acquirers' performance (Piesse et al., 2013). Challenges and risks related to M&A integration complexity may lead to uncertainty, influencing managers to excessively avoid risks to protect their interests and other incentives. In avoiding potential negative impacts (market risk) stemming from risk-taking, managers might have incentives to stick to conservative investments by forgoing profitable but risky M&A transactions (Lin et al., 2008). Particularly, M&A deals get more complex when partner firms are from different countries, with significant cultural and religious distances, or have large production capacity differences. Therefore, a firm will likely be exposed to higher uncertainty in the new working environment following such complexity. We examine whether the M&A complexity increases the impacts of agency problems on the deviation from optimal risk-taking.

Therefore, the divergence of interests can lead to excessive risk avoidance because managers are under-diversified compared to owners, or it can lead to excessive risk-taking for overconfident managers and opportunistic managers with empire-building motivations (Harjoto & Laksmana, 2018). The latter suggests that, although shareholders might value a company that takes on high risks, excessive risk-taking might adversely affect growth and destroy value. Both extreme settings of risk-taking (excessive risk avoidance and excessive risk-taking) can destroy corporate value and hinder corporate growth and performance (Harjoto & Laksmana, 2018). As per the literature presented above, risk-taking is strongly grounded in the agency theory, particularly in the relationship between managers and shareholders.

Further, although M&A encourages firm growth, it serves as a framework that can increase agency problems, and thus deviation from optimal risk-taking. In this paper, we account for the relationship of the firm shareholders with other stakeholders through its responsible actions, and we investigate whether and how ESG acts as a concision to mitigate deviations from the optimal risk level. The stakeholder's theory perspective suggests that a firm meeting the needs of all its stakeholders supports them better and reduces conflicts. Therefore, we consider corporate ESG performance as a strategic mechanism that helps to reduce deviations (far above and below the optimum risk-taking level) and brings risk-taking towards the optimum risk level.

Further, we consider the ESG performance as a critical mechanism that can reinforce the optimal corporate risk-taking, particularly in the M&A framework, for the following reasons: first, acquirers' responsible actions give them a competitive advantage over their competitors and can increase their operation's acceptability

to the new stakeholders in post-M&A. Besides, since ESG provides a competitive advantage, firms that excessively avoid risks are likely to be more risk-taking since corporate sustainability and survival in hardships are expected. This is consistent with Oikonomou et al. (2006) who found that socially responsible firms maintain lower risks during times of high market volatility, making them more capable of withstanding adverse economic shocks. The second reason is that the acquirers' ESG performance can reduce managerial excessive risk-taking and its negative impact, because ESG aligns all stakeholders' interests, reducing managerial opportunism (Freeman, 2010).

This paper adds to the literature in two main ways: 1) it adds to the debate on ESG by examining the mechanisms through which ESG reduces deviations from the optimum risk-taking, particularly in the M&A framework. Previous studies show that both excessive risk avoidance and excessive risk-taking adversely affect corporate value creation (Amihud & Lev, 1981; Harjoto & Laksmana, 2018). We suggest that the ESG performance of both acquirers and targets acts as a control mechanism to restrain deviations from the optimum risk-taking level. 2) This paper analyzes whether and how the ESG rating performance mitigates corporate pre- and post-M&A excessive risk-avoidance and excessive risk-taking. Likewise, while many studies examine the effects of ESG on corporate performance and market risk (e.g., Oikonomou et al., 2006; Deng et al., 2013; Donaldson & Preston, 1995; Edmans, 2012), this study focuses on the assessment of whether and how ESG helps to achieve optimum risk-taking in pre- and post-mergers and acquisitions. The remainder of this paper is organized as follows: Section 2 provides relevant literature and the research hypothesis development, Section 3 outlines the data, the sample selection, and the variable construction, Section 4 discusses the research methodology and empirical results, and Section 5 concludes.

2. Literature and Hypothesis Development

2.1. Environmental, Social, and Governance (ESG)

ESG is defined as a business organization's commitment to managing its operations responsibly, in alignment with stakeholders' interests and expectations (Deng et al., 2013). The ESG movement, which originated in the United States in the late 1960s, has gained widespread traction among businesses globally (Carroll, 1999). Over time, governments and society have increasingly held companies accountable for their impact on the environment, society, and governance practices (Frynas, 2009). As a result, ESG has become a significant priority in corporate decision-making. Edmans (2012) argues that companies should engage in ESG activities that go beyond legal obligations to build trust and foster better relationships with various stakeholders. Stakeholders, defined by Freeman (1984), include any group or individuals who may affect or be affected by corporate operations and objectives. According to Rangan et al. (2015), ESG focuses on three critical areas—corporate governance, social welfare, and environmental sustainability—to benefit all stakeholders. The objective of ESG is to enhance the long-term well-

being of stakeholders, helping companies mitigate operational risks over time. In essence, ESG promotes corporate responsibility to act in accordance with ethical standards and moral values, aligning actions with the best interests of stakeholders.

Value-Driven Role of ESG

There is an ongoing debate in the literature about whether ESG aligns with shareholders' wealth-maximizing interests. The discourse generally revolves around two opposing views. The first perspective extends corporate responsibility beyond merely creating value for shareholders to encompass the broader interests of all stakeholders (Freeman, 1984). Edmans (2012) posits that ESG is a vital component for value creation, fostering trust and loyalty among stakeholders, and attracting new investors. For instance, many companies view charitable contributions as a means to boost corporate value by increasing employee morale, customer loyalty, and gaining leniency from regulators, thereby strengthening relationships and support (Freeman, 2010; Donaldson & Preston, 1995). Similarly, Frynas (2009) argues that while ESG initiatives come with costs, these expenses are relatively minor compared to the potential long-term benefits. This viewpoint aligns with Freeman's (1984) stakeholder theory, which emphasizes ESG as a critical policy for enhancing long-term profitability. When a company embraces ESG principles, stakeholders' interests are more likely to align, increasing their loyalty and support for corporate actions. Additionally, the trust and goodwill garnered through ESG can protect a company's reputation during negative events, enabling a quicker recovery (Chen & Delmas, 2011; Deng et al., 2013). Moreover, ESG initiatives can offer companies a competitive edge in the market (Frynas, 2009).

ESG as a Value-Reducing Element

Despite numerous studies highlighting the positive effects of ESG on corporate risk-taking, others suggest that ESG could diminish corporate value. While the value-enhancement theory argues that ESG actions contribute to shareholder value by encouraging risk-taking, a contrasting view suggests that ESG introduces additional costs that may put companies at an economic disadvantage. This second perspective aligns with Friedman's (1970) argument, which finds a negative relationship between ESG activities and corporate financial performance. From this standpoint, the primary responsibility of any business is to allocate resources efficiently to maximize profits or shareholder value. Any activity that deviates from this goal could adversely impact corporate value creation. Essentially, funds spent on ESG initiatives might be better allocated to more profitable ventures, and focusing on ESG could mean missing out on lucrative opportunities.

Furthermore, ESG can lead to agency conflicts. While many researchers contend that ESG contributes to shareholder value by enhancing corporate reputation and stakeholder loyalty, a large body of literature suggests the opposite: that ESG could erode shareholder value due to managerial opportunism (Coles et al., 2006). In this context, managers may engage in ESG initiatives to enhance their own reputations or prestige, often at the expense of shareholders (Ayadi et al., 2014). As a

result, shareholder wealth may be diminished due to agency problems (Preston & O'Bannon, 1997). This issue is particularly significant in larger firms where ownership and management are separated, increasing the potential for wealth loss (Barnea & Rubin, 2010). Since managers are not the firm's owners, they may not fully bear the costs or risks associated with their decisions, nor do they enjoy all the benefits. Consequently, the conflict of interest between managers and shareholders can result in the destruction of corporate value or a misallocation of resources (Ayadi et al., 2014).

Similarly, the overinvestment hypothesis suggests that managers may derive personal utility from ESG activities that are unprofitable or offer little value (Preston & O'Bannon, 1997). Barnea & Rubin (2010), in their study on the relationship between ESG ratings and corporate capital structures, found that managers are prone to overspending on ESG initiatives, particularly when they have a smaller ownership stake in the firms they manage. This aligns with agency theory, which highlights the separation of ownership and management as a key factor in managerial opportunism (Jensen, 1986). In pursuit of personal interests, managers are more likely to invest in ESG initiatives that benefit their reputation or influence, but at the cost of shareholders. This opportunistic behavior may increase the likelihood of resource loss within the corporation.

2.2. The Association between ESG and Excessive Risk Avoidance in the M&A Framework

Both theoretical discussions and empirical research highlighted the importance of risk-taking and its positive impact on corporate growth. Corporate risk-taking and corporate growth are theoretically positively correlated (John, Litov, & Yeung, 2008; Boubakri et al., 2019). Managerial excessive risk avoidance hence makes firms vulnerable to competition and less attractive to shareholders and potential investors (McGrath, 2001). Besides, excessive risk avoidance can limit the funds' availability for future growth. Although several studies encourage risk-taking on one side, on the other side, many studies suggest risk-taking can destroy corporate value, especially due to the conflict of interests dividing managers and owners (Masulis et al., 2007). Indeed, managers act as agents for owners; they thus have full control over corporate daily operations; however, their risk-taking willingness is different from that of shareholders (Jensen & Meckling, 1976; Coles et al., 2006; Masulis et al., 2007; Lin et al., 2018).

In theory, managers' portfolios are relatively undiversified, and a large portion of their wealth is tied to the existence and the success of the firm, whereas shareholders' portfolio is fully diversified in different asset investments, making them risk-neutral (Coles et al., 2006). Given that employment represents the main source of managers' income, they may choose to excessively avoid risk since it can jeopardize their main source of income (Harjoto & Laksmana, 2018). In other words, the motive behind the managerial excessive risk-avoidance attitude is the uncertainty following risk-taking which exposes them to the risk of losing their

incentives and employment (Jensen, 1986; Coles et al., 2006). Therefore, the fear of potential negative surprises stemming from risk-taking leads managers to avoid high risk-taking to minimize the related undesirable impacts (Coles et al., 2006).

Moreover, to protect their employment and other private gains, managers prefer to remain conservative and avoid risk-taking investment decisions regardless of their potential net present value, which ends up decreasing corporate value (Lin et al., 2018; Coles et al., 2006). Indeed, corporate value is viewed as made up of already available assets and potential growth opportunities. Such potential opportunities come from the future capacity to risky profitable decisions that will add to the corporate value (John et al., 2008). In this case, we can compare growth opportunities to options, which present value results from the expected cash flow and the probability that the firm will take advantage of it.

Although M&A continues to be a popular corporate strategy, unrelenting evidence points out that M&A failure is a considerable issue, especially regarding the acquirer's performance. Often, combining two firms' operations proves to be a much more challenging and difficult task in practice than it might seem in theory (Lin et al., 2008; Deloitte, 2019). Particularly, the main issue regards the merged corporations being unable to achieve the expected objectives, whether in terms of cost savings, synergies making, or economies of scale benefits (Masulis et al., 2007). Besides, M&A integration appears to be among corporate decisions that are associated with a significant risk that can destructively affect the corporate reputation and performance (Coles et al., 2006). Particularly, M&A is considered a high-risk investment decision when pursuing new and advanced technologies from targets having a different cultural, social, and regulatory environment (Shleifer & Vishny, 1989).

Additionally, Masulis et al. (2007) consider that integrating corporations with different structures and processes is more complicated and prone to failure because of information asymmetry and other several incompatible and complex elements in the integration process. According to Clark and Mills (2013), integration complexities and risks can arise particularly when partner firms are from different countries, with big cultural and religious distances, or have large production capacity differences. Following such complexity, a firm will likely be exposed to higher uncertainty in the new working environment when it wants to expand its business operation in different industries or locations through M&A. Integration complexity and risk attached to M&A will lead managers to excessively avoid risk-taking in post-M&A. In other words, following the potential negative disruptive surprises in post-M&A, managers prefer to remain conservative and avoid taking risks to protect their benefits.

Since the complexity of integrating two corporations prompts agency conflict between managers and shareholders, we consider the ESG performance a good mechanism to mitigate excessive managerial risk avoidance in post-M&A. Several studies consider that risk-taking motivation can not only be defined at the managerial and ownership level but can also be influenced by corporate policy and

commitments toward all stakeholders (e.g., Deng et al., 2013; Donaldson & Preston, 1995). The concept of corporate social responsibility refers to the corporate commitment to managing the social, environmental, and economic effects of its operations responsibly and in line with stakeholders' expectations (Deng et al., 2013). In this regard, both stakeholder and resource dependence theories consider that stakeholders can influence managerial decisions. Both theories also consider that better corporate relations with key stakeholders through responsible actions can help to gain resources and can also reduce conflicts of interest, improving the corporate risk-taking appetite and performance. This is consistent with Freeman (1984) who considers that ESG activities attempt to balance the interests of all corporate stakeholders (investing and non-investing).

Moreover, several studies consider firms' responsible actions to effectively mitigate market risk because it helps firms to develop good long-term relationships with several stakeholders (Deng et al., 2013; Freeman, 2010). Thus, the goodwill acquired via ESG engagement protects the firm when negative events arise and enables a faster recovery (Deng et al., 2013). ESG is indeed positively associated with the stakeholders' loyalty and a good corporate public image (Freeman, 2010). According to Ortiz-de-Mandojana and Bansal (2016), ESG enhances corporate capabilities to quickly respond to changes in the external environment. This implies that when the firm's risk-taking level falls below the optimal level, ESG performance can increase managerial risk-taking without reducing the commitment to other stakeholders. The uncertainty surrounding M&A, in turn, increases the likelihood of managers deviating from the optimal risk-taking level. We expect both acquirers' and targets' ESG rating performance to guide managerial risk-taking toward the optimal risk-taking level, particularly post-M&A where the integration of both firms' activities is uncertain. We expect a positive association between both the acquirers' and the targets' ESG rating performance and firms' risk-taking when the corporate risk-taking level is below the optimal point.

More specifically, we suggest that the acquirer's pre-M&A ESG rating performance will mitigate a managerial excessive risk-avoiding attitude; thus, managers will be more willing to engage in value-enhancing risky projects. Additionally, in case the acquirer has a poor public reputation or takes less responsible actions in general, acquiring targets with a strong ESG rating performance may help to increase or improve the reputation in post-M&A. Also, vis-à-vis the integration complexities, the ESG performance helps the learning and knowledge exchange across corporations throughout the M&A deal (Muttakin & Khan, 2014). Consequently, the firm's responsible actions reduce integration barriers, alleviating the integration process riskiness (Deng et al., 2013). Therefore, stakeholders' loyalty stemming from ESG programs, along with a strong reputation built from good relationships, is likely to mitigate managerial excessive risk-avoidance and increase their risk-taking willingness in post-M&A. This evidence leads us to formulate the following hypothesis:

H1. a) Although the integration complexity can encourage excessive risk

avoidance, a strong acquirer's (target's) ESG reduces corporate excessive risk avoidance and serves as a directive mechanism for managerial risk-taking decisions toward the optimal risk-taking level.

H1. b) Acquirer's (Target's) pre-M&A ESG increases corporate risk-taking in post-M&A for managers who excessively avoid risk-taking.

2.3. The Association between ESG and Excessive Risk-Taking in the M&A Framework

While the previous section discusses examples in which managers might excessively avoid risk-taking to protect their gains, another great deal of the literature presents reasons why managers might take on too much risk for private gains as well. This behavior appears particularly in M&A because they offer an opportunity for opportunistic managers to personally gain from the deal. This suggests that, besides searching for corporate economic growth from synergy, the acquiring firms' managers can excessively take the risk of acquiring other firms not for corporate growth or synergy purposes, but for their private benefits, leading to corporate value lessening.

Indeed, regarding the relationship between M&A motives and its success, [Seth et al. \(2002\)](#) argue the real motives of M&A are the key to its success or failure. Managers that take excessive risk pre-M&A are likely to continue such behavior post-M&A. Many M&A stem from agency motives and managerial opportunism, such as increasing the corporate size—because managers expect higher incentives from the bigger firm post-M&A ([Stulz, 1988](#)). Further, M&A offers an opportunity to diversify investments and makes managers less likely replaceable as they expect their influence to grow ([Moeller et al., 2004](#), [Lin et al., 2008](#)). Along the same line, following the agency problem, managerial “empire-building” motivation stands out. This refers to managers' tendencies to grow the firm beyond its optimal size with the main purpose of increasing the personal utility from status, compensation, power, and prestige ([Stulz, 1988](#); [Masulis, Wang, & Xie, 2007](#)).

Also, following [Jensen and Meckling \(1976\)](#), several authors argue that corporate risk-taking investment and growth can be explained by managers' tendency to overinvest in projects that yield private gains. Also, diversification-wise, the cash flow theory suggests that conflict of interest makes managers more willing to use the firm's excess cash flow to make unnecessary and value-reducing acquisitions. Similarly, [Maksimovic and Phillips \(2001\)](#) added that dividing ownership and control facilitates the waste of corporate scarce resources for opportunistic managers' personal benefits and gains. Consequently, conflict of interests between managers and shareholders brings excessive risk-taking that could pose a significant threat and possibly jeopardize the corporate value and its survival ([Maksimovic & Phillips, 2001](#)), and this problem might increase with an M&A acquisition.

Further, opportunist managers attempt to engage in acquisitions for personal benefits, even if it can destroy corporate value ([Coles et al., 2006](#)). Similarly,

Shleifer and Vishny (1989) argue that M&A are the most important vehicle through which opportunistic managers can express their non-value-maximizing preferences. Besides, managers may also engage in an investment project with the excess belief that they can generate value from it. This hubris, or overconfidence behavior, was laid out by Roll (1986). The hubris hypothesis is based on managers' belief that they know the market. Therefore, overconfident managers take excessive risks as an outcome of irrational expectations, which may destroy the value of the firm.

In the M&A framework, we can consider that the acquirer's ESG engagement, as an outcome of the stakeholder management, will lead to a more equal resource allocation toward meeting the needs and interests of both investing and non-investing stakeholders. Therefore, acquirers with a strong ESG will have to engage resources in investments that balance the interests of their key stakeholders. The effective allocation of the acquirer's resources to such an investment will reduce excessive risk-taking since interests are balanced or effectively shared among stakeholders. We consider that when the firm's risk-taking level deviates far above the optimal level, the ESG rating performance of both the acquirer and the target serves as a countervailing factor to rebalance the allocation of resources between investing and non-investing stakeholders. Indeed, if the firm takes excessive risk pre-M&A, it will likely continue to undertake excessive risks post-M&A. However, if the target firm has good ESG behavior, we believe the risk-taking of such a firm will decrease towards the optimal level. Further, if the acquirer has a high risk-taking behavior (and a high ESG), the effect of ESG on post-M&A risk-taking will be even greater with a good ESG target. Thus, we expect a negative association between the ESG rating performance of both the acquirer and the target and the risk-taking when the corporate risk-taking level is above the optimal point. Following this evidence, our third hypothesis goes as follows:

H2. Acquirer's (Target's) pre-M&A ESG ratings reduce corporate pre- and post-M&A deviations from the optimum risk-taking level.

3. Materials and Methods

In this section, we begin by describing our sample of M&A firms. We then present our measures of corporate risk-taking and ESG, along with the standard control variables used in the literature to explain corporate risk-taking.

3.1. Data and Sample Selection

We start with all takeover deals from the Thomson Eikon database covering the period from January 1991 to December 2020. We download all deals involving public companies (targets and acquirers), including worldwide data from international news media, trade publications, and filings at the Securities and Exchange Commission and its international counterparts. Thomson Eikon offers information on deal status, dates of the cross-border announcements, each deal detail, deal value, the industry, etc. The database is commonly used for M&A in developed

and emerging economies (Muehlfeld et al., 2012). We remove a company if it appears more than once during a given year. We also exclude a deal if the target or the acquirer's DataStream identifier is missing or cannot be found in DataStream. The initial sample contains 49,364 deals.

Then, we use these DataStream identifiers to download financial data from Worldscope or DataStream. For all identified companies (targets and acquirers), we construct a RISK measure as the standard deviation of earnings (earnings before interest, taxes, and depreciation divided by total assets) over the past ten years. A firm must have at least four years of earnings over the past ten years to remain in the sample. We also use the ESG Intangible Value Assessment (IVA) information from MSCI, which compiles public companies' ESG data from 1995 to 2020. Using this data, we match the MSCI ESG IVA data with the M&A deals retrieved data—we exclude all deals with unavailable ESG information from the sample. We retrieve country-specific data from the Heritage Foundation¹.

Also, we match countries with their respective culture, religion, and productive capacity data using country codes (ISO). We exclude deals made in countries with unavailable culture, religion, or productive capacities. Each country's cultural dimensions are retrieved from the Geert Hofstede website². Each country's religious data is retrieved from the United Nations website³. Countries' productive capacities index data are extracted from the United Nations Conference on Trade and Development (UNCTAD) website⁴. The productive capacity data is available for 2000-2018. Finally, we complete the sample by excluding all deals marked as rumors. After we delete observations with missing data, our final sample sums up to 10,647 M&A announced deals, including 5616 (52.74%) deals that were officially completed after our study's span.

3.2. Variable Descriptions

Variable definitions and sources appear in **Table 1**, summary statistics for the variables appear in **Table 2**, and variable correlations appear in **Table 3**.

3.2.1. Measuring Risk-Taking

We measure risk-taking as the standard deviation of earnings before interest, taxes, and amortization (EBITDA) scaled by the book value of total assets (Assets). A firm must have at least four years of available data for EBITDA/Assets over the past ten years before the deal. Following John et al. (2008), we adjust EBITDA/Assets by subtracting the industry-year average EBITDA/Assets. We use Equation (1) to estimate the standard deviation of the industry-adjusted EBITDA/Assets.

$$\text{RISK1}_{i,t} = \sqrt{\frac{1}{T-1} \sum_{t=1}^T \left(E_{i,t} - \frac{1}{T} \sum_{t=1}^T E_{i,t} \right)^2} \mid T \geq 4 \quad (1)$$

¹<https://www.heritage.org/index/pages/all-country-scores>

²<https://www.geerthofstede.com>

³<http://data.un.org>

⁴<https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=199270>

$$\text{where } E_{i,t} = \frac{\text{EBITDA}_{i,t}}{A_{i,t}} - \frac{1}{N_t} \sum_{k=1}^{N_t} \frac{\text{EBITDA}_{k,t}}{A_{k,t}} \quad (2)$$

Indexes N_t and t represent the firm and the year, respectively. $A_{i,t}$ denotes the total assets of the firm in the same year. For every firm with available assets and earnings data for at least four subsequent years, we compute $E_{i,t}$ defined in Equation (2) as the deviation of the EBITDA/Assets ratio from the sample average within the country on the corresponding year. Therefore, we use the standard deviation of the current and the next three years' measures of $E_{i,t}$ to obtain $\text{RISK1}_{i,t}$. This proxy indicates the volatility of earnings in the following years that are presumed to be the result of the current year's managerial decision-making, as influenced by varying risk-taking appetites. We winsorize the firm-level variables at the 1% level in each tail of the sample distribution to reduce the influence of outliers in our estimates. For robustness, we adjust EBITDA/Assets by subtracting country-year average EBITDA/Assets.

Table 1. Variable definitions and sources.

| Variable | Definition | Sources |
|---|--|---|
| Risk-taking variables | | |
| RISK1: Industry-adjusted volatility of firm-level earnings | The standard deviation of the market-adjusted EBITDA/(Total Assets) ratio over a 4-year period | Thomson_IKON |
| RISK2: Country-adjusted volatility of firm-level earnings | The standard deviation of the country-adjusted EBITDA/(Total Assets) ratio over a 4-year period | Thomson_IKON |
| Excessive risk-avoidance | Risk level lower than level 1 (the minimum risk) | Worldscope/authors' calculation |
| Excessive risk-taking | Risk level lower than level 5 (the maximum risk) | Worldscope/authors' calculation |
| Corporate social responsibility (ESG) | | |
| Environment, social and governance | Environment, social, and governance rating aggregate score | MCSI IVA |
| High complexity variables | | |
| Cross-border M&A | Dummy variable: 1 if the deal is cross-border (i.e., the target company or assets being sold is not located in the same country as the acquirer's); 0, otherwise. All above the mean | Thomson_IKON |
| Cultural distance | The difference above the mean in different culture dimensions between acquirers' and targets' countries | https://geerthofstede.com/ |
| Religious distance | The difference above the mean in religion between acquirers' and targets' countries | http://data.un.org |
| Productive capabilities difference | The difference above the mean of productive capabilities from 8 indexes between acquirers' and targets' countries | UNCTAD unctadstat.unctad.org |
| Acquirers' and targets' characteristics | | |
| Size | The natural logarithm of the book value of total assets (in USD). | Worldscope/authors' calculation |
| ROA | The return on assets: operating income before depreciation—interest expenses—income taxes, divided by the book value of total assets. | |

Continued

| | |
|---|---|
| LT Debt/Assets | Book value of long-term debts over the book value of total assets. |
| Sales growth | Firms' sales growth using total sales denominated in the US. |
| Market-to-book ratio | The market value of common equity is scaled by the book value of common equity. |
| EBITDA | Earnings before interest, taxes, depreciation, and amortization. |
| Acquirers' country characteristics | |
| GDP growth | The annual GDP growth rate |
| Inflation | The rate at which the value of a currency is falling and, consequently, the general level of prices for goods and services is rising. https://www.heritage.org/index/pages/all-country-scores |
| Investment freedom | The index measures the degree to which the policies and institutions of countries are supportive of investment freedom. The cornerstone of investment freedom is the liberty given to investors to move their resources into and out of specific activities, both internally and across the country's borders, without restriction. |
| Trade freedom | The index measures the degree of a composite measure regarding the absence of tariff and non-tariff barriers that affect goods and services imports and exports. |
| Judicial effectiveness | This index measures the ability of a country's legal system to protect the rights of its citizens, including the enforcement of laws and appropriate punishment for breaking them. |
| Tax burden | The tax burden is a measure of the tax burden imposed by governments. This includes direct taxes, in terms of the top marginal tax rates on individual and corporate incomes, and overall taxes, including all forms of direct and indirect taxation at all levels of government, as a percentage of GDP. |

Table 2. Descriptive statistics.

| Variable | Obs. | Mean | Std. dev. | Min. | Max. |
|--------------------------|--------|--------|-----------|---------|--------|
| Excessive risk-avoidance | 10,914 | 0.002 | 0.045 | 0 | 1 |
| Excessive risk-taking | 10,914 | 0.282 | 0.45 | 0 | 1 |
| Cross-border | 10,647 | 0.478 | 0.5 | 0 | 1 |
| Cultural distance | 10,276 | 0.955 | 1.365 | 0.005 | 6.05 |
| Religious distance | 10,647 | 0.159 | 0.263 | 0 | 0.98 |
| PCI difference | 8110 | 1.653 | 5.796 | -19.518 | 27.747 |
| ACQ pre-M&A ESG | 5790 | 4.035 | 1.691 | 1 | 7 |
| TGT pre-M&A ESG | 5207 | 4.081 | 1.499 | 1 | 7 |
| Size | 10,647 | 18.317 | 2.729 | 10.595 | 27.932 |
| ROA | 10,376 | 0.111 | 0.076 | -0.095 | 0.388 |
| Long-term debt | 10,533 | 0.187 | 0.14 | 0 | 0.678 |
| Market book | 10,356 | 2.576 | 2.443 | 0.15 | 19.42 |
| Acquirer judicial eff. | 10,546 | 82.726 | 16.375 | 3.9 | 98 |

Continued

| | | | | | |
|------------------------|--------|--------|--------|---------|----------|
| Acquirer tax burden | 10,546 | 68.488 | 9.28 | 0 | 100 |
| Acquirer GDP growth | 10,552 | -4.593 | 2.936 | -59.719 | 43.384 |
| Acquirer inflation | 10,548 | 1.619 | 28.703 | -2.719 | 2355.147 |
| Acquirer investment | 10,546 | 72.191 | 14.626 | 0 | 95 |
| Acquirer trade freedom | 10,546 | 78.191 | 6.26 | 0 | 95 |

This table provides descriptive statistics of regression variables. Variables are defined in **Table 1**.

Table 3. Matrix of correlations.

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|------|--|
| (1) Excessive risk-avoidance | 1 | | | | | | | | | | | | | | | | | | |
| (2) Excessive risk-taking | -0.023 | 1 | | | | | | | | | | | | | | | | | |
| (3) Cross-border | -0.045 | 0.05 | 1 | | | | | | | | | | | | | | | | |
| (4) Cultural distance | 0.07 | 0.076 | 0.139 | 1 | | | | | | | | | | | | | | | |
| (5) Religious distance | -0.022 | -0.032 | 0.082 | 0.555 | 1 | | | | | | | | | | | | | | |
| (6) PCI difference | -0.019 | -0.124 | 0.436 | 0.063 | 0.044 | 1 | | | | | | | | | | | | | |
| (7) ACQ pre-M&A ESG | -0.006 | -0.032 | -0.018 | -0.033 | -0.016 | 0.015 | 1 | | | | | | | | | | | | |
| (8) TGT pre-M&A ESG | -0.075 | -0.071 | -0.151 | -0.063 | -0.022 | -0.185 | 0.089 | 1 | | | | | | | | | | | |
| (9) Size | 0.05 | -0.102 | -0.227 | -0.095 | 0.04 | -0.083 | -0.069 | -0.015 | 1 | | | | | | | | | | |
| (10) ROA | 0.033 | -0.077 | 0.022 | 0.014 | 0.009 | -0.035 | -0.047 | -0.104 | -0.167 | 1 | | | | | | | | | |
| (11) Long-term debt | 0.001 | -0.036 | 0.042 | -0.007 | -0.026 | 0 | 0.045 | -0.01 | -0.084 | -0.066 | 1 | | | | | | | | |
| (12) Market to book | -0.026 | -0.025 | 0.098 | 0.075 | 0.015 | -0.004 | -0.009 | -0.044 | -0.299 | 0.374 | 0.047 | 1 | | | | | | | |
| (13) Acquirer judicial eff. | -0.215 | 0.005 | -0.099 | -0.003 | 0.046 | -0.032 | -0.129 | 0.068 | 0.143 | -0.014 | -0.062 | -0.092 | 1 | | | | | | |
| (14) Acquirer tax burden | 0.176 | -0.288 | -0.01 | -0.083 | -0.013 | 0.144 | 0.126 | 0.153 | -0.034 | -0.007 | -0.074 | 0.06 | -0.432 | 1 | | | | | |
| (15) Acquirer GDP growth | 0.042 | -0.104 | -0.182 | -0.069 | -0.069 | 0.041 | 0.072 | 0.167 | 0.103 | -0.017 | -0.117 | -0.062 | -0.049 | 0.176 | 1 | | | | |
| (16) Acquirer inflation | 0.147 | 0.003 | 0.05 | 0.01 | -0.09 | 0.052 | 0.074 | -0.121 | -0.157 | 0.042 | -0.023 | 0.097 | -0.618 | 0.27 | 0.142 | 1 | | | |
| (17) Acquirer investment | -0.18 | 0.196 | 0.351 | 0.112 | -0.036 | 0.259 | -0.017 | 0.003 | -0.599 | -0.048 | 0.096 | 0.168 | 0.078 | -0.063 | -0.126 | 0.012 | 1 | | |
| (18) Acquirer trade freedom | -0.103 | 0.136 | 0.127 | 0.035 | -0.03 | -0.086 | 0.016 | 0.07 | -0.456 | -0.042 | 0.02 | 0.051 | 0.137 | -0.104 | -0.148 | -0.108 | 0.511 | 1 | |

3.2.2. Excessive Risk-Avoidance and Excessive Risk-Taking

Excessive risk avoidance and excessive risk-taking are key variables in this research. To identify the excessive risk-avoidance and excessive risk-taking levels,

we first calculate the average risk level by year, industry, and country, which yields what we consider optimum risk-taking. Then we compute excess risk-taking as the difference between the firm's level of risk-taking and the measure of optimum risk-taking. Finally, we divide the excess risk-taking into quintiles, with the lowest quintile representing excessive risk avoidance, and the highest quintile representing excessive risk-taking. We construct two subsamples including firms in the first and fifth quintile of excess risk-taking empirical distribution, which we describe respectively as the excessive risk-avoidance subsample and the excess risk-taking subsample.

3.2.3. Complexity Measure

M&A integration complexity can lead acquirers or target managers to excessively avoid risk-taking and even to disengage or withdraw from the deal anytime in the process—before the M&A completion date. In this paper, we measure the integration complexity using four measures: cross-border M&A, cultural distance, religious distance, and the productive capacity difference between the targets and the acquirer's country. We define cross-border deals as M&A involving an acquiring firm and a target firm with headquarters in different countries. Therefore, we measure cross-border as a binary variable with a value of 1 for a cross-border deal and 0 otherwise. We define and measure culture through six indicators, namely power distance (PDI), individualism (IDV), masculinity (MAS), uncertainty avoidance (UAI), long-term orientation, and indulgence. We perform a principal component analysis (PCA) to merge the six components into one (PCA).

Further, to measure the religious distance between acquirers and targets, we perform four steps. First, for each country, we calculate the religion based on the ratio of believers to the total population (including Christians, Muslims, unaffiliated, Hindus, Buddhists, folks' religions, Jews, and others). Second, we compare the religious distance for each acquirer's and target's countries. The religious difference for each religion is useful because the acquirers and the target countries may have a religion in common, but also host different religions. Third, we transform the differences for each religion into absolute values, since positive or negative doesn't matter in this context, but the significant distance does. Fourth, to avoid misclassification errors, we set a maximum difference value (named the religious distance variable) for all religions. Once completed, the four steps allow us to measure the impact of the acquirer and the target religious distance on cross-border M&A complexity and on the announced deal completion likelihood. To test whether and how the productive capacity difference between the acquirer and the target affects the M&A deal completion, we measure the productive capacities using the UNCTAD eight components: human capital, natural capital, energy, information and communication technology, structural change, transport, institutions, and the private sector. However, we use the overall productive capacity index in the test, specifically, the difference between the overall productive capacities of the acquirer and the target.

3.2.4. Constructing ESG Measures

Another variable of interest in this paper is the firms' ESG performance. We use the MSCI ESG IVA data to proxy the firms' ESG performance. The IVA allows analyzing risks and opportunities arising from over 35 ESG firm-related issues. Indeed, the MSCI ESG IVA rating methodology is divided into four steps. The first step is an in-depth analysis of the firms' focal industries. MSCI then aggregates the ESG industry-adjusted score against industry peers. With key ESG issues identified for each industry, firms are evaluated according to their exposure to these issues and their risk managerial ability. The second step regards data collection on concerned firms from media, government, NGOs, or company disclosures. Also, interviews with the firms' executive managers are conducted. The third step regards the evaluation of the firms' ESG performance.

The fourth and last step includes analysts performing a reality check to ensure the consistency of the measure. Evaluations of firms are expressed on a seven-point scale ranging from AAA (highest scores/best) to CCC (lowest scores/worst). The IVA rating compares firms on medium- to long-term value or risks that may not be captured by traditional financial metrics. Identifying long-term risks and opportunities is essential for companies; IVA research and analysis allow assessing a company's management quality regarding ESG issues as leading indicators for management quality and long-term financial performance. The MSCI ESG IVA allows analyzing risks and opportunities arising from over 35 ESG firm-related issues in three main pillars: environment, social and governance.

3.2.5. Control Variables

We include several firms' and countries' characteristics in the regressions to better understand the relationship between ESG and corporate risk-taking and ensure our ESG measure does not proxy for other known factors that influence risk-taking. In our regression analysis, we particularly include control variables following the M&A literature, such as Wang and Xie (2009), and Hegde and Mishra (2017).

Firm characteristics

As our study focuses on the impact of ESG on risk-taking before and after the M&A, we control the acquirers' characteristics. Indeed, after the M&A, the target disappears, and firms become one. Therefore, as per the firm-related variables, we control the size, the market-to-book ratio (MARKET VALUE), the return on assets (ROA), and the long-term debt (DEBT/ASSETS). Below, we briefly discuss the relationship between these variables and our dependent variable, risk-taking: *Size*: we measure the firms' size by the natural logarithm of total assets. The acquirers' size is likely to capture several factors that affect corporate decisions, such as public visibility and resource availability. Larger corporations with more resources and a higher stake in reputational wealth might take bigger risks (Liu et al., 2013). They may be associated with stronger governance quality due to investor interest and public scrutiny, which may in turn affect the effective corporation's risk policy (Chung et al., 2010).

Market-to-book ratio: we define and compute it as the ratio between the book

and the market values of common equity (Bouslah et al., 2013). This ratio can be associated with future profitability (Liu et al., 2013) and investment opportunities (Coles et al., 2006) which may positively affect corporate risk-taking. *ROA*: we define it as earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets. Particularly, in the context of M&A, the ROA performance can serve as a proxy for corporate financial performance in two ways. First, the acquirer's operating performance positively influences managerial hubris and improves the corporate risk-taking attitude (Hayward & Hambrick, 1997). Second, profitable targets are more attractive to acquirers; their profitability encourages the acquirer's risk-taking willingness level to engage in an M&A. Hence, we can predict a positive relationship between both the acquirers and the target's ROA performance and corporate risk-taking.

We also control the firm's leverage, which is the ratio of long-term debt over total assets (Vermeulen & Barkema, 2002). Leverage is important in a firm's riskiness and in its probability of success; it can serve as a proxy for financial health (Boubakri et al., 2019). Several empirical studies established a negative correlation between corporate growth and performance with high leverage (debt financing) (e.g., Myers, 1984; Harris & Raviv, 1991). Along the same line, Myers (1984) linked leverage to underinvestment problems (excessive risk aversion), which negatively impacts corporate growth eventually as well. Indeed, managers are under pressure to pay creditors fixed rate interests from the corporate profit, risky investment decisions may thus compromise the firm's ability to honor its obligations towards creditors. Also, since a failure to honor its commitment may seriously harm the corporation's business operations, managers prefer to avoid higher risk-taking decisions such as M&A.

Country characteristics

One of the strengths of our analysis regards the availability of information on a large sample of deals from over 100 countries, which helps to validate whether the ESG rating score performance serves as a control mechanism to reduce deviations from the optimal risk-taking level. In other words, we validate whether the ESG performance of both the acquirer and the target curbs excessive risk-taking and reduces excessive risk avoidance. To better understand the impact of ESG on reducing deviations from the optimum risk, we control for country characteristics because risk-taking can be influenced by the characteristics of the economic, institutional, and regulatory environment of the country where acquiring firms operate. In the M&A framework, acquirers' and targets' countries' differences in culture, religion, and productive capabilities can affect corporate risk-taking. Specifically, we control these variables because they are likely to induce deviation far lower from the optimum risk level since they involve integration complexity.

In this paper, we define and test the impact of cultural differences between the acquirer and the target through the six Hofstede cultural dimensions: the power of distance index (PDI), individualism (IDV), uncertainty avoidance index (UAI), masculinity (MAS), long-term orientation (LTO), and indulgence versus restraint

(IVR). We perform a principal component analysis (PCA) to merge the six components into one (PCA culture). We define four steps to measure religious distance's impact on acquirers and targets. First, we calculate the religion for each country based on the ratio of believers to the total population (including Christians, Muslims, unaffiliated, Hindus, Buddhists, folks' religions, Jews, and others). Second, we compare the religious distance between each acquirer and the target country. We calculate the religious difference for each religion because the acquirers' and the targets' countries may have a religion in common, but also host different religions. Third, we transform the differences for each religion into absolute values, since positive or negative doesn't matter in this context, but the significant distance does. Fourth, to avoid misclassification errors, we set a maximum difference value (named the religious distance variable) for all religions. Once completed, the four steps allow us to measure the impact of the religious distance between the acquirer and the target on risk-taking.

We also control productive capability differences. In cross-border M&A deals, two firms from countries with different productive capacities are less likely to close their deal compared to firms from countries with similar productive capacities. Negotiations can even be more complex and lead to the deal's failure when the target country has stronger productive capacities than the acquiring firm's country. However, the deal is likely to be completed when the acquirer's country has stronger productive capabilities than the target country. We test the situation where the acquirer has more productivity capabilities than the target. To test whether and how the productive capacity difference between the acquirer and the target affects the M&A deal completion, we measure productive capacities using the UNCTAD eight components: human capital, natural capital, energy, information and communication technology (ICTs), structural change, transport, institutions, and the private sector. However, we use the overall productive capacity index (all components are considered) in the test, specifically, the difference between the overall productive capacities of the acquirer and the target.

Also, the literature discusses several other countries' characteristics that can affect corporate risk policy. First, we control the countries' economic development level, proxied by GDP growth. Indeed, the efficiency of corporate control and growth increases with a country's economic development (Shleifer & Vishny, 1989). It can be plausibly argued that *ceteris paribus*, the high probability of corporate operations success is linked to efficient markets in the countries where they operate (Kaufmann et al., 2005). Second, we control inflation. Several previous studies, about the impact of inflation on corporate performance, confirmed the negative relationship (e.g., Umar et al., 2014; Khan & Senhadji, 2001; Geetha et al., 2011). Therefore, following the negative effect of inflation on corporate performance, we argue that uncertainty triggered by inflation can excessively reduce risk-taking levels.

Third, we control the country's investment freedom because it is likely to affect corporate risk-taking. In the risk-taking framework, we argue that the low

investment freedom of a country may negatively affect risk-taking. In sum, high investment-freedom countries can increase corporate risk-taking and low investment-freedom countries can reduce risk-taking. Fourth, we control trade freedom. We consider that firms in countries with higher trade freedom are more likely to take riskier investment decisions than firms with low trade freedom. Lastly, we control the country's tax burden as a characteristic that can influence corporate risk-taking level. Several studies investigate identifying the determinants of corporate financial performance or estimating the impact of taxation on the financial or economic performance of firms. The business tax burden raises government revenue at the cost of discouraging business activity. Given the tax burden discourages business activity, we consider the tax burden to reduce corporate risk-taking motivation or interests.

4. Empirical Results

This section presents the results of the impact of the acquirer's and the target's ESG on both excessive risk-avoidance and excessive risk-taking in the M&A framework. Further, the test results show how ESG affects or moderates the relationship between the integration complexity attached to the M&A with corporate pre- and post-M&A excessive risk-avoidance and excessive risk-taking.

4.1. Complexity, ESG, and Excessive Risk-Avoidance

Acquirers' (ACQ) pre-M&A ESG and pre-M&A excessive risk-avoidance

We run regression on the sample of excessively risk-avoiding firms. **Table 4** presents result regarding the impact of acquirers' pre-M&A ESG on excessive risk avoidance—the risk-adjusted to the industry average. The results reported in column (1) strongly support the view that pre-M&A ESG scores of acquirers are associated with an increase in risk-taking, suggesting less risk avoidance. This result confirms that ESG increases risk-taking appetite towards the optimum for excessive risk-avoiding firms. **Table 4** presents the coefficient estimates. In column 1, the coefficient of acquirers' pre-M&A is 0.003 and is significant at the 1% confidence level, highlighting that acquirers' pre-M&A ESG significantly improves pre-M&A risk-taking for firms with excessive risk-avoidance behavior. The effect is economically significant. On average, acquirers' pre-M&A ESG improves the risk-taking level of excessive risk-avoiding firms at 0.3%. In sum, ESG performance increases risk-taking for firms with risk-taking below the industry mean.

Table 4. ACQ pre-M&A ESG and pre-M&A excessive risk-avoidance.

| | (1) | (2) |
|------------------|---------------------|---------------------|
| ACQ_preM&A_ESG | 0.003*** (0.001) | 0.001 (0.001) |
| Ebitda to assets | | 0.105*** (0.029) |
| Ldebt to assets | | 0.037*** |

Continued

| | | |
|------------------------|---------|----------|
| | | (0.013) |
| Log of assets | | 0.001 |
| | | (0.001) |
| Market book | | -0.001 |
| | | (0.001) |
| Sales_to_assets | | -0.002 |
| | | (0.004) |
| Sales_growth | | -0.003 |
| | | (0.003) |
| Acquirer_judicial_eff. | | 0 |
| | | (0) |
| Acquirer_tax_burden | | 0.001*** |
| | | (0) |
| Acquirer_GDP_growth | | 0.001* |
| | | (0.001) |
| Acquirer_inflation | | 0 |
| | | (0.002) |
| Acquirer_trade_freedom | | 0 |
| | | (0) |
| Acquirer_investment | | 0** |
| | | (0) |
| Constant | -0.007 | -0.062 |
| | (0.004) | (0.047) |
| Observations | 1196 | 1063 |
| R-squared | 0.006 | 0.074 |

This table reports values from regressions of the acquirers' pre-M&A ESG on pre-M&A excessive risk avoidance (industry adjusted). Variables are described in **Table 1**. All regressions include year and industry-fixed effects, further including control variables. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels, respectively.

ACQ pre-M&A ESG, complexity and post-M&A excessive risk-avoidance

We believe the uncertainty surrounding the firm's activities will be high in post-M&A due to the complexity of integrating businesses. Thus, risk-taking will be low. However, a good ESG firm will experience a lesser decrease in risk-taking. In this section, we evaluate whether the pre-M&A ESG affects the post-M&A risk-taking. **Table 5(A)** presents our regression results on the moderating role acquirers' pre-M&A ESG has on the relationship between complexity and excessive risk avoidance. These results show that integration complexity encourages excessive risk avoidance. The results reported in columns (2), (3), (4), and (5) support the

view that the M&A integration complexity encourages managerial excessive risk avoidance. The negative relationship between complexity and excess risk also confirms this. This means the more complex the deal is, the lower the risk-taking becomes. This is consistent with the agency theory, stating that the excessive risk-avoiding behavior stems from the uncertainty following risk-taking, which exposes managers to the danger of losing their incentives and employment (Jensen, 1986; Coles et al., 2006). Therefore, the fear of potential negative surprises stemming from the M&A encourages managers to avoid risk-taking to minimize related undesirable impacts (Coles et al., 2006).

In column 1, we test the impact of the acquirers' pre-M&A ESG on excessive risk-avoidance. The coefficient associated with the acquirers' pre-M&A ESG is positive and statistically significant at the 1% level. This suggests that the acquirers' pre-M&A ESG significantly improves risk-taking for excessive risk-avoiding firms. More precisely, the coefficient associated with the acquirers' pre-M&A ESG is 0.009 (t-statistic = 0.002). The table also shows that a strong acquirer's ESG significantly alleviates integration complexity, raising risk-taking level for excessive risk-avoiding firms, even if such integration complexity related to cross-border M&A, cultural, religious, and productive capabilities differences prompt excessive risk-avoidance.

Table 5. (A) ACQ Pre-M&A ESG, complexity, and post-M&A excessive risk-avoidance; (B) TGT pre-M&A ESG, complexity, and post-M&A excessive risk-avoidance.

| | (A) | | | | |
|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| ACQ_preM&A_ESG | 0.009*** (0.002) | 0.013*** (0.003) | 0.013*** (0.003) | 0.014*** (0.003) | 0.018*** (0.005) |
| Cross-border | | -0.003* (0.014) | | | |
| CB * AQ pre-M&A ES | | 0.007*** (0.003) | | | |
| Cultural_distance | | | -0.008* (0.01) | | |
| CD * AQ P-MA ESG | | | 0.006** (0.002) | | |
| Religious_distance | | | | -0.009 (0.047) | |
| RD * AQ P-M&A ESG | | | | 0.003 (0.01) | |
| PCI_difference | | | | | -0.001 (0.002) |
| PCI * AQ P-M&A ESG | | | | | 0.001** |

Continued

| | | | | (0) |
|------------------------|----------|----------|----------|----------|
| Ebitda_to_assets | 0.07 | 0.106 | 0.06 | -0.088 |
| | (0.094) | (0.095) | (0.095) | (0.134) |
| Ldebt_to_assets | 0.011 | 0.014 | 0.011 | 0.063 |
| | (0.04) | (0.04) | (0.041) | (0.055) |
| Log_of_assets | -0.005** | -0.005** | -0.005* | -0.006 |
| | (0.003) | (0.002) | (0.003) | (0.004) |
| Market book | -0.006* | -0.008** | -0.004 | 0 |
| | (0.003) | (0.003) | (0.003) | (0.006) |
| Sales_to_assets | -0.006 | -0.009 | -0.009 | 0.005 |
| | (0.014) | (0.013) | (0.014) | (0.021) |
| Sales_growth | -0.001 | -0.012 | -0.006 | 0.006 |
| | (0.041) | (0.042) | (0.042) | (0.059) |
| Acquirer_judicial_eff. | 0.002*** | 0.002*** | 0.002*** | 0.003*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Acquirer_tax_burden | 0 | 0 | 0 | -0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Acquirer_GDP_growth | 0.002 | 0.002 | 0.002 | 0.004 |
| | (0.002) | (0.002) | (0.002) | (0.005) |
| Acquirer_inflation | 0.008 | 0.01 | 0.009 | 0.076*** |
| | (0.006) | (0.006) | (0.006) | (0.012) |
| Acquirer_trade_freedo | 0 | 0 | 0 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.002) |
| Acquirer_investment | 0.003*** | 0.003*** | 0.003*** | 0.005*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Constant | 0.046*** | 0.521*** | 0.519*** | 0.49*** |
| | (0.011) | (0.135) | (0.134) | (0.137) |
| Observations | 436 | 240 | 236 | 240 |
| R-squared | 0.03 | 0.316 | 0.347 | 0.294 |

This table reports regression estimates of the relationship between the acquirers' pre-M&A ESG and post-M&A excessive risk-avoidance (industry-adjusted) in the context of the complexity related to M&A. The table also reports the impact of the M&A integration complexity through four measures: cross-border deal, cultural distance, religious distance, and the productive capacity difference between the acquirers' and the targets' countries on excessive risk-avoidance, further including control variables. Further, the table reports the moderating role of the acquirers' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk avoidance. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

| | (B) | | | | |
|-------------------------|---------------------|---------------------|--------------------|--------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| TGT preM&A ESG | 0.009*** (0.003) | 0.003* (0.003) | 0.004* (0.003) | 0.004* (0.003) | 0.003* (0.003) |
| Cross-border | | -0.017* (0.012) | | | |
| CB * TGT P-M&A ES | | 0.001 (0.002) | | | |
| Cultural_distance | | | -0.007* (0.009) | | |
| CD * TGT-M&A ESG | | | 0.001* (0.002) | | |
| Religious_distance | | | | -0.018 (0.033) | |
| RD * TGT-M&A ESG | | | | 0.002* (0.009) | |
| PCI_difference | | | | | -0.003** (0.001) |
| PCI * TGT-M&A ESG | | | | | 0.001* (0) |
| Ebitda_to_assets | | -0.019 (0.077) | -0.019 (0.079) | -0.017 (0.078) | -0.116 (0.086) |
| Ldebt_to_asetts | | -0.007 (0.033) | -0.009 (0.033) | -0.01 (0.033) | -0.006 (0.035) |
| Log_of_assets | | -0.005** (0.002) | -0.004* (0.002) | -0.004* (0.002) | -0.001 (0.003) |
| Market book | | -0.003 (0.003) | -0.003 (0.003) | -0.002 (0.003) | 0 (0.004) |
| Sales_to_assets | | -0.015 (0.011) | -0.013 (0.011) | -0.014 (0.011) | 0.011 (0.013) |
| Sales_growth | | 0.012 (0.036) | 0.011 (0.036) | 0.007 (0.036) | -0.006 (0.039) |
| Acquirer_judicial_eff0. | | 0.001*** (0) | 0.002*** (0) | 0.002*** (0) | 0.004*** (0.001) |
| Acquirer_tax_burden | | 0 (0.001) | 0 (0.001) | 0 (0.001) | -0.001 (0.001) |
| Acquirer_GDP_growth | | 0.004* (0.002) | 0.003 (0.002) | 0.003 (0.002) | 0.004 (0.003) |
| Acquirer_inflation | | 0 (0.005) | 0 (0.005) | 0 (0.005) | 0.102*** (0.009) |

Continued

| | | | | | |
|-----------------------|----------|----------|----------|----------|----------|
| Acquirer_trade_freedo | | 0 | 0 | 0 | 0.001 |
| | | (0.001) | (0.001) | (0.001) | (0.001) |
| Acquirer_investment | | 0.003*** | 0.002*** | 0.002*** | 0.006*** |
| | | (0.001) | (0.001) | (0.001) | (0.001) |
| Constant | 0.045*** | 0.425*** | 0.383*** | 0.381*** | 0.735*** |
| | (0.011) | (0.124) | (0.121) | (0.121) | (0.143) |
| Observations | 422 | 220 | 219 | 220 | 124 |
| R-squared | 0.029 | 0.204 | 0.198 | 0.197 | 0.745 |

The table reports values from regressions of the targets' pre-M&A ESG on post-M&A excessive risk-avoidance in the context of the M&A complexity, further including control variables. In addition, the table accounts for the relationship between complexity and post-M&A excessive risk avoidance. Further, the table also reports the moderating role of the targets' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk-avoidance (industry-adjusted). Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

TGT pre-M&A ESG, complexity, and post-M&A excessive risk-avoidance

Table 5(B) presents regression results on the moderating role the targets' pre-M&A ESG has on the relationship of the deal integration complexity and excessive risk avoidance. Our regression results show that the integration complexity encourages excessive risk avoidance. In column 1, we test the impact of the targets' ESG on excessive risk avoidance. The coefficient associated with targets in pre-M&A is positive and statistically significant at the 1% level. This suggests that the targets' pre-M&A ESG significantly improves risk-taking for excessive risk-avoiding firms. More precisely, the coefficient associated with the targets' pre-M&A ESG is 0.009 (t-statistic = 0.002). The table also shows that acquiring a target with a strong ESG alleviates the complexity and improves risk-taking for excessive risk-avoiding firms, even if the integration complexity related to cross-border M&A, cultural, religious, and productive capabilities differences encourage excessive risk-avoidance.

4.2. ESG, Complexity, and Excessive Risk-Taking**ACQ pre-M&A ESG and pre-M&A excessive risk-taking**

Table 6 reports values from regression results regarding the impact of acquirers on pre-M&A excessive risk-taking adjusted to the industry. Results show a negative relationship between the ESG of the acquirer and corporate excessive risk-taking. In column 1, the coefficient of the acquirers' pre-M&A ESG is -0.017 and is significant at the 5% confidence level. On average, the acquirers' pre-M&A ESG reduces excessive risk-taking by 1.7%. This means that the acquirers' pre-M&A ESG significantly reduces excessive risk-taking. The effect is economically significant, meaning that the acquirers' good ESG significantly reduces the pre-M&A excessive risk-taking. These results are consistent with a stakeholder view that

emphasizes that ESG can help to mitigate agency and managerial opportunism and help to align all stakeholders' interests. Our results are also broadly in line with the findings of Harjoto and Laksmana (2018) regarding how ESG helps to improve firm value by serving as a control mechanism to curb excessive risk-taking (they also confirm the positive direct impact of ESG on firm value).

Table 6. ACQ pre-M&A ESG and pre-M&A excessive risk-taking.

| | (1) | (2) |
|-------------------------|---------------------|----------------------|
| ACQ_preM&A_ESG | -0.017** (0.007) | -0.015** (0.008) |
| Ebitda_to_assets | | -0.417** (0.194) |
| Ldebt_to_assets | | -0.265*** (0.089) |
| Log_of_assets | | -0.002 (0.006) |
| Market to book | | 0.001 (0.007) |
| Sales_to_assets | | -0.091*** (0.029) |
| Sales_growth | | -0.017 (0.018) |
| Acquirer_judicial_eff0. | | -0.006*** (0.001) |
| Acquirer_tax_burden | | -0.007*** (0.002) |
| Acquirer_GDP_growt | | 0.008* (0.005) |
| Acquirer_inflation | | -0.028** (0.012) |
| Acquirer_trade_freedom | | 0.005* (0.003) |
| Acquirer_investment | | 0.002* (0.001) |
| Constant | 0.291*** (0.031) | 1.007*** (0.313) |
| Observations | 1196 | 1063 |
| R-squared | 0.005 | 0.078 |

This table reports values from regressions of the acquirers' pre-M&A ESG on pre-M&A excessive risk-taking (industry-adjusted). Variables are described in **Table 1**. All regressions include year and industry-fixed effects, further including control variables. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

ACQs’ and targets’ pre-M&A ESG, complexity, and post-M&A excessive risk-taking

Table 7(A) reports values from the acquirers’ pre-M&A ESG regressions results on post-M&A excessive risk-taking, adjusted to the industry in the context of M&A complexity. ESG and excessive risk-taking form a negative relationship. In column 1, the regression shows a negative and significant relationship between the acquirers’ pre-M&A ESG and post-M&A excessive risk-taking. It means the acquirers’ pre-M&A ESG significantly reduces post-M&A excessive risk-taking at a 10% level. The coefficient is -0.002 . As we test the ESG impact on excessive risk-taking in the context of M&A complexity, we also test whether complexity affects excessive risk-taking and how the acquirers’ ESG moderates such relation. As already mentioned, we test complexity through four measures: cross-border M&A, cultural distance, religious distance, and difference in productive capabilities between the acquirer’s country and the target’s country. Results show that the relationship between complexity and excessive risk-taking is positive, but not significant, except for the difference in PCI which significantly increases excessive risk-taking at a 10% level. This means all other complexity measures do not significantly increase excessive risk-taking. Results also confirm that, although integration complexity may encourage excessive risk-taking, the acquirers’ strong ESG reduces the integration complexity and excessive risk-taking as well.

Table 7. (A) ACQ Pre-M&A ESG, complexity, and post-M&A excessive risk-taking; (B) TGT pre-M&A ESG, complexity and post-M&A excessive risk-taking.

| | (A) | | | | |
|--------------------|---------|---------|---------|---------|-----------|
| | (1) | (2) | (3) | (4) | (5) |
| ACQ_preM&A_ESG | -0.002* | -0.035* | -0.031* | -0.037* | -0.073*** |
| | (0.015) | (0.02) | (0.021) | (0.02) | (0.019) |
| Cross-border | | 0.01 | | | |
| | | (0.081) | | | |
| CB * ACQ P-M&A ES | | -0.008 | | | |
| | | (0.016) | | | |
| Cultural_distance | | | 0.022 | | |
| | | | (0.059) | | |
| CB * ACQ P-M&A ES | | | -0.011 | | |
| | | | (0.014) | | |
| Religious_distance | | | | 0.03 | |
| | | | | (0.275) | |
| RD * ACQ P-M&A ES | | | | -0.027 | |
| | | | | (0.06) | |
| PCI_difference | | | | | 0.018* |
| | | | | | (0.007) |

Continued

| | | | | | |
|-------------------------|----------|-----------|-----------|-----------|-----------|
| PCI * AQ P-M&A ES | | | | | -0.001* |
| | | | | | (0.002) |
| Ebitda_to_assets | | -0.986* | -1.223** | -0.988* | -0.915 |
| | | (0.559) | (0.574) | (0.558) | (0.566) |
| Ldebt_to_assets | | -0.065 | -0.16 | -0.052 | -0.147 |
| | | (0.239) | (0.241) | (0.238) | (0.231) |
| Log_of_assets | | -0.01 | -0.01 | -0.009 | 0.029* |
| | | (0.015) | (0.015) | (0.015) | (0.017) |
| Market book | | -0.008 | -0.006 | -0.009 | -0.013 |
| | | (0.02) | (0.02) | (0.019) | (0.025) |
| Sales_to_assets | | 0.224*** | 0.232*** | 0.227*** | 0.11 |
| | | (0.081) | (0.081) | (0.081) | (0.089) |
| Sales_growth | | -0.403 | -0.29 | -0.403 | -0.194 |
| | | (0.247) | (0.253) | (0.247) | (0.25) |
| Acquirer_judicial_eff0. | | 0.008** | 0.008** | 0.008** | 0.014*** |
| | | (0.003) | (0.003) | (0.003) | (0.003) |
| Acquirer_tax_burden | | -0.016*** | -0.017*** | -0.016*** | -0.021*** |
| | | (0.004) | (0.004) | (0.004) | (0.004) |
| Acquirer_GDP_growth | | 0.006 | 0.005 | 0.005 | -0.01 |
| | | (0.014) | (0.014) | (0.014) | (0.019) |
| Acquirer_inflation | | 0.09** | 0.096** | 0.092** | 0.128** |
| | | (0.038) | (0.038) | (0.038) | (0.052) |
| Acquirer_trade_freedo | | 0.011 | 0.01 | 0.01 | 0.008 |
| | | (0.007) | (0.008) | (0.007) | (0.008) |
| Acquirer_investment | | 0.003 | 0.004 | 0.003 | 0.008* |
| | | (0.004) | (0.004) | (0.004) | (0.004) |
| Constant | 0.404*** | 1.646** | 1.792** | 1.574* | 0.806 |
| | (0.068) | (0.803) | (0.807) | (0.805) | (0.89) |
| Observations | 436 | 240 | 236 | 240 | 135 |
| R-squared | 0 | 0.173 | 0.177 | 0.175 | 0.451 |

This table reports regression estimates of the relationship between acquirers' pre-M&A ESG and post-M&A excessive risk-taking (industry-adjusted) in the context of complexity related to M&A. The table also reports the impact of M&A integration complexity through four measures: cross-border deal, cultural distance, religious distance, and the productive capacity difference between the acquirers' and the targets' countries on corporate post-M&A excessive risk-taking, further including control variables. The table also reports the moderating role of the acquirers' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk-taking. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

| | (B) | | | | |
|-------------------------|---------|----------|-----------|----------|-----------|
| | (1) | (2) | (3) | (4) | (5) |
| TGT_preM&A_ESG | -0.026* | -0.012* | -0.007* | -0.014* | -0.034* |
| | (0.015) | (0.022) | (0.022) | (0.022) | (0.023) |
| Cross-border | | 0.017 | | | |
| | | (0.088) | | | |
| CB * TGT P-M&A ES | | -0.007 | | | |
| | | (0.017) | | | |
| Cultural_distance | | | 0.012 | | |
| | | | (0.066) | | |
| CD * TGT_PM&A_E | | | -0.009 | | |
| | | | (0.016) | | |
| Religious_distance | | | | 0.103 | |
| | | | | (0.241) | |
| RD * TGT_PM&A_E | | | | -0.004 | |
| | | | | (0.063) | |
| PCI_difference | | | | | 0.022** |
| | | | | | (0.008) |
| PCI * TGT_PM&A_ES | | | | | -0.002 |
| | | | | | (0.002) |
| Ebitda_to_assets | | -0.804 | -0.801 | -0.805 | -0.773 |
| | | (0.564) | (0.577) | (0.566) | (0.578) |
| Ldebt_to_assets | | -0.219 | -0.224 | -0.217 | -0.013 |
| | | (0.243) | (0.242) | (0.242) | (0.236) |
| Log_of_assets | | -0.005 | -0.004 | -0.003 | 0.023 |
| | | (0.017) | (0.016) | (0.016) | (0.017) |
| Market book | | -0.011 | -0.014 | -0.011 | -0.025 |
| | | (0.019) | (0.019) | (0.019) | (0.026) |
| Sales_to_assets | | 0.207** | 0.21** | 0.209** | 0.091 |
| | | (0.081) | (0.082) | (0.081) | (0.09) |
| Sales_growth | | -0.491* | -0.428 | -0.512* | -0.11 |
| | | (0.26) | (0.263) | (0.26) | (0.262) |
| Acquirer_judicial_eff0. | | 0.008** | 0.008** | 0.008** | 0.011*** |
| | | (0.004) | (0.004) | (0.004) | (0.004) |
| Acquirer_tax_burden | | -0.02*** | -0.021*** | -0.02*** | -0.017*** |
| | | (0.004) | (0.004) | (0.004) | (0.005) |
| Acquirer_GDP_growt | | 0.008 | 0.008 | 0.006 | 0.016 |
| | | (0.016) | (0.015) | (0.015) | (0.02) |

Continued

| | | | | | |
|------------------------|----------|----------|----------|----------|----------|
| Acquirer_inflation | | 0.114*** | 0.114*** | 0.117*** | 0.083 |
| | | (0.035) | (0.035) | (0.035) | (0.06) |
| Acquirer_trade_freedom | | 0.013* | 0.016** | 0.013* | 0.005 |
| | | (0.008) | (0.008) | (0.008) | (0.008) |
| Acquirer_investment | | 0.002 | 0.004 | 0.002 | 0.013*** |
| | | (0.005) | (0.004) | (0.004) | (0.005) |
| Constant | 0.493*** | 1.633* | 1.514* | 1.569* | 0.841 |
| | (0.067) | (0.907) | (0.879) | (0.881) | (0.957) |
| Observations | 422 | 220 | 219 | 220 | 124 |
| R-squared | 0.007 | 0.2 | 0.204 | 0.203 | 0.432 |

This table reports regression estimates of the relationship between the targets' pre-M&A ESG and post-M&A excessive risk-taking (industry-adjusted) in the context of complexity related to M&A. The table also reports the impact of M&A integration complexity through four measures: cross-border deal, cultural distance, religious distance, and the productive capacity difference between the acquirers' and the targets' countries on corporate post-M&A excessive risk-taking, further including control variables. The table also reports the moderating role of the targets' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk-taking. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

Table 7(B) reports values from regressions of the targets' pre-M&A ESG on post-M&A excessive risk-taking, adjusted to the industry in the context of M&A complexity. In column 1, the regression shows the negative and significant relationship between the targets' pre-M&A ESG and post-M&A excessive risk-taking. This means that the targets' pre-M&A ESG significantly reduces excessive risk-taking at a 10% level. The coefficient is -0.026 . We also test the impact of complexity on excessive risk-taking and the moderating role of the targets' ESG. Complexity is tested through its four measures: cross-border M&A, cultural distance, religious distance, and difference in productive capabilities between the acquirer's country and the target's country. The ESG performance significantly reduces risk-taking for firms with a risk-taking level below the industry mean. We can conclude that ESG affects risk avoidance more than it affects excessive risk-taking.

4.3. Additional Tests and Robustness

1) Dependent variable: measuring risk-taking

We use alternative risk-taking measures to support the baseline findings. For the robustness check, we measure risk-taking by the deviations of operating results from the country's economy-wide average. We also consider a measure of the total risk by subtracting a country-specific component from firm-level earnings before computing risk-taking measures. Thus, we consider that a measure of

risk, which includes economy-wide risks, would bias our results against finding that a strong ESG rating score is associated with a good risk-taking level. This study uses panel OLS to confirm the sign and the significance of the coefficients. Our empirical results still hold in indicating that the ESG rating reduces deviations (far below the mean and far above the mean) from the optimum risk-taking level.

Table 8(A) reports the impact of the acquirers’ pre-M&A ESG on corporate post-M&A excessive risk avoidance; risk is adjusted to the country considering the complexity. Results are like those adjusted to the industry. Regression results show that the relationship between the acquirers’ pre-M&A ESG rating score and the corporate post-M&A excessive risk-taking is positive and significant at a 10% level at the coefficient of 0.04 (see model 1). A one-point increase in the acquirers’ pre-M&A ESG best-in-class score is thus associated with an increase of 0.04 in the standard deviation of the firm’s earnings ratio in the following years (post-M&A). This result indicates that no linear relationship links the two variables. In **Table 8(B)**, we repeat regression tests with the targets’ pre-M&A ESG considering the complexity, and the results remain the same.

Table 8. (A) ACQ Pre-M&A ESG, complexity, and post-M&A excessive risk-avoidance; (B) TGT pre-M&A ESG, complexity, and post-M&A excessive risk-avoidance.

| | (A) | | | | |
|--------------------|---------|---------|---------|---------|----------|
| | (1) | (2) | (3) | (4) | (5) |
| ACQ_preM&A_ESG | 0.004* | 0.033* | 0.029 | 0.035* | 0.064*** |
| | (0.015) | (0.021) | (0.021) | (0.021) | (0.023) |
| Cross-border | | -0.051* | | | |
| | | (0.082) | | | |
| CB *ACQ P-M&A ES | | 0.01 | | | |
| | | (0.016) | | | |
| Cultural_distance | | | -0.019* | | |
| | | | (0.06) | | |
| CD *ACQ P-M&A ES | | | 0.011 | | |
| | | | (0.014) | | |
| Religious_distance | | | | -0.065 | |
| | | | | (0.278) | |
| RD *ACQ P-M&A ES | | | | 0.037 | |
| | | | | (0.061) | |
| PCI_difference | | | | | 0.006 |
| | | | | | (0.009) |
| PCI *ACQ P-M&A ES | | | | | 0.001 |
| | | | | | (0.002) |

Continued

| | | | | |
|-------------------------|-----------|-----------|-----------|----------|
| Ebitda_to_assets | 0.968* | 1.212** | 0.957* | 0.827 |
| | (0.565) | (0.581) | (0.565) | (0.668) |
| Ldebt_to_assets | 0.155 | 0.271 | 0.152 | 0.364 |
| | (0.242) | (0.244) | (0.241) | (0.273) |
| Log_of_assets | 0.012 | 0.01 | 0.009 | -0.023 |
| | (0.016) | (0.015) | (0.015) | (0.02) |
| Market to book | 0.008 | 0.003 | 0.007 | 0.007 |
| | (0.02) | (0.02) | (0.02) | (0.03) |
| Sales_to_assets | -0.246*** | -0.257*** | -0.252*** | -0.133 |
| | (0.082) | (0.082) | (0.082) | (0.105) |
| Sales_growth | 0.492* | 0.384 | 0.497** | 0.366 |
| | (0.25) | (0.256) | (0.25) | (0.295) |
| Acquirer_judicial_eff0. | 0.007** | 0.007** | 0.007** | 0.012*** |
| | (0.003) | (0.003) | (0.003) | (0.004) |
| Acquirer_tax_burden | 0.015*** | 0.016*** | 0.015*** | 0.021*** |
| | (0.004) | (0.004) | (0.004) | (0.005) |
| Acquirer_GDP_growth | 0.004 | 0.001 | 0.002 | 0.017 |
| | (0.015) | (0.014) | (0.014) | (0.023) |
| Acquirer_inflation | -0.082** | -0.09** | -0.087** | -0.107* |
| | (0.038) | (0.038) | (0.038) | (0.061) |
| Acquirer_trade_freedom | -0.009 | -0.008 | -0.009 | -0.008 |
| | (0.008) | (0.008) | (0.008) | (0.01) |
| Acquirer_investment | 0.005 | 0.004 | 0.004 | -0.004 |
| | (0.004) | (0.004) | (0.004) | (0.005) |
| Constant | 0.571*** | -0.781 | -0.907 | 0.004 |
| | (0.069) | (0.812) | (0.817) | (0.815) |
| Observations | 436 | 240 | 236 | 240 |
| R-squared | 0 | 0.164 | 0.168 | 0.164 |

This table reports regression estimates of the relationship between the acquirers' pre-M&A ESG and post-M&A excessive risk-avoidance (country risk-adjusted) in the context of complexity related to M&A. The table also reports the impact of M&A integration complexity through four measures: cross-border deal, cultural distance, religious distance, and the productive capacity difference between the acquirers' and the targets' countries on excessive risk-avoidance, further including control variables. The table also reports the moderating role of the acquirers' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk-avoidance. Variables are described in [Table 1](#). Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

| | (B) | | | | |
|-------------------------|---------|-----------|-----------|-----------|----------|
| | (1) | (2) | (3) | (4) | (5) |
| TGT_preM&A_ESG | 0.032** | 0.005 | 0.012 | 0.005 | 0.056** |
| | (0.015) | (0.023) | (0.022) | (0.022) | (0.027) |
| Cross-border | | -0.059 | | | |
| | | (0.089) | | | |
| CB * TGT P-M&A ESG | | 0.009 | | | |
| | | (0.017) | | | |
| Cultural_distance | | | -0.016 | | |
| | | | (0.067) | | |
| CD * TGT_PM&A_E | | | -0.009 | | |
| | | | (0.016) | | |
| Religious_distance | | | | -0.11 | |
| | | | | (0.245) | |
| RD * TGT_PM&A_ES | | | | 0.002 | |
| | | | | (0.063) | |
| PCI_difference | | | | | 0.014 |
| | | | | | (0.01) |
| PCI * TGT_PM&A_ES | | | | | 0.001 |
| | | | | | (0.002) |
| Ebitda_to_assets | | 0.824 | 0.836 | 0.82 | 0.79 |
| | | (0.571) | (0.585) | (0.575) | (0.681) |
| Ldebt_to_assets | | 0.329 | 0.343 | 0.333 | 0.257 |
| | | (0.246) | (0.246) | (0.246) | (0.278) |
| Log_of_assets | | 0.008 | 0.004 | 0.004 | -0.021 |
| | | (0.017) | (0.016) | (0.016) | (0.02) |
| Market to book | | 0.011 | 0.012 | 0.009 | 0.021 |
| | | (0.019) | (0.02) | (0.019) | (0.03) |
| Sales_to_assets | | -0.224*** | -0.231*** | -0.228*** | -0.122 |
| | | (0.082) | (0.083) | (0.082) | (0.106) |
| Sales_growth | | 0.595** | 0.529** | 0.618** | 0.335 |
| | | (0.264) | (0.267) | (0.264) | (0.309) |
| Acquirer_judicial_eff0. | | 0.007* | 0.007* | 0.007* | 0.007 |
| | | (0.004) | (0.004) | (0.004) | (0.004) |
| Acquirer_tax_burden | | 0.018*** | 0.019*** | 0.018*** | 0.016*** |
| | | (0.004) | (0.004) | (0.004) | (0.005) |
| Acquirer_GDP_growth | | 0.008 | 0.007 | 0.004 | 0.009 |
| | | (0.016) | (0.015) | (0.015) | (0.023) |
| Acquirer Inflation | | -0.104*** | -0.104*** | -0.107*** | -0.057 |
| | | (0.035) | (0.035) | (0.036) | (0.071) |
| Acquirer_trade_freedom | | -0.012 | -0.015* | -0.011 | -0.006 |
| | | (0.008) | (0.008) | (0.008) | (0.01) |
| Acquirer_investment | | 0.004 | 0.004 | 0.003 | -0.01* |

Continued

| | | | | | |
|--------------|----------|---------|---------|---------|---------|
| | | (0.005) | (0.004) | (0.004) | (0.006) |
| Constant | 0.465*** | -0.79 | -0.569 | -0.63 | 0.277 |
| | (0.068) | (0.919) | (0.892) | (0.894) | (1.127) |
| Observations | 422 | 220 | 219 | 220 | 124 |
| R-squared | 0.01 | 0.191 | 0.194 | 0.192 | 0.309 |

The table reports values from regressions of the targets' pre-M&A ESG on post-M&A excessive risk-avoidance (country risk-adjusted) in the context of M&A complexity, further including control variables. In addition, the table accounts for the relationship between the complexity and post-M&A excessive risk-avoidance. The table also reports the moderating role of the targets' pre-M&A ESG on the relationship between complexity and post-M&A excessive risk-avoidance (country risk-adjusted). Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

2) Independent variable: best and worst in class ESG

Besides the effective management of financial capital, business organizations have realized the importance of adopting measures promoting a more transparent internal organization (governance) and more responsibility and accountability to society (Buallay, 2018). Particularly, the "best in class" approach allows investors to reduce ESG-related risks and maximize their exposure to firms with leading ESG practices by sector or industry. In doing so, investors mitigate risks associated with poor ESG performers and position themselves for the possibility of long-term benefits arising from responsible firms. Therefore, as part of the robustness test, we perform regression tests from classified ESG to measure the effect of both the acquirers' and the targets' best-in-class and worst-in-class ESG on optimum corporate risk-taking. In other words, we assess how best and worst in class affect deviations from the optimum risk-taking in the context of the M&A complexity. We particularly assess the effect of both best-in-class and worst-in-class ESG pre-M&A on pre- and post-M&A corporate risk-taking (we repeat the tests performed before with these new variables). We can expect the best-in-class ESG to have a strong positive impact on risk-taking because investors feel reassured to invest their resources in firms with good ESG rating scores.

Table 9(A) reports the impact of the acquirers' pre-M&A best and worst-in-class ESG on corporate post-M&A excessive risk avoidance. Regression results show that the relationship between the acquirers' best-in-class ESG rating score and corporate post-M&A is positive and significant at a 10% level at the coefficient of 0.09 (see model 1). Indeed, a one-point increase in the acquirers' pre-M&A ESG best-in-class score is associated with an increase of 0.09 in the firms' earnings ratio standard deviation in the following years (post-M&A). Also, regression results show that the relationship between the acquiring firm's pre-M&A worst-in-class ESG with the post-M&A excessive risk avoidance is 0. This means the pre-M&A ESG does not correlate with the pre-M&A excessive risk avoidance. In **Table 9(B)**, we repeat regression with targets, and the results remain unchanged.

Table 9. (A) ACQ Pre-M&A best and worst in class ESG, and post-M&A excessive risk-avoidance; (B) TGT pre-M&A ESG best and worst in class and post-M&A excessive risk-avoidance.

| | (A) | | | |
|-------------------------|---------|-----------|-----|-----|
| | (1) | (2) | (3) | (4) |
| ACQBEST_pre_M&A | 0.009* | 0.001 | | |
| | (0.005) | (0.006) | | |
| ACQWORST_pre_M& | | | 0 | 0 |
| | | | (0) | (0) |
| Ebitda_to_assets | | 0.114*** | | 0 |
| | | (0.042) | | (0) |
| Ldebt_to_assets | | 0.044** | | 0 |
| | | (0.02) | | (0) |
| Log_of_assets | | 0 | | 0 |
| | | (0.001) | | (0) |
| Market to book | | -0.001 | | 0 |
| | | (0.001) | | (0) |
| Sales_to_assets | | -0.005 | | 0 |
| | | (0.007) | | (0) |
| Sales_growth | | -0.004 | | 0 |
| | | (0.004) | | (0) |
| Acquirer_judicial_growt | | 0.001** | | 0 |
| | | (0) | | (0) |
| Acquirer_tax_burden | | 0.001*** | | 0 |
| | | (0) | | (0) |
| Acquirer_GDP_growth | | 0 | | 0 |
| | | (0.001) | | (0) |
| Acquirer_inflation | | -0.002 | | 0 |
| | | (0.003) | | (0) |
| Acquirer_trade_freedom | | 0.001 | | 0 |
| | | (0.001) | | (0) |
| Acquirer_investment | | -0.001*** | | 0 |
| | | (0) | | (0) |
| Constant | 0 | -0.034 | 0 | 0 |
| | (0.004) | (0.072) | (0) | (0) |
| Observations | 686 | 626 | 56 | 48 |
| R-squared | 0.004 | 0.101 | . | . |

This table reports regression estimates of the relationship between the acquirers' best and worst in class pre-M&A ESG with post-M&A excessive risk-avoidance (country-adjusted), further including control variables. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

| | (B) | | | |
|--------------------------|---------------------|---------------------|--------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| TG_BEST_pre_M&A | 0.066** (0.027) | 0.037 (0.028) | | |
| TG_WORST_pre_M& | | | 0.015 (0.033) | -0.017 (0.034) |
| Ebitda_to_assets | | 0.459** (0.215) | | 0.444** (0.215) |
| Ldebt_to_assets | | 0.35*** (0.098) | | 0.36*** (0.097) |
| Log_of_assets | | 0.004 (0.006) | | 0.006 (0.006) |
| Market to book | | -0.004 (0.007) | | -0.003 (0.007) |
| Sales_to_assets | | 0.102*** (0.032) | | 0.104*** (0.032) |
| Sales_growth | | 0.003 (0.023) | | 0.006 (0.023) |
| Acquirer_judiciary_eff0. | | 0.003*** (0.001) | | 0.003*** (0.001) |
| Acquirer_tax_burden | | 0.008*** (0.002) | | 0.008*** (0.002) |
| Acquirer_GDP_growth | | 0.008 (0.005) | | 0.007 (0.005) |
| Acquirer_inflation | | 0.029** (0.013) | | 0.024* (0.013) |
| Acquirer_trade_freedom | | 0.004 (0.003) | | 0 (0.003) |
| Acquirer_Investment | | 0 (0.001) | | -0.001 (0.001) |
| Constant | 0.717*** (0.021) | -0.041 (0.352) | 0.768*** (0.03) | -0.301 (0.342) |
| Observations | 1077 | 966 | 1091 | 980 |
| R-squared | 0.006 | 0.06 | 0 | 0.056 |

This table reports regression estimates of the relationship between the targets' best and worst in class pre-M&A ESG with post-M&A excessive risk-avoidance (country-adjusted), further including control variables. Variables are described in [Table 1](#). Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

Table 10. (A) ACQ Pre-M&A best in class ESG, and post-M&A excessive risk-taking; (B) TGT pre-M&A ESG best and worst in class and post-M&A excessive risk-avoidance.

| | (A) | | | |
|-------------------------|---------------------|----------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) |
| ACQBEST_pre_M&A | -0.02** (0.032) | -0.018 (0.033) | | |
| ACQWORST_pre_M&A | | | -0.135 (0.128) | -0.028 (0.151) |
| Ebitda_to_assets | | -0.533** (0.241) | | -0.027 (0.952) |
| Ldebt_to_assets | | -0.436*** (0.114) | | -1.39*** (0.484) |
| Log_of_assets | | 0 (0.007) | | -0.042 (0.03) |
| Market book | | -0.004 (0.008) | | -0.029 (0.042) |
| Sales_to_assets | | -0.054 (0.04) | | -0.023 (0.142) |
| Sales_growth | | -0.023 (0.023) | | -0.099 (0.069) |
| Acquirer_judicial_eff0. | | -0.007*** (0.001) | | -0.005 (0.004) |
| Acquirer_tax_burden | | -0.009*** (0.002) | | -0.031** (0.012) |
| Acquirer_GDP_growth | | 0.001 (0.006) | | -0.015 (0.027) |
| Acquirer_inflation | | -0.006 (0.015) | | 0.098* (0.054) |
| Acquirer_trade_freedom | | 0.005 (0.004) | | 0.009 (0.015) |
| Acquirer_investment | | 0.002 (0.002) | | -0.01 (0.007) |
| Constant | 0.225*** (0.023) | 1.029** (0.415) | 0.268*** (0.066) | 30.744* (1.862) |
| Observations | 686 | 626 | 56 | 48 |
| R-squared | 0.001 | 0.118 | 0.02 | 0.429 |

This table reports regression estimates of the relationship between the acquirers' best and worst in class pre-M&A ESG with post-M&A excessive risk-taking (country-adjusted), further including control variables. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

| | (B) | | | |
|-------------------------|---------|-----------|----------|-----------|
| | (1) | (2) | (3) | (4) |
| TG_BEST_pre_M&A | -0.05* | -0.017 | | |
| | (0.026) | (0.027) | | |
| TG_WORST_pre_M&A | | | 0.003 | 0.003 |
| | | | (0.032) | (0.032) |
| Ebitda_to_assets | | -0.422** | | -0.42** |
| | | (0.205) | | (0.204) |
| Ldebt_to_assets | | -0.257*** | | -0.271*** |
| | | (0.093) | | (0.092) |
| Log_of_assets | | 0.001 | | 0 |
| | | (0.006) | | (0.006) |
| Market to book | | 0.004 | | 0.002 |
| | | (0.007) | | (0.007) |
| Sales_to_assets | | -0.088*** | | -0.09*** |
| | | (0.03) | | (0.03) |
| Sales_growth | | -0.002 | | -0.003 |
| | | (0.021) | | (0.021) |
| Acquirer_judicial_eff0. | | -0.006*** | | -0.005*** |
| | | (0.001) | | (0.001) |
| Acquirer_tax_burden | | -0.009*** | | -0.009*** |
| | | (0.002) | | (0.002) |
| Acquirer_GDP_growth | | 0.011** | | 0.011** |
| | | (0.005) | | (0.005) |
| Acquirer_inflation | | -0.03** | | -0.026** |
| | | (0.012) | | (0.012) |
| Acquirer_trade_freedom | | 0.006* | | 0.003 |
| | | (0.003) | | (0.003) |
| Acquirer_investment | | 0.002* | | 0.003** |
| | | (0.001) | | (0.001) |
| Constant | 0.25*** | 0.856** | 0.218*** | 1.079*** |
| | (0.02) | (0.335) | (0.029) | (0.325) |
| Observations | 1077 | 966 | 1091 | 980 |
| R-squared | 0.003 | 0.079 | 0 | 0.077 |

This table reports regression estimates of the relationship between the targets' best and worst in class pre-M&A ESG with post-M&A excessive risk-taking (country-adjusted), further including control variables. Variables are described in **Table 1**. Financial variables are winsorized at the 1% and the 99% levels. Standard errors are reported in brackets below the coefficients. ***, **, and * denote significance at the 1%, the 5%, and the 10% levels respectively.

Table 10(A) reports the impact of the acquirers' pre-M&A best and worst-in-class ESG on the corporate post-M&A excessive risk-taking. Regression results show that the relationship between the acquirers' best-in-class ESG rating score and the corporate post-M&A excessive risk-taking is negative and significant at a 5% level at the coefficient of -0.02 (see model 1). This means a one-point increase in the acquirers' pre-M&A ESG best-in-class score is associated with a decrease of 0.02 in the firm's earnings ratio standard deviation in the following years (post-M&A). Also, regression results show that the relationship between the acquiring firms' pre-M&A worst-in-class ESG with the post-M&A excessive risk-taking is positive, but not significant. This means the acquirers' pre-M&A worst-in-class ESG does not significantly encourage excessive risk-taking. In **Table 10(B)**, we repeat regression with the targets' best and worst in-class ESG, and the results remain unchanged. In sum, a stronger ESG performance is associated with smaller deviations from post-M&A risk-taking level.

5. Conclusion

This paper examines the relationship between ESG scores and deviations from the optimum risk-taking in the M&A framework. Using two risk-taking measures and a sample of 10,647 transactions occurring between 1991 and 2020 in public firms worldwide, we find that a stronger ESG performance is associated with smaller deviations from optimal risk-taking levels. We establish a negative relationship between both the acquirers' and the targets' ESG with deviations from the optimum risk-taking. Our results confirm that ESG has a positive impact on corporate risk-taking if the deviations remain far below the mean. In other words, the ESG encourages risk-taking for firms with excessive risk avoidance. This emphasizes that the ESG encourages these firms' risk level to increase towards the average risk level, which is the optimum risk. However, for the firms with excessive risk-taking (far above the mean), we find a negative relationship with ESG. This means the ESG reduces deviations far above the mean toward the optimum risk.

As firms, investors, and shareholders are becoming increasingly conscious of social and environmental factors, evaluating M&A investment opportunities through an ESG lens is critical. For the foreseeable future, ESG-assessed M&A will be an important tool to generate growth and provide firms with a competitive edge, as it curbs both excessive risk avoidance and excessive risk-taking. This suggests by taking a holistic approach to risk management that incorporates ESG factors, firms can make more informed decisions about their operations and investments, which can help to achieve an optimum risk-taking level. Additionally, by prioritizing ESG considerations, companies can build trust with stakeholders, including investors, customers, and employees, which can enhance their long-term sustainability, profitability, and growth. In sum, firms that take the initiative and that embrace ESG in M&A will be better positioned to achieve sustainable growth and adapt their risk-taking levels to constantly evolving expectations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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