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**Transaction Premiums,
Managerial Overconfidence
and Social Responsibility**

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Title Transaction premiums, managerial overconfidence and social responsibility	
<p>Purpose</p> <p>This paper investigates the relationship between transaction premiums paid within M&A and the managerial overconfidence of the acquiring companies. As an additional dimension, the effect of the acquiring firm's commitment to social responsibility on its overconfidence within an M&A setting is examined. Besides the dyadic relation of deal premiums and managerial overconfidence, the objective is thus also to explore how a premium might be affected by the interaction of the acquirer's overconfidence and its engagement in promoting the social good.</p> <p>Theoretical perspectives</p> <p>As high uncertainty investments, mergers and acquisitions have been argued to leave more room for psychological factors to affect the decision-making process. As an example of such a behavioural trait, overconfidence may cause unreasoned distortion, e.g., through the overestimation of benefits or underestimating risks related to a deal. Managers with such biases may thus engage in unfavourable and over-acquisitive acquisition behaviour, e.g., by paying larger transaction premiums due to this irrational motivation. As socially responsible managers are considered to emphasise more the interests of their various stakeholders, they may be considered to dissociate more from such overconfident, irrational and even value-destroying behaviour. Hence, the more responsible the firm is, the less likely it is to pay large premiums.</p> <p>Methodology</p> <p>The paper's dataset is cross-sectional. Thus, pooled ordinary least square was selected as the econometric method to investigate the relationship between transaction premiums, overconfidence and social responsibility. Four regression models were introduced to test the hypotheses of this paper. The first two examined CEO overconfidence and how it impacts transaction premiums. The third model investigated the relationship between ESG performance and transaction premiums. Lastly, interaction terms were introduced in the fourth regression model to capture the moderating effect of ESG performance on overconfidence and premiums.</p> <p>Empirical foundation</p> <p>The paper's sample consists of 529 completed M&A transactions in the U.S. during 2010-2019. Thomson Reuters Eikon, Thomson Reuters ASSET4, and Thomson Reuters Datastream were the three primary databases used for data collection regarding the deals and the involved CEOs.</p> <p>Conclusions</p> <p>According to the investigated sample of 529 M&A transactions carried out by U.S. companies, the relationship between transaction premiums paid and the managerial overconfidence of the acquiring companies is positive. In other words, overconfident CEOs generally pay more premiums than their non-overconfident equals. When it comes to the potential moderating effect of the acquirer's social responsibility commitment, such an engagement does not seem to moderate the psychological bias and the premiums within the sample deals and acquirers.</p>	
Keywords M&A, transaction premium, managerial overconfidence, social responsibility, ESG	

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1 INTRODUCTION

1.1 Background

In 1970, Nobel Prize winner Milton Friedman stated that the only social responsibility of a company is to create wealth for its owners, and any activity undertaken for this purpose should have no external obligations. He argues that there is no economic justification or financial benefit to moving resources from the core activities into promoting, e.g., the sustainability aspects of the business, which were the kind of initiatives he deemed merely as an inefficient allocation of shareholders' money. However, according to the stakeholder view presented by Professor Robert Freeman in 1984, these types of investments into social good do not rule out the potential financial benefits for a company and its ownership base. It has even been proposed that the shareholder value enhancement requires a company to consider the interests of its various stakeholders, which is the kind of orientation that will eventually lead to increased wealth creation for the owners (Branco & Rodrigues, 2006; Jensen, 2002). It is a mindset that has, therefore, challenged Friedman's (1970) shareholder expense view by acknowledging the wealth increasing potential of the social and external considerations (e.g., Porter & Kramer, 2006). One particular context where the company's social responsibility stance plays a growing role today within finance is the field of mergers and acquisitions (Gomes & Marsat, 2018).

Companies acquiring other firms within corporate M&A end up occasionally paying more for the target companies than their actual market values would suggest (e.g., Gomes & Marsat, 2018). This type of premium is defined as the difference in the price paid per target company's share lower the price prior to the deal announcement. For example, if the bid price per share is \$40 and the market value prior to the deal announcement is \$36, the offered premium is \$4. Such a premium may be seen as a statement for the unrealised value that the acquirer believes it can extract from the target company. Hence, the current valuation does not necessarily reflect the actual market value of the target. (Hayward & Hambrick, 1997.) Transaction premiums are also seen as compensation for attributes that cannot necessarily be observed by assessing the financials of the company, but that are worthy enough to pursue via acquisition (Pan, Liu & Wang, 2019; Simonyan, 2014; Varaiya, 1987). These features may be, despite their potential role as sources of competitive advantage (Wernerfelt, 1984), troublesome to value due to their, among other things, intangible nature (Frynas & Yamahaki, 2016; Gomes & Marsat, 2018).

An aspect observed to affect transaction premiums in M&A settings, and which is gaining increasing attention in today's discussion, is the social responsibility orientation of an acquiring company. In other words, the companies' commitments to promoting social good may affect the transaction premiums they pay. (e.g., Frynas & Yamahaki, 2016; Krishnamurti, Shams, Pensiero & Velayutham, 2018.) Firms' activities regarding such considerations are commonly referred to as corporate social responsibility (CSR) (Deng, Kang & Low, 2013; Frynas & Yamahaki, 2016; Gomes & Marsat, 2018). McWilliams and Siegel (2001) define CSR as activities that contribute to social good beyond the company's business interests yet through its operations. The concept of CSR is a more discretionary and unregulated form of information sharing, and it is based on the disclosure about how a company impacts its various stakeholders while operating. A similar and well-established indicator for this type of engagement is the environmental, social, and governance concept (ESG), which covers similar aspects as CSR. Although CSR's effect on the transaction premiums paid has been well explored in the M&A literature, ESG has not received as much attention. However, and just like CSR, it does indicate how the company's activities impact the society around it. (Fatemi, Glaum & Kaiser, 2018.)

Another factor affecting transaction premiums within M&A is the managerial overconfidence among corporate executives. When looking at this psychological trait from the acquiring company's perspective, overconfidence has been observed when the managers and decision-makers overestimate their judgment and reasoning abilities while contemplating why, whether, and how to pursue an acquisition. (e.g., Hayward & Hambrick, 1997; Roll, 1986.) More generally, individuals are observed to act overconfidently regarding outcomes they commit themselves to and which they believe they can control (Langer, 1975; Nofsinger, 2005; Weinstein, 1980). For instance, the Chief Executive Officer (CEO) of a company may inflate the realisable synergies of a deal due to his or her overconfidence, which can result in irrationally reasoned over-acquisitiveness and over-payment (e.g., Jiang, Zhang & Lu, 2009). Managers are also being observed to neglect the risks related to M&A deals, which is also a common sign of managerial overconfidence (Heaton, 2002; March & Shapira, 1987). Such a bias in the M&A decision-making may provide irrational motivation for acquisitions, acquisitiveness and transaction premiums (Pan et al., 2019). Despite the vast amount of research, there is no consensus about measuring overconfidence in corporate finance. Instead, many authors have constructed different proxies to account for this cognitive phenomenon.

1.2 Purpose

This paper investigates the relationship between the transaction premiums paid within mergers and acquisition and the managerial overconfidence of the acquiring companies. As an additional dimension, the effect of the acquirer's commitment to social responsibility on its overconfidence within M&A is examined. Moreover, and besides the dyadic relationship between deal premiums and managerial overconfidence, the objective is thus also to investigate how a premium might be affected by the interaction of the overconfidence within the acquirer and its commitment to promoting social good. In other words, the intention is to explore how such an engagement might moderate the psychological bias affecting the acquisition behaviour.

For each of the three aspects of this paper, current literature provides a vast amount of research. However, no previous study has examined the relationship between transaction premiums and managerial overconfidence of the acquiring firms, when also accounting for the effect of their social responsibility. The lack of research investigating the prospective impact of social considerations on managerial overconfidence within M&A presents this study as an insightful application when also considering the growing attention for social responsibility in finance. Whereas the existing research has focused more on the characteristics of the target companies when examining the role of social responsibility in M&A, this paper shifts the focus to the acquiring firms. The paper aims to contribute to the related discussion by clarifying the factors influencing the transaction premiums paid and exploring further the effects of managerial overconfidence and social responsibility on M&A behaviour. Whereas the social responsibility commitments have been mostly indicated by the CSR ratings in the previous studies, this paper approaches those considerations and engagement through the concept of ESG ratings.

1.3 Findings

After investigating the sample of 529 M&A transactions carried out in the United States between the years 2010 and 2019 and the involved CEOs, the empirical testing results present a statistically significant and positive relationship between the transaction premiums paid and the managerial overconfidence of the CEOs. It can be interpreted so that the more overconfident managers, in this case, the acquiring CEOs, pay larger transaction premiums within their companies' M&A activity than their non-overconfident equals. In other words, the

more overconfident the manager is, the larger the transaction premium gets generally paid. Besides aligning the first hypothesis of the paper, this finding agrees with results from the majority of earlier and similar studies regarding the dyadic relationship. However, whereas many researchers have been investigating this particular relationship in the Chinese M&A market, this has its focus strictly on acquisitions carried out by U.S. companies. Hence, the paper's findings regarding the relationship between the transaction premiums and the managerial overconfidence contribute to the existing literature by strengthening the perception about the effect of such a psychological bias on deal premiums. Also, by detecting overconfidence through the CEOs' demographic characteristics instead of, e.g., the more common method of managers' stock option activities, the study points out that despite how such a behavioural trait seems to be accounted for, the results will likely point out a positive relationship between deal premiums and overconfidence among the managers.

According to the paper's empirical results regarding the different demographic characteristics used in order to detect managerial overconfidence among the sample CEOs, the educational background of an executive poses as statistically significant. In other words, CEOs with more extensive educational backgrounds pay more transaction premiums than their less-educated colleagues. It can be explained by the idea that much more profoundly educated individuals and decision-makers trust their judgement abilities more strongly, and thus engage more in paying deal premiums within the M&A transactions targeted at the firms that they desire.

Regarding the other dimension of the paper, the effect of the acquiring company's social responsibility commitment on its overconfidence within M&A and the related transaction premiums, the hypotheses were that such an engagement associates negatively with premiums and that it weakens the positive and undesired relationship between managerial overconfidence within the sample CEOs and transaction premiums paid. However, instead of detecting such a constraining effect and moderation against overconfidence and transaction premiums among the observations within the sample, the impact of such consideration turned out to be positive, although statistically insignificant. In other words, and regarding the sample of 529 transactions conducted by U.S. companies and their CEOs during 2010-2019, the engagement into social responsibility did not turn out to make a difference in the propensity of paying deal premiums.

1.4 Limitations

When considering the scope and time restriction of this paper, some limitations must be considered. First of all, the sample of this paper consists of M&A transactions carried out by acquirers from one country, the United States. In other words, this paper uses one country as a representative of the global M&A market. The broader inclusion of other acquirers could have potentially given more insight into differences between different countries and may have thus increased the generalisation of the results. The second limitation is the measurement of CEO overconfidence. Several different ways to measure CEO overconfidence has been introduced in previous studies. The chosen method to measure such a psychological phenomenon and bias in this paper was the examination of the demographic characteristics of the sample CEOs. The inclusion of more several measurement methods of CEO overconfidence would add to the reliability of the results. Additionally, it would enable comparative examination and analysis between different measurement methods.

1.5 Structure

This paper is structured as follows. In Section 2, a sample of prior literature regarding the key factors of the study (transaction premiums, managerial overconfidence and corporate social responsibility) and their relationships is reviewed. Section 3 binds the primary notions of the related literature together as a theoretical background and derives the examined hypotheses. The observed sample, chosen variables and used methods of the study are introduced within the methodology part in Section 4, and the results of the empirical testing conducted are presented and reviewed in Section 5. Section 6 discusses the findings, and Section 7 concludes the paper. The tables and graphs referred to in the text are presented at the end of the paper.

2 LITERATURE REVIEW

2.1 Corporate Investment and Managerial Overconfidence

The key relationships of this paper are those between transaction premiums and managerial overconfidence, transaction premiums and social responsibility, and managerial overconfidence and social responsibility. In order to enlighten the factors behind premiums within mergers and acquisitions, the related aspect of corporate investing is assessed to provide an understanding of how it might affect the setting. Corporate investment activity implies to the habits of a company to execute and carry out its investment initiatives. In other words, companies have their rules, tendency and reasoning in undertaking investments where their resources are used. (e.g., Morellec & Schürhoff, 2011.) Examples of this kind of investment decisions are the corporate mergers and acquisitions, where the party representing the buyer's side in the deal is contemplating on whether to invest a high number of capital resources on acquiring another business operator. This corporate investing activity and the derived acquiring behavior of a company within M&A tend to be exposed to managerial overconfidence and affect the transaction premiums paid (Malmendier & Tate, 2005; Malmendier & Tate, 2008).

John Heaton (2002) was among the first authors who investigated the behavioural aspect of managerial overconfidence among company executives against the corporate investment decision-making in the field of corporate finance. His findings have provided the basis for many researchers ever since. In his study, Heaton considered managers as overconfident in the case of systematic overestimation of upsides and underestimation of potential downsides when undertaking corporate investments. He noted that the anomaly and upward distortion from the company's general investment policy might result from the overconfident managers overestimating their abilities to scout, reason, and justify investment initiatives. In other words, company executives contemplating when, why and whether to engage in corporate investments can be excessively optimistic regarding the basis, potential outcomes, and controllable factors. He concluded that managerial overconfidence and excessive optimism among company executives might cause systematic overvaluation of upside or undervaluation of downside regarding potential investments. This type of cognitive error and irrationality might, in turn, lead to company managers and other decision-makers undertaking more than optimal amounts of investments and investing too few capital resources due to their upward biased reasoning.

Building on the work of Heaton (2002), Malmendier and Tate (2005) also investigated the impact of overconfidence within company management on its corporate investment activities. The authors' focus was on the personal characteristics of the corporate decision-makers, and the assumption was that the trait of overconfidence in the case of large company executives led to an upward deviation from the companies' general investment policies. In other words, they assumed the overconfident managers to have more optimistic and ambitious projections regarding the future returns of the corporate investments undertaken with the company resources. The assumption laid on the psychological notion of Miller and Ross (1975), who defined people as actors who always expect their decisions and actions to result in success. In case of failure, the results were to be attributed to bad luck. For their study, Malmendier and Tate examined 477 Forbes 500 CEOs and their companies during 1980-1994 to find out the nature of the prospective relationship. A CEO was classified as overconfident if he or she kept on sticking with the company-related stock options until their expiration despite them being deep-in-the-money. Hence, the personal portfolios of the company executives were explored.

As a result of their empirical examination, Malmendier and Tate (2005) concluded that there was a significant and positive relationship between the sensitivity of corporate investment propensity to cash flow and managerial overconfidence. In other words, and as the authors predicted, overconfident managers ended up allocating more resources in corporate investments when they had more capital in hand to spend. The findings pointed out that in order to reduce the excessive and somewhat irrational investing relative to the general policy with company resources, managers need to be steered into engaging in the first-best options when it comes to investments. It could be pursued, for example, via tailored contracting practices, because the options held by the CEOs were not seen to reduce the value-destroying propensity of managerial overconfidence. When given the opening, overconfident managers may end up in excessive and irrational investment activity resulting in destroying the shareholders' wealth.

Three years later, Malmendier and Tate (2008) conducted another study to widen the perception of behavioural finance in the context of corporate investments and mergers and acquisitions. They were set to build on the foundation and notions of their earlier work (Malmendier & Tate, 2005) and to present additional evidence on the positive correlation of managerial overconfidence and upward deviation from general corporate investment guidelines resulting from this particular irrationality in M&A settings. This time, and instead of focusing exclusively on the personal characteristics and actions of the company executives

when measuring for managerial overconfidence, an alternative proxy was engineered to include the perceptions of people outside the companies. Following this media-based approach, corporate managers were classified as overconfident if the external actors perceived them as such through perception and image via the press portrayal among publications such as The New York Times, Financial Times, and The Economist. The projection was that the CEOs who were externally perceived as overconfident, over-optimistic, and over-ambitious would engage continually in upward distorting corporate investment activity relative to the company habits. Such activity would also be much greater when compared to the non-overconfident CEOs. The hypothesis of Malmendier and Tate (2008) aligned with the one from 2005, although this time, the overconfidence was accounted differently than through CEO actions and behaviour.

As a sample for their study, Malmendier and Tate (2008) used a group of 394 large and publicly traded U.S. companies between 1980 and 1994. The information regarding the executives' personal investment decisions, i.e., the stock and option holdings tied to their companies, was used to detect overconfidence, just like in the earlier work. If a CEO was seen as a "long holder" and not executing the deep-in-the-money options, he or she was classified as overconfident due to the revealed beliefs. (Hall & Murphy, 2002; Malmendier & Tate, 2005.) As an additional dimension, the aforementioned media-based proxy for overconfidence was introduced. The evidence of managerial overconfidence emerging from these two engineered approaches was tested against their companies' acquisition behaviour. However, the authors acknowledged that high overconfidence might not exclusively result in a higher number of acquisitions. Whereas overconfident CEOs with a strong reserve and solid flow of internal capital resources were projected to acquire more, the overconfident executives with less internal capital available would pass on potential M&A initiatives while being reluctant to raise external funds. Due to their strong and irrational beliefs about the prospects of their companies, overconfident managers may to consider actors such as financial institutions to undervalue their firms, and thus external capital would not be raised to engage in some mergers and acquisitions activities.

As a result, Malmendier and Tate (2008) pointed out that managers perceived as overconfident based on both of the proxies did end up undertaking corporate investment initiatives in an upward distorting manner. The findings were in line with the ones from their earlier study (Malmendier & Tate, 2005), although now the qualification for being classified as overconfident was multidimensional. For example, and on average, a manager with a tendency of late option exercising (i.e., high overconfidence) was seen to make a minimum of one

acquisition 65 per cent more likely than a non-overconfident manager a year. However, this type of causality is not unambiguous due to the factor of financial constraints for undertaking significant investments such as mergers and acquisitions. Additionally, overconfident CEOs were more likely to get engaged in value-destroying transactions when undertaking investments. As the primary notion of their study, the authors concluded that CEOs with strong overconfidence are unconditionally more active when undertaking mergers and acquisitions.

2.2 Transaction Premium and Managerial Overconfidence

Hayward and Hambrick (1997) were interested in the reasoning behind corporate acquirers still paying high transaction premiums even though the recent years and M&A transactions pointed out that high premiums tended to lead to financial trouble and value transfer for the benefit of the target companies' shareholders (Jensen, 1984). The authors intended to find out if and how the potential overestimation of decision-making capabilities among the corporate executives and managers responsible for the acquisition activity played a role in the occurring of deal premiums. The assumption about the high probability of overconfident managers to pay more significant acquisition premiums was based on the hubris hypothesis of Richard Roll (1986), who stated that the corporate transactions often take place due to overconfident acquiring managers overestimating their abilities to extract unrealised value from the target companies. This type of overconfidence might, in turn, lead to increased acquisitiveness and overpayment. In other words, Hayward and Hambrick (1997) examined the role of executive hubris to explain the large premiums paid in the field of corporate mergers and acquisitions. By that time, the hubris motive in this particular context had been relatively neglected by the researchers in the fields of finance and management regarding the acquiring managers.

In their research, Hayward and Hambrick (1997) investigated a sample of 106 corporate acquisitions conducted by U.S. companies with a deal value of over 100 million U.S. dollars between 1989 and 1992. When it comes to the decision-makers involved in the examined transactions as acquirers and the factors indicating their potential overconfidence, the chief executive officers of the acquiring companies and their characteristics were observed. As sources of CEO overconfidence, i.e., the hubris, and as the explanatory variables for the acquisition premiums, the authors included the organisational success of the recent years, media praise for the company CEO and their self-importance. The managerial hubris resulting

from these aspects was predicted to lead to higher acquisition premiums. Therefore, the authors hypothesised that each of these factors would result in a larger premium when high.

As a result, Hayward and Hambrick (1997) concluded that each of the three explanatory variables correlated positively with the acquisition premiums. In other words, CEO overconfidence, when measured with those particular parameters, resulted in higher deal premiums. Aligned with Roll's (1986) notions, the human characteristics of managers did seem to affect M&A settings and the decision of how much to bid when accounting for manager hubris as a result of the three variables. As the authors had assumed, the findings suggested that with managerial overconfidence, the CEOs could fall into believing that they can extract more and undiscovered benefits from the targets, and this may lead to higher premiums paid. Also, and as a potential behavioural scenario for over acquisitiveness, Hayward and Hambrick (1997) presented a scenario where an overconfident manager pursues an acquisition intensively to grow his or her company to a point which could lead to personal benefits such as Forbes 500 listing. Hence, and when determined, he or she is ready to overpay in order to reach the deal.

Liu and Chen (2017) pursued to shed light on the relation of transaction premiums and potential overconfidence within the managers of the acquiring companies. As an additional dimension, the factor of the political connection of the buyer was included, which impact on the overconfidence among the decision-makers in an M&A setting was examined. I.e., and besides studying the relationship of premiums and overconfidence, the objective was to find out if the political ties affected the overconfidence and behaviour of corporate executives when acquiring other operators. This study was partly built on the notion that many Chinese enterprises were seen to fall into financial insolvency after paying substantial deal premiums. The sample consisted of 419 deals within Chinese companies during 2007-2014, and the factor of political connection was argued as relevant due to a high number of government-owned companies in the market. As a basis for the behavioural aspect of the study, the overconfidence hypothesis of Roll (1986) was presented because although the managers may acknowledge their value-destroying acquiring behaviour, they still may end up undertaking the initiatives. The authors hypothesised that the overconfidence would have a positive relationship with the acquisition premiums paid, and the impact of political connection was to moderate that relation negatively.

As a result of their empirical testing, Liu and Chen (2017) concluded that the acquisition premiums paid among the sample companies were highly associated with their managerial

overconfidence. In other words, and as hypothesised, high overconfidence was found to lead to significant acquisition premiums. When it comes to the moderating effect of political connections, the results indicated that the political connection as a factor would weaken the positive correlation of managerial overconfidence and acquisition premiums. Liu and Chen (2017) analysed that instead of political connection having a direct impact on the premiums, it was seen to play an indirect role by decreasing the overconfidence and irrationality among the managers. Furthermore, political connections could provide the kind of knowledge or rationality for the company executives in the M&A settings that cannot be ignored on purpose no matter how overconfident or committed the decision-maker is to his or her reasoning. In other words, this type of information might, according to the authors' analysis, steer the buying behaviour and habits to a more value-creating direction as an efficient governance mechanism.

Pan, Liu and Wang (2019) also investigated managerial overconfidence and the deal premiums paid within corporate mergers and acquisitions. They departed from the work of Liu and Chen (2017) by replacing the moderating factor of political connection with corporate debt capacity. Their research focused on the internal relation of acquisition premiums and managerial overconfidence in China when accounting for the moderating effect of debt capacity. Debt capacity was defined as the maximum amount of money the external creditors are ready to lend for the company, and thus the maximum amount of debt financing it can obtain (Turnbull, 2012). The logic of including debt capacity as an additional dimension was that it was considered to reflect financial constraints and, consequently, the ability of a company to pay higher transaction premiums. Pan et al. (2019) projected overconfidence to be positively correlated with M&A premiums in the Chinese market, i.e., high overconfidence among companies leads to high premiums paid. Regarding the effect of corporate debt capacity, the sub-hypothesis was that it would strengthen the aforementioned relation when higher. In other words, when the overconfident managers are highly motivated to pay for the target companies and have strong payment ability through larger debt capacity, the effect poses as strengthening.

The sample of Pan et al. (2019) consisted of 1625 M&A transactions. From the decision-making executives involved in these particular deals, 317 (19.5 per cent) were classified as overconfident. As the parameters for overconfidence within the sample executives, the authors used five demographic characteristics: gender, age, education level, professional background, and potential simultaneous positions within a firm. These factors were considered as a proxy for the psychological characteristics that are valued as the essential determinants for managerial

overconfidence (Yu, Xia & Zou, 2013). When the sum of these variables reached a value of four, the manager was considered as overconfident and assigned a dummy variable of one.

Pan et al. (2019) concluded that the deal premiums paid by companies with high managerial overconfidence were more substantial than those paid by enterprises with non-overconfident executives. As the main explanation for this finding, the authors presented the argument about overconfidence steering the managers into overestimating the potential benefits and synergies of acquisitions and underestimating the emerging risks, which, as a bias, would result in increased acquisitiveness and higher premiums. Regarding the moderating effect of debt capacity, it was noted that it did significantly strengthen the positive relationship between managerial overconfidence and acquisition premiums paid. In other words, larger debt capacity supported the company's premium paying ability through the more potent supply of usable funds. Considering the results of the study by Malmendier and Tate (2008) regarding the relationship of managerial overconfidence and corporate investing, this finding of the effect of debt capacity appeared as rather contradicting. Whereas Pan et al. (2019) presented this access to external funds as means for increased acquisitiveness, Malmendier and Tate (2008) noted that the lack of sufficient internal capital resources tamed the irrational ambition to acquire.

2.3 Transaction Premium and Social Responsibility

In their research, Deng, Kang and Low (2013) examined the nature of the impact the socially and environmentally responsible orientation of an acquiring company might have on the characteristics of its corporate transaction deals. The objective was to investigate how the acquirer's pre-acquisition consciousness, responsibility and engagement into promoting social good affected value creation for its shareholders along the lifecycle of a deal, e.g., via transaction premiums. The various social and environmental commitments and businesses' effects on the communities around them were explicitly examined in the context of mergers and acquisitions due to being a field in which the deals are of those magnitudes that have significant impacts on the owners' wealth (Harford, Humphery-Jenner & Powell, 2012).

The study of Deng et al. (2013) consisted of a sample of 1556 corporate acquisitions in the United States during 1992-2007. The sample was tailored so that every acquiring company included had established a CSR rating to illustrate the level of its social and environmental

commitments and orientation. The results were in line with the stakeholder value maximisation view (Freeman, 1984) as opposed to the shareholder expense view presented by Milton Friedman (1970). As a support for the stakeholder value maximisation view, the authors concluded that the more a company considers the various stakeholders it is associated with and the social and environmental influence of its business operations, the more likely it was for it to get engaged in value-creating investments and rational buying behaviour. In other words, pursuing acquisitions intensively, e.g., through overinvesting and paying significant acquisition premiums, was not considered as common among responsible corporate acquirers.

Krishnamurti, Shams, Pensiero and Velayutham (2018) investigated the level of transaction premiums paid by socially and environmentally committed companies when getting engaged in corporate M&A. The authors predicted that the more environmental and social-oriented the firm is, the less likely it was for it to participate in value-destroying investment initiatives. Socially responsible companies were expected to allocate their capital resources more efficiently and responsibly by avoiding high deal premiums and irrational overpayment when acquiring because transaction premiums and overpayment are considered as one of the most significant sources of value destruction in corporate finance (e.g., Harford et al., 2012). Hence, the objective was to examine the relation of deal premiums and the firm's social orientation. In order to do this, Krishnamurti et al. (2018) examined a sample of 776 Australian companies which they declared as comparable to U.S. ones due to the similarities regarding corporate governance. Regarding the social orientation, corporate social responsibility (CSR) was used as the corresponding indicator: The higher the CSR rating was for a firm, the more conscious it was expected to be with its acquisition behaviour and value destruction avoidance.

The acquisition premiums among the M&A activity of the 776 companies observed by Krishnamurti et al. (2018) revealed a significant and negative relationship between the premiums paid and the social responsibility orientations of the acquiring companies. In other words, more responsible companies tended to pay lower transaction premiums, thus having a lower probability of overpayment. The findings were aligned with the authors' predictions because the socially responsible sample companies appeared to be more considerable and rational when allocating resources to acquisition initiatives. It was noted that such responsible buyers had a lower level of acquisitiveness and thus less propensity to compromise shareholder value, e.g., by paying high deal premiums. The authors concluded that the managers of companies with high social orientation have more concern and commitment to shareholder

wealth maximization. Besides the transaction premium aspect, and just like Jiao (2010) had also pointed out, the more general notion rising from the study was that a stronger social orientation might indeed increase shareholder wealth by preventing the decision-makers from engaging in more risky investments. I.e., the ambitions of responsible managers were to be better aligned with their shareholders.

2.4 Managerial Overconfidence and Social Responsibility

McCarthy, Oliver and Song (2015) investigated the relationship between the company's socially responsible orientation and its potential managerial overconfidence. In their study, social considerations were indicated via corporate social responsibility (CSR). As a foundation for the research, the authors viewed the responsible and socially considerate yet business-oriented activities as a form of corporate hedging. According to Godfrey, Merrill and Hansen (2009), social responsibility could be seen as a hedging tool because when a company implements such considerations, it might appear as a more responsible operator by concerning the impact of its actions on social good and broader stakeholder interest. This perception among stakeholders is expected to lead to a more positive image, attribution and even financial capital. Hence, the corporate social responsibility stance can be seen as a prospective tool for the firm's risk management strategy, which, as a more subtle form of hedging, channels through the creation of goodwill. In the case of a company facing an adverse event impacting its operations, CSR acts as a sort of buffer which mitigates the downside effect of the event through a reserve of "earned" moral capital. E.g., in a case of product recall due to a defect, a company with a higher CSR activity and derived moral capital has been examined to suffer relatively less value reduction compared to a one with lower levels of CSR commitments (Minor & Morgan, 2011).

Considering corporate social responsibility commitment as a hedging tool, McCarthy et al. (2015) projected a negative relationship between managerial overconfidence and higher CSR orientation. In other words, the more overconfident the manager, the less will there be for hedging, and thus little CSR activity gets undertaken. When testing for the hypothesis, an overall CSR rating of a company was examined against the level of overconfidence of the CEO of the company. The proxy for managerial overconfidence was derived from the CEO's faith in the company's future via his or her option exercise behaviour. Whereas a rational manager is considered to execute his or her stock options when both deep-in-the-money and as soon as given the opportunity (Hall & Murphy, 2002), the overconfident CEOs were projected to be

reluctant to act so due to their overoptimistic future predictions (Malmendier & Tate, 2005). The study sample consisted of 15 379 firm-year observations with 2138 firms and 3478 CEOs.

As a result of their empirical testing, McCarthy et al. (2015) noted that managerial overconfidence within a company had a negative relation with its level of corporate social responsibility engagement. When considering CSR as a hedging tool, this finding aligned with the hypothesis about overconfident managers avoiding hedging activities, e.g., due to their over-optimistic views regarding their companies' economic prospects. According to the findings, there was no evidence to support a positive relationship between the overall CSR rating and executive overconfidence. From the agency problem point of view, the results presented the following implication: Whereas overconfident managers might overestimate the predictions regarding financial success and undervalue the related risks, they may end up passing on the CSR activities that could mitigate the potential negative effects on the company value in case of future adversity (Minor & Morgan, 2002).

Park, Byun and Choi (2019) also dived into the relationship of managerial overconfidence among company CEOs and the corporate social responsibility activities undertaken by their firms. They intended to investigate the largely unknown impact of executive overconfidence on the decision-making regarding the company's CSR commitments in the United States. In line with the projections of McCarthy et al. (2015), the authors assumed the overconfident managers to more likely to ignore the potential benefits of CSR considerations and instead emphasise their business managing capabilities. Hence, this type of stance was seen to lead to less social and environmental considerate initiatives undertaken by overconfident managers. According to the mindset, allocating resources into CSR activities is needless due to the self-sufficient and optimistic expectations for the future derived from the manager's faith in oneself. As an additional dimension, the factor of financial constraints was introduced with a logic that when CSR activities require financial resources, not all operators would be equally intense to make such commitments. Prior research from Chan, Chou and Lo (2017) and Zhao and Xiao (2019) had pointed out that companies' CSR activity correlated negatively with such constraints and that the financially troubled firms did not engage as much in those activities even when acknowledging the possible value increase the activity could potentially generate.

The sample of Park et al. (2019) consisted of 19 367 observations within publicly traded U.S. companies between 1994 and 2016. As an indicator of managerial overconfidence among the

CEOs of the sample companies, the textual analysis developed by Loughran and McDonald (2015) was used. This approach measures the tone within the expressed content in public disclosure, e.g., a profit announcement. The developers had constructed a specific vocabulary that would indicate overconfidence within the personnel composing the documents. Hence, and while these documents were usually put up by the management, Park et al. (2019) used this method and investigation of the wordings and content to gather evidence and indicators for overconfidence. In other words, documents with over-optimistic and praising vocabulary, language and tone were used as instances of managerial overconfidence. The overall CSR orientation of a firm was constructed by gathering the different dimensions of CSR from an external rating agency and then applied to an average ratings. As the primary hypothesis, the authors projected that firms with overconfident CEOs have fewer CSR activities compared to the less overconfident ones. Hence, the company's CSR rating was the dependent variable.

The empirical analysis of Park et al. (2019) pointed out that CEO overconfidence was significantly and negatively related to CSR activities within the sample companies. In other words, and in the case of textual analysis, the less overconfident managers were more engaged in CSR activity. Moreover, the companies with overconfident managers were examined to have 33 to 40 per cent lower overall CSR rating than their non-overconfident counterparts. Despite having no derived findings to explain why overconfident CEOs take on fewer CSR initiatives, the authors stuck with the idea of managerial reluctance to spend resources on such costly activities when being confident in one's actions. However, when it comes to the additional dimension of financial constraints, the testing showed a positive relation between financially constrained firms and their CSR activities. Additionally, investing in these activities when constrained were seen to correlate positively with the company's long-term performance, which could mean that non-overconfident CEOs evaluate the effect of CSR more accurately.

Gul, Krishnamurti, Shams and Chowdhury (2020) explored whether and how a company's social and environmental orientation and commitments were associated with its tendency for empire building in the context of corporate mergers and acquisitions. The term "empire building" refers to the propensity of a corporate manager to pursue to grow his or her business beyond the manageable and optimal size in order to have more assets to govern, which usually gets done through overinvesting of company capital (Jensen, 1986). In other words, the primary objective of the authors was to investigate the nature of the relationship between the managerial

overconfidence channelled and appearing through empire building within the corporate mergers and acquisitions context and the buyer's commitments towards promoting social good.

As an indicator of the social responsibility orientation of the 16 635 U.S. companies in the sample, Gul et al. (2020) exploited the corporate social responsibility ratings. In the same way as Malmendier and Tate (2005 & 2008) had assessed the cognitive factor in their research, the authors accounted for the managerial overconfidence dictating acquisition behaviour by classifying a CEO as overconfident if he or she held a deep-in-the-money stock option for his or her company during the observation period of 1996-2015. They projected that the higher the CSR rating of a company, the less likely it would be for it to engage in irrational and empire-building investment behaviour through corporate mergers and acquisitions. The hypothesis based on the stakeholder value maximisation view where responsible behaviour and consideration towards stakeholders was seen as preferable from the perspective of shareholders and their value creation ambitions (Baron, 2008; Bénabou & Tirole, 2010; Freeman, 1984). In contrast with the shareholder expense view (Friedman, 1970), companies and CEOs with higher levels of corporate social responsibility should be seen to consider external parties and consequences more when undertaking corporate investments. Consequently, they should be seen to avoid overconfident and value-destroying acquisition initiatives as they are seen as one of the most significant sources of shareholder value destruction in the field of corporate finance (Freeman, 1984; Harford et al., 2012; Porter & Kramer, 2006).

As a result, Gul et al. (2020) found the social responsibility commitments of a company and its engagement to enhancing social good through its operations to be significantly associated with its over-acquisitiveness regarding corporate mergers and acquisitions. Furthermore, and aligned with both the authors' predictions and the principles of stakeholder value maximisation view (Freeman, 1984), the sign of the relationship was concluded to be negative. A company with stronger CSR orientation and consciousness was less likely to get involved in irrational and value-destroying acquisition activity due to its accountability and considerations regarding external operators, i.e., the various stakeholders. Additionally, the results of Gul et al. (2020) presented that the company's engagement in socially responsible activity has a positive relationship with firm performance when the CEO is non-overconfident. In other words, the authors concluded that CEO overconfidence interacts with the company's social responsibility orientation by making the company more acquisitive but, on the other hand, less valuable.

3 THEORETICAL BACKGROUND AND HYPOTHESES

3.1 Transaction Premium and Managerial Overconfidence

A fundamental part of approaching corporate mergers and acquisitions from the buyer's point of view is to decide on the bidding price. The acquirer must weigh factors such as the expected financial gains and risks of the transaction as a basis for the bid. Considering corporate M&A as a field of high uncertainty from the investment perspective, psychological and behavioural factors such as overconfidence among the acquiring managers may play a significant role in the decision-making (Chen & Lu, 2013). This type of unreasoned distortion can lead, e.g., to the overestimation of the realisable income and benefits and underestimation of potential risks related to the deal (e.g., Heaton, 2002; March & Shapira, 1987). Due to this irrationality, overconfident managers may deviate from general, reasoned and stakeholder considerate acquisition behaviour and engage in paying unnecessary transaction premiums for the target companies they over-intensively pursue. In other words, they are willing to pay higher premiums resulting from the failure to assess their capabilities to succeed with the desired transaction, cope with the obstacles, project and realise the potential synergies and generate wealth for themselves and the shareholders (Liu & Chen, 2017). A transaction premium can thus be seen as a result of managers overestimating their judgement and reasoning abilities and pursuing a deal through overpayment fuelled by such irrational motivation (Pan et al., 2019).

In addition to the aforementioned context of corporate mergers and acquisitions, overconfident executives may also engage in upward deviating investment behaviour in case of other investment initiatives where the companies' capital resources are exploited. This distorting behaviour and hubris regarding also the more regular investment activity are based on the same psychological aspects as in the case of significant initiatives such as M&A. (Malmendier & Tate, 2005; Malmendier & Tate, 2008; Roll, 1986.) Building on the research regarding the relationship between these more general corporate investments and executive overconfidence and the previously elaborated logic and reasoning behind the relation of transaction premiums and managerial overconfidence within the corporate M&A (Hayward & Hambrick, 1997; Liu & Chen, 2017; Pan et al., 2019), the first of the three hypotheses of this paper is proposed:

H1: Transaction premium correlates positively with managerial overconfidence

3.2 The Effect of Social Responsibility

The main obligation of corporate managers is to generate wealth for the owners. Activities undertaken in daily operations should be value-creating, reasoned and stakeholder considerate. (e.g., Haksever, Chaganti & Cook, 2004.) It is also the main objective of corporate investments, such as mergers and acquisitions, which are identified as one of the most notable instances affecting shareholder wealth (Harford et al., 2012; Jensen, 1986). Against the owners' ambitions about wealth generation, research shows that acquisitions and the related premiums may result in destroying the wealth of the shareholders (e.g., Masulis, Wang & Xie, 2007).

Aligned with Freeman's (1984) stakeholder view, companies with a strong social responsibility stance are considered to get less likely involved in value-destroying activity within M&A. In other words, the higher and irrational acquisitiveness that is common for overconfident managers is not considered as a trait of the more considerate and responsible executives who take into consideration the ambitions of their stakeholders. (e.g., Gul et al., 2020.) When considering such a mindset of accountability and consideration as an indicator of strong social responsibility, managers with higher social commitment are less likely to engage in value-destroying acquisition activity (Deng et al., 2013; Park et al., 2019). Furthermore, acknowledging the reputation of deal premiums as a significant source of value destruction for the acquiring companies' shareholders, the company's high social commitment could be seen as an indicator of the absence of such a behaviour (Harford et al., 2012; Jiao, 2010).

As overconfident managers tend to neglect the aspects of social responsibility and engagement into promoting the social good, an emphasis on such commitments towards the stakeholders should negatively moderate the positive relation of managerial overconfidence and the value-destroying behaviour of the executives (Gul et al., 2020; Park et al., 2019). The more socially responsible the acquiring executive, the more avoided should be the distortion of shareholder wealth via high premiums, and the more should be acted rationally (Krishnamurti et al., 2018). Consequently, the two latter hypotheses for this paper are proposed as follows:

H2: Socially responsible acquiring companies pay less transaction premiums

H3: Social responsibility engagement weakens the relation of transaction premiums and managerial overconfidence

4 METHODOLOGY

4.1 Sample

The sample of this paper consists of corporate mergers and acquisitions conducted between the years 2010 and 2019 in the United States. Due to the scope and time limitations, only transactions carried out by corporate acquirers from the U.S. are included. Considering the general ownership structure and the relative size of the M&A market in the United States, the transactions and their investigated characteristics are seen as a good representation of the total and global population. During the year 2019 alone, a total amount of 17 649 mergers and acquisitions were conducted by U.S. companies, which covered more than 30 per cent of all the M&A transactions worldwide (Institute for Mergers, Acquisitions and Alliances, 2020).

In addition to the acquirer's nationality, several other criteria were introduced to make the examined sample more comparable with previous studies. Firstly, only completed M&A transactions were included because when focusing on transaction premiums paid, there is no use in minding pending or withdrawn deals. Including also other than completed deals would lead to a bias in the dependent variable, as premiums in uncompleted deals can easily change and thus not represent the real premium of the transaction. Secondly, this paper considers only M&A transactions with a deal value above one million U.S. dollars. Thirdly, transactions, after which the acquiring company had less than the majority (50%) ownership of the target, were excluded. Fourthly, companies operating in the financial sector were excluded from the sample according to the common practice (Arouri, Gomes & Pukthuanthong, 2019; Gomes et al., 2018). Lastly, corporate M&A transactions carried out by firms with insufficient financial data, CEO characteristic information, or ESG data were excluded. After these modifications, the final sample consists of 529 completed M&A transactions during the examination period.

The data for this paper was collected mainly through two separate sources, Thomson Reuters Eikon and Thomson Reuters Datastream. Thomson Reuters Eikon database provides information and data on several asset classes worldwide, and its primary use in this paper was to retrieve the M&A transaction list through its advanced M&A search tool. Additionally, Thomson Reuters Eikon provides detailed information about the firms' current and previous CEOs, which were used to construct the overconfidence variable used in this paper. In case of

missing data regarding the CEO characteristics in Thomson Reuters Eikon, company websites, annual reports and other similar statements were used to complete the missing data. The other source, Datastream, was used to retrieve firm-specific information about the acquiring companies, which supplies the paper's control variables. Furthermore, the Datastream ASSET4 ESG database was used to retrieve ESG ratings for the acquiring firms.

4.2 Econometric Method

The data set of this study consists of both cross-sectional and time-series dimensions, as it includes M&A transactions from different years. A data set with both cross-sectional and time-series dimensions can be either a pooled cross-sectional or panel data. As this study does not follow the same operators (acquiring companies) throughout the examined period, the data set is not considered as panel data (Wooldridge, 2012). To examine the relationship between CEO overconfidence, acquiring companies' ESG ratings and the transaction premiums, pooled ordinary least square (POLS) is used. POLS has also been used in related studies by authors such as Gomes et al. (2018) and Krishnamurti et al. (2018), who investigated the relation of transaction premiums and the ESG ratings of target companies.

This study uses four separate regression models, which are used to test the paper's three hypotheses. The first two models are used to investigate the relationship between transaction premiums and CEO overconfidence. In the first model, the explanatory variable is CEO overconfidence, whereas, in the second model, the overconfidence is divided into subcategories to investigate the effect of each component on transaction premiums separately. The third model is used to examine the relationship between acquirer ESG performance and transaction premiums. Finally, the fourth and last model introduces interaction terms to capture the impact of ESG performance on CEO overconfidence and transaction premiums.

The first model of the four regression models is applied to investigate the nature of the stand-alone relationship between a transaction premium and CEO overconfidence:

$$Premium_i = \beta_0 + \beta_1 Overconfidence_i + \sum_{i=1}^n \beta_i Controls_i + \mu_i \quad (1)$$

$Premium_i$ is the transaction premium paid by the acquiring company i , whereas $Overconfidence_i$ is the dummy variable for CEO overconfidence. The construction of the dummy variable is discussed in detail in Section 4.3.2. The coefficient β_1 indicates the sign and magnitude of how the overconfidence affects the transaction premiums in the sample. If the sign is positive (negative), it indicates that overconfident managers pay higher (lower) premiums. $\sum_{i=1}^n \beta_i Controls_i$ includes all the control variables used in this paper, which are further divided into firm-specific and deal-specific control variables. A more thorough discussion of the control variables can be found in Section 4.3.4.

As overconfidence is in this study defined based on the demographic characteristics of the CEO, the second regression model is constructed to investigate the separate relationships between these five demographic characteristics and the transaction premiums paid:

$$Premium_i = \beta_0 + \beta_1 Male_i + \beta_2 Young_i + \beta_3 Postgrad_i + \beta_4 EducBackg_i + \beta_5 CEOduality_i + \sum_{i=1}^n \beta_i Controls_i + \mu_i \quad (2)$$

$Male_i$ is a dummy variable that takes the value of 1 if the CEO is a male 0 otherwise. $Young_i$ is a dummy variable that takes the value of 1 if the CEO is younger than the average of the sample and 0 otherwise. $Postgrad_i$ is a variable that takes the value of 1 if the CEO holds a degree, which is higher than an undergraduate degree and 0 otherwise, whereas $EducBackg_i$ is a dummy variable that takes the value of 1 if the CEO has a degree outside of the business-related fields. Lastly, $CEOduality_i$ is a dummy variable that takes the value of 1 if the CEO and board chair are the same person and 0 otherwise. Each of these demographic characteristics is discussed more in detail in Section 4.3.2.

The third regression model is applied to investigate the relationship between ESG ratings and transaction premiums. This regression model is used to determine whether the acquiring company's ESG performance affects the transaction premiums in M&A transactions:

$$Premium_i = \beta_0 + \beta_1 ESGgood_i + \beta_2 ESGbad_i + \sum_{i=1}^n \beta_i Controls_i + \mu_i \quad (3)$$

In this model, $ESGgood_i$ and $ESGbad_i$ are dummy variables that are assigned to the acquiring companies based on the performance of the three pillars (environmental, social and

governance). The category, in which and an acquirer is placed, is determined by the combined performance of two pillars. The control variables used in the third regression model are the same as in the previous models. Section 4.3.3 provides a more in-depth discussion of how the companies are divided into these categories based on ESG performance.

The last regression model examines the effect of the acquiring company's ESG performance and CEO overconfidence:

$$\begin{aligned}
 Premium_i = & \beta_0 + \beta_1 Overconfidence_i + \beta_2 ESGgood_i + \beta_3 ESGbad_i + \\
 & \beta_4(Overconfidence_i \times ESGgood_i) + \beta_5(Overconfidence_i \times ESGbad_i) + \\
 & \sum_{i=1}^n \beta_i Controls_i + \mu_i
 \end{aligned} \tag{4}$$

In order to measure and examine the effect of the acquiring companies' ESG performance on CEO overconfidence, interaction variables have been introduced in the fourth regression model. The model estimates how do the different categories of ESG performance impact managerial overconfidence and transaction premiums. The coefficient β_4 captures the potential moderating effect of having a good ESG rating. In contrast, the moderating effect of having a bad ESG rating is captured by the coefficient β_5 .

4.3 Variables

The following section discusses the different variables used in this paper. The dependent variable is the transaction premium, whereas the main explanatory variable is the managerial overconfidence. The variable providing the additional dimension for this paper is the corporate social responsibility. The various control variables of the study are also introduced.

4.3.1 Transaction Premium

In this paper, the M&A transaction premium is used as the dependent variable. It is calculated as the excessive amount of money paid for the target firm relative to its actual market value. In this study, the premium is calculated one month prior to the announcement of the potential deal. This one-month lag is commonly used in similar studies to ensure that the examined premium is calculated for the price that has not been affected by any sorts of rumours or leaked

intel regarding the transaction (Gomes et al., 2018; Krishnamurti et al., 2019). The transaction premiums examined in this study were retrieved from the Thomson Reuters Eikon database.

4.3.2 CEO Overconfidence

The main explanatory variable in this paper is CEO overconfidence, which represents the potential managerial overconfidence among the executives in the acquiring companies within the sample. It is more of a psychological phenomenon where individuals are overconfident regarding outcomes they intensively commit themselves to and believe they are in control (Langer, 1975; Nofsinger, 2005; Weinstein, 1980). In the context of corporate M&A, a CEO might, for instance, overestimate the realizable synergies of a deal or underestimate the related risks. Such cognitive bias is seen as a behavioural trait that can provide irrational motivation for corporate management and decision-makers when deciding on different initiatives. (Hayward & Hambrick, 1997; Roll, 1986.) Although managerial overconfidence has been widely researched, there is no consensus regarding its measurement. Instead, researchers have constructed their proxies to capture the phenomenon. For example, the CEOs' investment behaviour regarding the stock option holdings connected to their companies has been used as an indicator of overconfidence via execution timing. Moreover, a CEO can be deemed overconfident if he or she does not execute the options despite being deep-in-the-money. (Malmendier & Tate, 2005). Also, the perceptions of external actors, perceived by media, about the company CEOs have been used as a proxy to classify one as potentially overconfident (Malmendier & Tate, 2008). As a third way of such a classification, demographic factors such as the person's gender or age have been used as proxies (Pan, et al., 2019).

In this paper, CEO overconfidence is measured by exploring the individual characteristics of the sample CEOs. In order to determine whether the CEO is overconfident or not, five different demographic characteristics are assessed and assigned a value of 1 or 0 depending on the status and characteristics of that particular manager. In the end, the outcomes of all these five individual characteristics are summed together. If the predetermined threshold is breached, the sample CEO is classified as overconfident.

The first demographic characteristic used in this paper to account for potential managerial overconfidence is gender. The variable is assigned a value of 1 if the CEO is a male and 0

otherwise. Faccio, Marchica and Mura (2016) concluded in their study regarding the relation of gender and corporate risk-taking that female CEOs are less likely to undertake risky investment initiatives than their male counterparts. Additionally, the company's risk-taking tendency was seen to decrease when a female CEO was appointed for this particular position. The second characteristic used is age. If the age of the CEO is below the sample mean, this variable is assigned a value of 1 and 0 if above. According to Serfling (2014), younger CEOs have an increased tendency to undertake riskier investment initiatives than the older company executives to signal and highlight their abilities, judgement, and competence.

As the third characteristic, the CEO's level of education is considered. This variable is assigned a value of 1 if he or she has a degree higher than undergraduate and 0 if not. People with a more extended educational history and higher completed degrees are more likely to have a higher trust in their abilities and act more confidently than their lower educated colleagues. Considering also the educational background of a CEO is the fourth characteristic that addresses the field of study. CEOs with a degree from either finance, accounting, management, economics or another business-related field are more aware of the potential risks and have a better understanding of negative exposure. (Liu & Chen, 2017.) This variable takes the value of 1 if a sample CEO has a degree outside of the aforementioned fields and 0 otherwise. The fifth and last characteristic considers the potential CEO duality within the firm. In other words, one might simultaneously act as the CEO and as the chairman of the board. This variable takes the value of 1 if the CEO is the same person as the chairman and 0 otherwise. According to Masulis et al. (2007), the firm trusts one person with more power by having the same person as the CEO and the chairman. These more powerful CEOs are more likely to take on value-destroying acquisitions, which is an attribute of overconfidence.

Finally, the outcomes of each of the five CEO characteristics regarding a single sample executive are summed together. Furthermore, a dummy variable of *Overconfidence* for managerial overconfidence is generated, which takes the value of 1 if the sum of the five CEO characteristic variables reaches at least the value of four. Otherwise, it will be 0. It indicates that a chief executive officer is considered as overconfident if four or more criteria are met.

4.3.3 Corporate Social Responsibility

The additional dimension and factors in this paper is the corporate social responsibility (CSR). For this paper, it is defined and measured by using the ESG ratings provided by the Thomson Reuters ASSET4 ESG database. Several prior studies have used the same database to estimate a company's CSR orientation (Arouri et al., 2019; Gomes et al., 2018; Krishnamurti et al., 2019). ASSET4 ESG is a database that provides the ESG ratings for almost 9000 companies worldwide. Such a rating is calculated by using over 450 metrics, of which the 186 most relevant industry-wise are used to calculate the total rating. (Refinitiv, 2020)

The ESG rating is a weighted sum of its three components: environmental, social and governance. These components are also referred to as the “pillars” by Thomson Reuters ASSET4 database. Each pillar is further divided into different sub-categories. Environmental pillar is divided into resource use, emissions, and innovations. Social pillar is divided into the workforce, human rights, community, and product responsibility. Lastly, the governance pillar is divided into management, shareholders, and CSR strategy. The total ESG rating is the weighted sum of these three pillar ratings, where the weights vary between industries. All three pillars and the total ESG rating have been assigned a rating in percentage between 0, being the worst, and 100 being the best. Additionally, a corresponding grade is assigned, which ranges from D- being the worst to A+ being the best. (Refinitiv, 2020)

In this study, an alternative method to measure CSR through ESG scores is introduced. Previous studies have only used the total ESG ratings, or the different ESG pillar ratings to determine social responsibility. In order to get more insight into how different scores impact the transaction premiums and CEO overconfidence, the total ESG scores have been divided into three different categories, depending on the performance of the three pillars. As the ESG score is divided into three different categories, it allows a more in-depth analysis of how different scores impact the transaction premiums and CEO overconfidence. The three different categories into which the total ESG score is divided into are excellent, good and bad. *ESGexcellent* is a dummy variable that takes the value of 1 if two or more pillars have a rating above 75 (A-) and 0 otherwise. Similarly, *ESGgood* is a dummy variable that takes the value of 1 if two or more pillars have a rating between 33.3 (C) and 74.9 (B+) and 0 otherwise. Finally, *ESGbad* is a dummy variable with a value of 1 if two or more pillars has a rating below 33.3 (C-), and 0 otherwise.

4.3.4 Control Variables

When it comes to the control variables, this paper uses both firm-specific variables as well as deal-specific ones. The four firm-specific control variables are growth, size, leverage and Tobin's Q. The four deal-specific variables are whether the transaction is a cross-border transaction or not, industry relatedness, the relative size of the deal and the ownership share acquired. The yearly effect is also controlled. These control variables are commonly used in prior research within the M&A field, which validates the usage of these particular control variables in this paper (e.g., Krishnamurti et al., 2019; Masulis et al., 2017; Pan et al., 2019).

In this paper, the firm-specific control variables are connected to the characteristics of the acquiring company. The first control variable in this category is *SIZE*. Size is measured in this paper as the natural logarithm of the acquirer's market capitalisation. According to, e.g., Masulis et al. (2007), larger acquirers are more likely to pay higher premiums as well as participate in M&A transactions that are value-destroying. Consequently, a positive relationship between leverage and M&A transaction premiums is expected. The second variable in this category is *LEVERAGE*. It is measured as the total debt of the company divided by its total assets. M&A transactions financed with large amounts of cash tend to have higher premiums due to prominent taxation (Gomes et al., 2018). Hu & Yang (2016) conclude that the percentage of cash paid in an M&A transaction decreases with leverage. Thus, the expected relationship between a firm's leverage and transaction premiums is negative.

The third variable is *TOBINQ*. Tobin's Q is measured as the market value of the company's assets divided by the book value. It is commonly used in the M&A literature as a control variable, but the results have been rather ambiguous (Masulis et al., 2007). The relation between Tobin's Q and transaction premiums can be projected to be as likely positive as negative when considering the ambiguity and incoherency of prior studies. The fourth and last firm-specific control variable is *GROWTH*, which is measured as the one-year growth in the company's revenue. According to Pan et al. (2019), firms that realise slow revenue growth while facing high growth pressure are willing to pay higher transaction premiums than ones with higher realised growth. Hence, the relationship between the realised revenue growth of a sample company and the transaction premium paid is expected to be negative.

The deal-specific control variables are variables that are connected to the transaction characteristics. The first variable in this category is *CROSSBORDER*, which is a dummy variable that takes the value of 1 if the transaction is carried out by companies from different countries and 0 otherwise. Previous studies indicate that cross-border acquisitions tend to associate with higher transaction premiums due to high information asymmetry as well as higher complexity and uncertainty regarding a deal (Gomes et al., 2018; Maung, Shedden, Wang & Wilson, 2019). Hence, the relationship between cross-border acquisitions and transaction premiums is expected to be positive. The second variable is *INDUSTRY*, which refers to the industry relatedness between the acquiring company and the target. This variable is a dummy variable that takes the value of 1 if both parties operate in the same industry and 0 otherwise. In M&A transactions within the same industry, synergies can be more easily realised, e.g., due to economies of scale and technical compatibilities (Chon, Choi, Barnett, Danowski & Joo, 2003; Nocke & Yeaple, 2007). Consequently, a positive correlation and relationship between the industry relatedness and transaction premiums are projected.

The third deal-specific control variable set for the paper is *ACQPERC*, which refers to the share of ownership acquired in a deal by the buying company. Regarding this transfer, Pan et al. (2019) found in their research a positive relationship between the acquired percentage and transaction premiums, and thus it is expected to find similar results regarding the sample gathered for this paper. The fourth and final deal-specific control variable, *RSIZE*, refers to the relative size of the M&A transaction in hand compared to the acquiring company. It is calculated as the total deal value divided by the market capitalisation of the acquiring firm

4.4 Diagnostic Tests

4.4.1 Heteroskedasticity

Potential heteroskedasticity in the used regression models would lead to biased estimators of the models. In order to test for this potential heteroskedasticity, White's test is used. If the null hypothesis of homoskedasticity is rejected, it indicates that the model suffers from heteroskedasticity. If any of the models used in this paper should suffer from heteroskedasticity, robust standard errors are introduced to deal with heteroskedasticity.

4.4.2 Multicollinearity

Multicollinearity is an issue where other variables can predict variables of the regression models. It is possible that the variables used in the regression models of this paper suffer from multicollinearity and thus must be accounted for. The correlation matrix will be used to examine the correlations between all the variables used in the regression models of this paper.

4.4.3 Normality

Normality assumes that the residuals are independent of explanatory variables and that they are normally distributed. With large sample sizes, this condition is not necessary. However, to test for normality, the residuals are plotted on a graph in order to examine whether or not they are normally distributed.

5 EMPIRICAL RESULTS

5.1 Descriptive Statistics

Table 1 presents the number of M&A transactions completed in each year of the examined time-period of 2010-2019. As seen from the table, the distribution of the 529 included acquisitions is quite evenly spread throughout the years. The lowest number of transactions was conducted in 2019, with 37 transactions (6.99%). In contrast, the highest number of deals within the gathered sample was carried out in 2015 and 2018 with 67 transactions (12.29%).

Summary statistics regarding the deal- and firm-specific characteristics are presented in Table 2, where the average deal size within the sample is pointed out to be approximately 5.2 billion U.S. dollars. As the only restriction that was set for deal size was the minimum of about 1 million USD, there is a high level of standard deviation within the sample (12 billion USD), indicating a considerable variation between the deal sizes. The average transaction premium within the observed sample is 38.65%, which is rather similar to the previous findings by, e.g., Gomes and Marsat (2018), as their research sample had an average deal premium of 32.1%. An interesting finding is that only 16% of the deals within the sample were cross-border transactions. It is a low representation of such transactions compared to the previous similar type of studies. For example, the share of cross-border transactions was around 40% of all transactions in the research sample of Gomes and Marsat (2018). Also, Krishnamurti et al. (2018) reported a proportion of over 50% of cross-border transactions in their sample. However, both of these studies included acquirers in a multinational manner, which may explain the differences in the proportion of cross-border transactions. Gomes and Marsat (2018) displayed that almost 40% of the target firms were in the United States, which explains the low amount of cross-border transactions in this sample. Over half of the transactions (55%) were done between firms within the same industry, and the relative size of the acquisitions averaged 39% of the acquiring company's market capitalization.

The firm-specific characteristics (Table 2) have similar values as earlier studies. Regarding the acquiring companies in the sample, the average market capitalisation is 320bn USD, when measured as the total capitalisation. A high standard deviation indicates a large variety in terms of size among the acquiring companies. A similar type of feature indicating a large variety

within the gathered sample can be observed by looking into the average, standard deviation, minimum and maximum values of the other firm-specific control variables.

Table 3 presents the summary statistics of acquirer ESG performance and CEO overconfidence. When looking into the sample companies' ESG ratings, the average total rating is 39%, which is equivalent to a rating of C. According to Thomson Reuters, C is considered as a satisfactory level of socially considerate performance (Refinitiv, 2020). When investigating the separate sub-categories of ESG ratings, governance has the highest average of 45%. In contrast, the environmental aspect has the lowest average of 31%. The average ESG ratings of this sample are slightly lower than those in studies by Gomes and Marsat (2018) and Krishnamurti et al. (2018). Gomes and Marsat (2018) reported an average total ESG rating of 48%. Additionally, the ratings for environmental and social categories were also slightly higher, at 44% and 50%, respectively. Krishnamurti et al. (2018) had an average ESG rating of 50% for the acquiring companies. This paper's lower average ESG ratings can be partly explained by the fact that the aforementioned authors investigated acquirers from various countries. Moreover, ESG ratings are impacted by country-specific factors and can thus differ in a significant way when investigating a sample of acquirers from a single country. When looking into the divided ESG rating categories (excellent, good and bad), one can see that most of the investigated acquirers (46.7%) belong to the "bad" category, followed by the "good" category (39.3%). Less than 15% of the sample companies are considered to be engaged in the "excellent" environmentally and socially considerate performance.

In the paper's sample, 32% of the CEOs are considered as overconfident (Table 3), which is slightly higher when comparing to previous studies by Liu & Chen (2017) and Pan et. Al (2019) as they presented 20% and 25% as overconfident in their samples. When examining the CEOs' demographic characteristics, an interesting finding is that only 3% of the CEOs are female. Additionally, over two-thirds of the CEOs have a post-graduate degree, as well as an educational background in business-related fields. Almost half of the CEOs (45%) are simultaneously holding the position as the chairman of the board.

5.2 Regression Results

5.2.1 Diagnostic Test Results

To address the potential issue of multicollinearity, a correlation matrix is used to determine the correlations between different variables (Table 4). This paper considers a correlation below -0.8 and above 0.8 as a high correlation. When examining the correlations, none of the value is above or below the set limits. However, some relatively high correlations can be detected amongst the ESG performance indicators. Also, the statistical software Stata used in this paper automatically drops any variables if the multicollinearity assumption is violated.

In order to test for heteroskedasticity, White's test is conducted for each regression model used in this paper. As seen in Table 5, none of the tests show statistical significance ($p\text{-value} < 0.05$). As the null hypothesis of White's test is homoskedasticity, and as the tests are not able to reject the null hypothesis, we can conclude that the models used in this paper do not suffer from heteroskedasticity. Thus no related action needs to be taken. In order to test if the assumption of normal distribution holds, the residuals are plotted in Graph 1. As seen from the graph, the residuals are quite normally distributed. Additionally, the sample ($N = 529$) in this paper is large enough to account for normality.

5.2.2 Empirical Results

Table 6 presents the regression results. Models 1 to 3 are investigating the stand-alone effects of ESG ratings on transaction premiums as well as the influence of managerial overconfidence on the premiums. In contrast, Model 4 is looking into the prospectively moderating effect of ESG ratings on CEO overconfidence and transaction premiums.

In Table 6, Model 1 presents statistically significant results for the main explanatory variable CEO overconfidence within the 5% confidence level ($p\text{-value} < 0.05$). The coefficient is positive, which indicates that overconfident CEOs pay on average more premiums than the non-overconfident CEOs. The magnitude of the coefficient is 4.394, which indicates that the excess premium that an overconfident CEO pays is around 4.4% more than other CEOs. Regarding the control variables, both growth (*GROWTH*), cross-border transactions

(*CROSSBORDER*) and relative size (*RSIZE*) have statistically significant results. Growth is statistically significant on the 10% confidence level (p-value < 0.1), relative size is within the 5% confidence level (p-value < 0.05) and cross-border transactions are statistically significant on the 1% level (p-value < 0.01). As the variable *GROWTH* was a measure of percentage, the coefficient is interpreted as how a one per cent increase in yearly revenue growth impacts the transaction premium. However, the magnitude of the coefficient is very low, so it barely has any economic impact, e.g., a ten percent increase in revenue decreases the premium by 0.1%.

On the other hand, the feature of a cross-border transaction in our sample has, on average, a rather large impact on the transaction premiums (Table 6). The magnitude of the coefficient is 11.271, which indicates that in our sample, acquirers pay on average over 11% higher premiums than in domestic deals, which is almost one-third of the sample average (37.5%). Lastly, the relative size coefficient is negative (-0.295), which indicates that the larger the deal size is compared to the acquirer, the less premium is paid.

Model 2 investigates the stand-alone impact of the different CEO demographic characteristics on transaction premiums (Table 6). The only statistically significant variable among the demographic characteristics is the educational variable (*POSTGRAD*), which is statistically significant on the 5% confidence level (p-value < 0.05). As the coefficient is positive (4.622), it indicates that CEOs that have a degree that is higher than an undergraduate degree, pay on average, 4.6% more premium. Another interesting finding is that the only variable amongst the demographic characteristics that is negative is the *MALE* variable. This negative coefficient indicates that, on average male CEOs pay less premium than female CEOs. However, as the variable is not statistically significant, no further analysis can be conducted. In comparison to Model 1, the same control variables are still statistically significant. However, the statistical significance of relative size (*RSIZE*) has dropped from 5% confidence level (p-value < 0.05) to 10% confidence level (p-value < 0.1). Additionally, the magnitude of the coefficients has stayed relatively stable. The coefficient of cross-border transactions increased slightly, whereas the coefficients of growth and relative size decreased slightly.

Model 3 investigates the relationship between ESG performance of the acquiring company and the transaction premiums (Table 6). The coefficient of both good (*ESGgood*) and bad (*ESGbad*) ESG performance is negative. However, the magnitude of good ESG performance (-3.088) is more negative than bad ESG (-2.152) performance, which indicates that on average, the better

(worse) the ESG performance is, the lower (higher) is the paid premium. However, neither of these two variables is statistically significant ($p\text{-value} > 0.1$). When examining the control variables, the results are similar to the results of Model 2. Cross-border transactions are still significant on the 1% confidence level ($p\text{-value} < 0.01$) whereas, relative size and growth are statistically significant on the 10% confidence level ($p\text{-value} < 0.1$). Moreover, the magnitude of the coefficients has remained stable.

The final regression model, Model 4, examines the effect of ESG performance on CEO overconfidence and how it potentially moderates its relationship with transaction premiums (Table 6). Both of the interaction terms between overconfidence and good ESG performance ($Overconfidence \times ESG_{good}$), and overconfidence and bad ESG performance are positive ($Overconfidence \times ESG_{bad}$). The magnitude of the coefficients is 6.908 for good performance and 5.266 for negative ESG performance. These results indicate that, on average, an overconfident CEO pays almost 7% more premiums in a firm with good ESG performance and 5.266% more premium in a firm with bad ESG performance. In other words, the better the ESG performance, the higher the paid premiums by overconfident managers. However, these findings lack statistical significance ($p\text{-value} > 0.1$), and thus no further conclusions can be drawn from the results. The statistically significant control variables are the same as in previous models (*GROWTH*, *RSIZE* and *CROSSBORDER*). Additionally, the magnitude of the coefficients has remained stable in comparison with previous models.

6 DISCUSSION

6.1 Transaction Premium and Managerial Overconfidence

The results of the empirical testing regarding the dyadic relationship between the paper's dependent variable, the transaction premiums paid within corporate mergers and acquisitions, and the main explanatory variable, the managerial overconfidence of the acquiring companies, align with the first hypothesis of the paper. According to that specific hypothesis, managerial overconfidence among the acquiring CEOs was projected to be positively related to the transaction premiums paid for the pursued target companies. As it has turned out to be the nature of this investigated association among the majority of the earlier studies, it also appeared to be the case regarding the 529 transactions included in the examined sample. Moreover, the empirical results present a statistically significant positive relationship between the variables.

According to the results of the paper's empirical testing, such a behavioural trait and psychological bias as managerial overconfidence among the acquiring companies does seem to translate into larger transaction premiums paid within M&A generally. In other words, and when it comes to the corporate transactions, acquiring companies and their CEOs investigated in the study, if the CEO of an acquirer is deemed as overconfident, the more likely it is for him or her to pay larger premiums within the acquisition activity of the company. The results also indicate that such a biased U.S. based CEO pays more in terms of transaction premiums than his or her non-overconfident equivalent. It is a phenomenon that appears to occur even though such premiums paid by overconfident managers are considered to be fuelled by irrational motivation and unreasonably enhanced acquisitiveness due to the misjudgement of decision-making abilities regarding M&A. Acknowledging the facts that mergers and acquisitions have been identified as a field of high uncertainty that leaves more room for subjective traits such as overconfidence to surface to support the decision-making (Chen & Lu, 2013) and that the transaction premiums paid have been concluded as one of the most detrimental instances in terms of shareholder value destruction (Harford et al., 2012), it seems interesting that executives are still left with such a room and openings to capitalise their overconfident beliefs. Moreover, there seems to be a lack of authority to minimize such inconsiderate behaviour.

The paper's finding of the positive relationship between transaction premiums and managerial overconfidence aligns with earlier studies (e.g., Hayward & Hambrick, 1997; Liu & Chen, 2017; Malmendier & Tate, 2005; Malmendier & Tate, 2008; Pan et al., 2019). Despite the lack of consensus within the field regarding the measurement of managerial overconfidence, the outcomes of the studies using different proxies to account for such bias have almost without exception presented a positive association between the two variables in a dyadic setting. In order to classify a CEO as overconfident, this paper exploited demographic factors such as the CEO's gender, age, level of education, education field, and the potential simultaneity of CEO and board chair positions within the company. These were the same characteristics as Pan et al. (2019) used in their research regarding Chinese M&A market. Similar to the results of Pan et al. (2019) regarding the M&A market in China, this paper's exploitation of those particular determinants for detecting managerial overconfidence within the U.S. acquirers also indicated that an overconfident manager does engage in upward deviating behaviour when it comes to transaction premiums. Despite the geographic variation, the classified overconfidence detected via these factors had a positive relationship between the premiums paid. Even the strong presence of government ownership within the Chinese companies does not harm the comparison of the studies because the results of Pan et al. (2019) present also an even stronger positive relationship between overconfidence and the premia when investigating the privately-owned Chinese companies. It is a finding and setting that resonates well with this paper. Liu and Chen (2017) also confirm these positive findings regarding the Chinese firms in their similar study. However, they used different metrics when identifying potential overconfidence.

Regarding the demographic characteristics used in the paper to account for overconfidence among the sample CEOs, the educational background factor posed as statistically significant. In other words, and according to the empirical testing, CEOs with more than an undergraduate degree pay more transaction premiums in general, which could mean that a more extensive educational background generates overconfidence for the executive. Such observation and conclusion could be explained by the idea that education-wise, such experienced executives, trust their decision-making abilities more than their less-educated colleagues. Moreover, this type of increased trust in one's own capabilities may also be irrational despite being more educated. (Liu & Chen, 2017.) When it comes to the results of this paper, such an enhanced trust due to that particular education-related aspect seems is a significant factor when it comes to the irrationally fuelled upward deviating acquisition behaviour in terms of transaction premiums in general among corporate acquirers in the United States.

Analysing the paper's results and looking at the findings from the previous studies investigating the relationship between managerial overconfidence and transaction premiums, it seems like that there is without exception an opportunity for such a behavioural trait as overconfidence to play a distorting role in the decision-making process. As mentioned earlier in this section, it is something that may build on the nature of M&A as a field of high uncertainty (Chen & Lu, 2013). It appears to be the fact among both the examined significant corporate investments such as the mergers and acquisitions and the more general and cyclic corporate investments (e.g., Malmendier & Tate, 2005; Malmendier & Tate, 2008). In other words, decision-making individuals seem to be allowed to realise their irrational over-acquisitiveness and use company resources by paying larger premiums. Of course, there may also be target companies that are indeed worth the premiums. However, this kind of scrutiny and separation does not fall within the scope of this paper. When individuals have been observed to appear as overconfident regarding projects and outcomes they commit themselves to and think that they can control (Langer, 1975; Nofsinger, 2005; Weinstein, 1980), it seems obvious and inevitable that the CEOs and other corporate decision-makers end up capitalising their distorted beliefs and ambitions when there are no strict monitoring and taming mechanisms in place. Moreover, whereas initiatives such as mergers and acquisitions may always be seen, at least to some degree, as the managers' pet projects, it makes much sense that overconfidence may generate different types of distorting characteristics into the execution of such investment initiatives.

Since the idea about managerial hubris hypothesis by Richard Roll (1986), there has been a strong consensus that regardless of the chosen determinants or geographical markets, such a cognitive bias leads to higher transaction premiums among the affected managers. In other words, when there is enough room for managerial discretion to take place that might be steered by psychological and behavioural factors such as overconfidence, large transaction premiums are observed to get paid. However, whereas this is the case regarding the dyadic setting between the premiums and overconfidence, it would be possible that different mechanisms, constraints and moderating factors could potentially be used to tame the biased executives and prevent them from engaging in irrationally motivated premium payments that may even result in destroying the wealth of the companies' shareholders. (Hayward & Hambrick, 1997.)

6.2 The Effect of Social Responsibility

When the overconfident managers in charge of M&A decision-making are imposed with constraints that prevent them from paying large transaction premiums, the positive relationship between the transaction premiums and managerial overconfidence weakens. For example, Pan et al. (2019) used the company's debt capacity as an additional factor to test its potentially moderating effect on the relationship mentioned above. Liu and Chen (2017) did also widen the setting, but instead of including corporate debt capacity to the setting, they used the company's political connections. Both of these studies investigated the Chinese M&A market. The results showed that such factors restricted the activities and premium payment tendency of the overconfident managers. In the study of Pan et al. (2019), the corporate debt capacity correlated with the funds available for the over-acquisitive manager to use for acquisitions and the premiums. Thus, it moderated the positive relationship between paid premiums and overconfidence when being low. Liu and Chen (2017) presented that when a company had a lot of political connections and authoritative influencers acting, for example, as advisors, the overconfident managers could not realise their ambitions due to these prestigious individuals monitoring and guiding them. In other words, no matter how overconfident the manager or decision-maker was, he or she could not pass on the knowledge or advice that these connections were giving them. Thus the relation of premiums and overconfidence was moderated.

Considering the aforementioned works of Pan et al. (2019) and Liu and Chen (2017) and their notions about constraining factors for the irrational executive behaviour within M&A, the effect of social responsibility commitment of an acquiring company on its acquisition behaviour was assumed to moderate the relationship between transaction premiums and managerial overconfidence. In other words, when considering socially responsible corporate executives as decision-makers who emphasise the interests of their companies' various stakeholders while making investment decisions and thus avoiding irrational investment initiatives, such an engagement should decrease the realisation of the psychological bias and thus the payment of transaction premiums which are noted as one of the most significant instances impacting the wealth of the company's shareholders (Harford et al., 2012). It would mean that just like the company's debt capacity (Pan et al., 2019) or political connections (Liu & Chen, 2017), the social responsibility engagement of a company could suffocate the overconfident and irrational behaviour by putting the interests of the stakeholders first.

Regarding the effect of social responsibility commitments of the acquiring company on its managerial overconfidence within the M&A setting, the first of the two hypotheses projected that an acquirer's social responsibility engagement would be negatively associated with the premiums paid. In other words, the more (less) socially responsible the acquirer, the less (more) likely it was projected for it to pay significant transaction premiums for the target companies. The other related hypothesis stated that the emphasis on promoting the social good should weaken the previously examined dyadic relationship between transaction premiums and the managerial overconfidence of the acquiring companies, which was discovered to be positive. If aligned with this latter hypothesis, it would mean that the social responsibility commitment would tame and restrict the overconfident managers from realising their overconfident beliefs, just like the different factors had in the earlier studies (Liu & Chen, 2017; Pan et al., 2019).

However, the paper's empirical testing results regarding the 529 U.S. based M&A transactions point out that there is no statistically significant association between the interaction of the acquiring company's social responsibility engagement and managerial overconfidence when examined against the transaction premiums paid within their M&A activity. In other words, and regarding the examined sample, such engagement into promoting the social good does not influence the overconfidence within the M&A decision-making processes and the related premium payments. Although, and rather surprisingly, the relationship within the sample is found to be positive, meaning that overconfident managers in socially responsibly established companies pay more premiums which could be explained by them realising their overconfident ambitions more freely due to considering such a responsible corporate image and reputation as a cover or moral capital that will soften the impact of failure (McCarthy et al., 2015), no conclusion or further discussions are worth to be drawn due to the statistical insignificance. All things considered, and regarding the paper's sample, social responsibility engagement does not moderate the psychological bias within the examined acquirers' M&A activity and its realisation, e.g., in the form of transaction premiums paid.

7 CONCLUSION

The purpose of this paper was to investigate the relationship between transaction premiums paid within corporate mergers and acquisitions and the managerial overconfidence of the acquiring companies. Additionally, the prospective effect of the acquirer's commitments into social responsibility on its overconfident behaviour within the M&A settings was examined. In other words, and besides the dyadic relationship between premiums and overconfidence, the objective was thus also to explore how a deal premium might be affected by the interaction of the acquiring company's overconfidence and its engagement in promoting the social good.

The paper's hypothesis regarding the relationship between transaction premiums and managerial overconfidence projected the association to be positive. After investigating the sample of 529 M&A transactions carried out by acquirers in the United States during 2010-2019, the empirical testing results presented a statistically significant and positive relationship between the two variables. In other words, and as hypothesised, the overconfident CEOs were observed to pay larger premiums within M&A in general than their non-overconfident equals. This finding also aligned with the results of various earlier studies regarding the dyadic relation. While lacking consensus regarding the measurement of overconfidence within finance, the psychological bias among the sample CEOs was detected by exploring five demographic characteristics of gender, age, educational background, the field of education, and potential dual position as both the CEO and the board chair. If the CEO fell into a predetermined category regarding the outcomes of these characteristics, he or she was classified as overconfident and thus more prone to higher acquisitiveness and the payment of irrationally motivated premiums.

Regarding those demographic characteristics, the educational background of a sample CEO posed as statistically significant when examined against transaction premiums. In other words, the more extended the educational background of the CEO, the more probably he or she may get engaged in upward deviating acquisition behaviour in terms of deal premiums. Such a tendency might arise from the increased trust of the CEO in one's decision-making abilities and judgement skills regarding the M&A initiatives of the company he or she represents.

The results regarding the relation of transaction premiums and the managerial overconfidence of the acquirers contribute to the existing literature by strengthening the perception about the

effect of such a psychological bias on deal premiums. Like the earlier studies, and when ignoring the potential moderating factors, this paper also points out that overconfident managers are more likely to engage in upward distorting acquisition behaviour by paying larger premiums than their more considerate counterparts. While many of the similar earlier studies have been conducted in China, this paper provides insight into the phenomenon in the U.S. market. By detecting overconfidence through the CEOs' demographic characteristics, the study points out that despite how the behavioural trait is accounted for, the results exclusively point out a positive relationship between deal premiums and overconfidence among the management.

Regarding the other dimension of the paper, the effect of the acquiring company's social responsibility commitment on its overconfidence within M&A and the transaction premiums, the hypotheses were that such an engagement associates negatively with premiums and that it weakens the relationship between CEO overconfidence and deal premiums. An assumption of such a nature was due to earlier notions about factors such as available funds and debt capacity to moderate managers' overconfident and irrational behavior. Hence, and when considering such an emphasis on the considerations regarding the interests of the company's various stakeholders and avoidance of shareholder value destruction, the effect of the commitment to promoting social good was strongly projected to align with the paper's hypotheses. However, instead of detecting such a constraining effect against overconfidence and transaction premiums among the observations within the sample, the effect turned out to be positive yet statistically insignificant. In other words, and regarding the sample of 529 transactions conducted by U.S. companies during 2010-2019, the engagement into social responsibility did not turn out to make a difference in the propensity of paying transaction premiums.

As the literature examining the relation of social responsibility and overconfidence in M&A is scarce, there is room for further research. This paper founded a solid base for further researches to build upon. In future studies, a suggested change to this paper is that it would be interesting to investigate the different components of ESG more in detail. It would add more to the understanding of how managerial overconfidence is affected by each of the ESG components (environmental, social, and governance) and if there are any differences between the different dyadic relationships. Furthermore, as this paper only investigated only U.S. acquirers, it would be insightful to examine a sample that consists of worldwide acquirers. Including several countries opens a new area of research that could investigate how the relationship between managerial overconfidence and transaction premiums vary between geographical locations.

REFERENCES

- Arouri, M., Gomes, M. & Pukthuanthong, K. (2019). Corporate social responsibility and M&A uncertainty. *Journal of Corporate Finance*, 56, 176-198.
- Baron, D.P. (2008). Managerial contracting and corporate social responsibility. *Journal of Public Economics*, 92, 268-288.
- Bénabou, R. & Tirole, J. (2010). Individual and corporate social responsibility. *Economica*, 77(305), 1-19.
- Branco, M. & Rodrigues, L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics*, 69, 111-132.
- Chan, C.Y., Chou, D.W. & Lo, H.C. (2017). Do financial constraints matter when firms engage in CSR? *The North American Journal of Economics and Finance*, 39, 241-259.
- Chen, S.H. & Lu, C.C. (2013). Inter-enterprise executive connection and M&A premium decision – An empirical study based on inter-organizational imitation theory. *Management World*, 5, 144-156.
- Chon, B., Choi, J., Barnett, G., Danowski, J. & Joo, S. (2003). A structural analysis of media convergence: Cross-industry mergers and acquisitions in the information industries. *Journal of Media Economics*, 16(3), 141-157.
- Deng, X., Kang, J.K. & Low, B.S. (2013). Corporate social responsibility and stakeholder value maximization: Evidence from mergers. *Journal of Financial Economics*, 110(1), 87-109.
- Faccio, M., Marchica, M. & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, 39, 193-209.
- Fatemi, A., Glaum, M. & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, 38, 45-64.
- Freeman, R.E. (1984). *Strategic management: A stakeholder approach*. Cambridge University Press.
- Friedman, M. (13.9.1970). The social responsibility of a business is to increase its profits. *New York Times Magazine*. Available at: <https://www.nytimes.com/1970/09/13/archives/article-15-no-title.html>
- Frynas, J.G. & Yamahaki, C. (2016). Corporate social responsibility: Review and roadmap of theoretical perspectives. *Business Ethics: A European Review*, 25, 258-285.
- Godfrey, P.C., Merrill, C.B. & Hansen, J.M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management*, 30, 425-445.

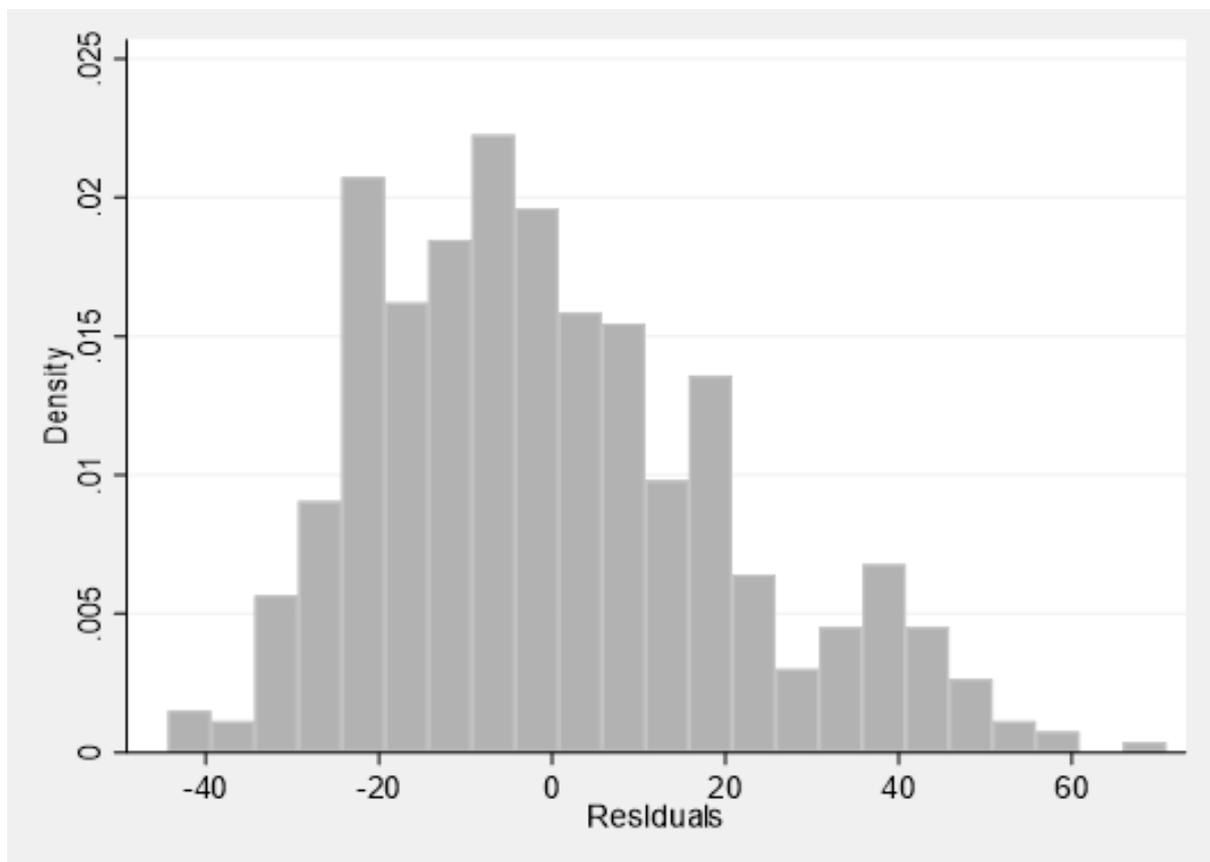
- Gomes, M. & Marsat, S. (2018). Does CSR impact premiums in M&A transactions? *Finance Research Letters*, 26, 71-80.
- Gul, F.A., Krishnamurti, C., Shams, S. & Chowdhury, H. (2020). Corporate social responsibility, overconfident CEOs and empire building: Agency and stakeholder theoretic perspectives. *Journal of Business Research*, 111(4), 52-68.
- Haksever, C., Chaganti, R. & Cook, R.G. (2004). A model of value creation: Strategic view. *Journal of Business Ethics*, 49, 291-305.
- Hall, B.J. & Murphy, K. (2002). Stock options for undiversified executives. *Journal of Accounting and Economics*, 33(1), 3-42.
- Harford, J., Humphery-Jenner, M. & Powell, R. (2012). The sources of value destruction in acquisitions by entrenched managers. *Journal of Financial Economics*, 106(2), 247-261.
- Hayward, M.L.A. & Hambrick, D.C. (1997). Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, 42(1), 103-127.
- Heaton, J.B. (2002). Managerial optimism and corporate finance. *Financial Management*, 32, 33-45.
- Hu, M. & Yang, J. (2016). The role of leverage in cross-border mergers and acquisitions. *International Review of Economics and Finance*, 43, 170-199.
- Institute for Mergers, Acquisitions and Alliances (IMAA). M&A statistics – Worldwide, regions, industries & countries. Available at: <https://imaa-institute.org/mergers-and-acquisitions-statistics/> (Accessed 20 May 2020)
- Jensen, M.C. (1984). Takeovers: Folklore and science. *Harvard Business Review*, 64(2), 107-116.
- Jensen, M.C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(2), 323-329.
- Jensen, M.C. (2002). Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly*, 12, 235-256.
- Jiang, F.X., Zhang, M. & Lu, Z.F. (2009). Managerial overconfidence, firm expansion and financial distress. *Economic Research Journal*, 1, 131-143.
- Jiao, Y. (2010). Stakeholder welfare and firm value. *Journal of Banking and Finance*, 34(10), 2549-2561.
- Krishnamurti, C., Shams, S., Pensiero, D. & Velayutham, E. (2018). Socially responsible bidding firms and acquisitions decisions: Australian evidence. *SSRN Electronic Journal*, available at: <http://dx.doi.org/10.2139/ssrn.3109014>
- Krishnamurti, C., Shams, S. & Chowdhury, H. (2020). Empire building and corporate social responsibility. *SSRN Electronic Journal*, available at: <https://ssrn.com/abstract=2804846>

- Langer, E. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Liu, N. & Chen, W. (2017). Executives' overconfidence, political connection and acquisition premium of enterprises. *Journal of Service Science and Management*, 10, 260-279.
- Loughran, T. & McDonald, B. (2015). The use of word lists in textual analysis. *The Journal of Behavioral Finance*, 16, 1-11.
- Malmendier, U. & Tate, G. (2005). CEO overconfidence and corporate investment. *The Journal of Finance*, 9(6), 2661-2700.
- Malmendier, U. & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), 20-43.
- March, J.G. & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. *Management Science*, 33(11), 1404-1418.
- Masulis, R.W., Wang, C. & Xie, F. (2007). Corporate governance and acquirer returns. *Journal of Finance*, 62, 1851-1889.
- Maung, M., Shedden, M., Wang, Y. & Wilson, C. (2019). The investment environment and cross-border merger and acquisition premiums. *Journal of International Financial Markets, Institutions and Money*, 59, 19-35.
- McCarthy, S., Oliver, B. & Song, S. (2015). Corporate social responsibility and CEO confidence. *Journal of Banking and Finance*, 75, 280-291.
- McWilliams, A. & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review*, 26(1), 117-127.
- Miller, D.T. & Ross, M. (1975). Self-serving biases in attribution of causality: Fact or fiction? *Psychological Bulletin*, 82, 213-225.
- Minor, D. & Morgan, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review*, 53(3), 40-59.
- Morellec, E. & Schürhoff, N. (2011). Corporate investment and financing under asymmetric information. *Journal of Financial Economics*, 99, 262-288.
- Nocke, V. & Yeaple, S. (2007). Cross-border mergers and acquisitions vs. greenfield foreign direct investment: The role of firm heterogeneity. *Journal of International Economics*, 72(2), 336-365.
- Nofsinger, J.R. (2005). Social mood and financial economics. *Journal of Behavioral Finance*, 6(3), 144-160.
- Pan, A., Liu, W. & Wang, X. (2019). Managerial overconfidence, debt capacity and merger & acquisition premium. *Nankai Business Review*, 10(4), 570-590.

- Park, K., Byun, J. & Choi, P.M.S. (2019). Managerial overconfidence, corporate social responsibility activities, and financial constraints. *Sustainability*, 12(61), 1-14.
- Porter, M.E. & Kramer, M.R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 12, 78-92.
- Refinitiv. (April 2020). Environmental, social and governance (ESG) scores from Refinitiv. Available: www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/esg-scores-methodology.pdf
- Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business*, 59(2), 197-216.
- Serfling, M. (2014). CEO age and the riskiness of corporate policies. *Journal of Corporate Finance*, 25, 251-273.
- Simonyan, K. (2014). What determines takeover premia: An empirical analysis. *Journal of Economics and Business*, 75, 93-125.
- Turnbull, S.M. (2012). Debt capacity. *The Journal of Finance*, 34(4), 931-940.
- Varaiya, N.P. (1987). Determinants of premiums in acquisition transactions. *Managerial and Decision Economics*, 8(3), 175-184.
- Weinstein, N. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39, 806-820.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Wooldridge, J.M. (2012). *Introductory econometrics: A modern approach* (5th edition). Mason, OH: Cengage.
- Yu, M.G., Li, W.G. & Pan, H.B. (2013). Managerial overconfidence and corporate risk-taking. *Journal of Financial Research*, 1, 149-163.
- Zhao, T. & Xiao, X. (2019). The impact of corporate social responsibility on financial constraints: Does the life cycle stage of a firm matter? *International Review of Economics and Finance*, 63, 76-93.

GRAPHS

Graph 1: Plotted Residuals



TABLES

Table 1: Corporate Acquisitions per Year

Year	# Transactions	in %
2010	52	9.83%
2011	42	7.94%
2012	57	10.78%
2013	42	7.94%
2014	53	10.02%
2015	65	12.29%
2016	59	11.15%
2017	57	10.78%
2018	65	12.29%
2019	37	6.99%
Total	529	100.00%

Table 2: Summary Statistics: Deal and Firm Characteristics**Deal characteristics**

Variable	Deal Size (mUSD)	Premium (%)	Cross-border	Industry relatedness	% Acquired	Relative Size
N	529	529	529	529	529	529
Mean	5215.80	38.65	0.16	0.55	98.83	3.92
Std. Dev.	12062.29	22.16	0.37	0.50	5.56	6.10
Min	7.033	1.01	0	0	52.14	0.005
Max	101499.50	101.54	1	1	100	75

Firm Characteristics

Variable	Size (mUSD)	Growth (%)	Tobin's Q	Leverage
N	529	529	529	529
Mean	320015.40	44.97	1.99	31.64
Std. Dev.	618562.10	139.93	1.12	18.24
Min	808.72	-66.42	0.42	0
Max	5660235	2078.43	9.70	105.57

Table 3: Summary Statistics: ESG Performance and CEO Overconfidence

Acquirer ESG Performance							
Variable	Total ESG	Environmental	Social	Governance	Excellent	Good	Bad
N	529	529	529	529	529	529	529
Mean	39.394	31.103	40.629	45.210	0.140	0.393	0.467
Std. Dev.	27.629	30.909	28.690	31.102	0.347	0.489	0.499
Min	0	0	0	0	0	0	0
Max	93.820	95.850	96.760	96.200	1	1	1
CEO Overconfidence							
Variable	Overconfidence	Male	Young	Postgraduate	Non-Business	CEO Duality	
N	529	529	529	529	529	529	
Mean	0.318	0.970	0.499	0.673	0.376	0.459	
Std. Dev.	0.466	0.171	0.500	0.470	0.485	0.499	
Min	0	0	0	0	0	0	
Max	1	1	1	1	1	1	

Table 5: Tests for Heteroskedasticity

Model	Test	Null-Hypothesis	p-value	Heteroskedasticity
Model 1	White's Test	Homoskedasticity	0.0803	no
Model 2	White's Test	Homoskedasticity	0.0702	no
Model 3	White's Test	Homoskedasticity	0.1961	no
Model 4	White's Test	Homoskedasticity	0.1378	no

Table 6: Regression Results

VARIABLES	(1)	(2)	(3)	(4)
	Premium	Premium	Premium	Premium
Overconfidence	4.394** (2.068)			-0.842 (5.042)
ESGgood			-3.088 (3.015)	-5.126 (3.969)
ESGbad			-2.152 (3.414)	-3.783 (4.292)
(Overconf x ESGgood)				6.908 (6.022)
(Overconf x ESGbad)				5.266 (5.861)
MALE		-1.289 (5.175)		
YOUNG		2.709 (1.915)		
POSTGRAD		4.622** (1.945)		
EDUCBACKG		0.246 (2.041)		
CEODUALITY		-0.917 (1.978)		
SIZE (log)	0.095 (0.621)	0.254 (0.642)	0.010 (0.726)	0.077 (0.725)
GROWTH	-0.010* (0.005)	-0.008* (0.005)	-0.010* (0.007)	-0.010* (0.007)
LEVERAGE	-0.054 (0.059)	-0.063 (0.059)	-0.056 (0.057)	-0.054 (0.057)
TOBINQ	0.303 (0.889)	0.510 (0.873)	0.293 (0.904)	0.328 (0.903)
CROSSBORDER	11.271*** (3.106)	11.313*** (3.154)	11.481*** (2.694)	11.288*** (2.695)
INDUSTRY	-2.180 (1.876)	-2.248 (1.887)	-2.066 (1.957)	-2.131 (1.953)
ACQUIRED (%)	0.167 (0.139)	0.197 (0.145)	0.193 (0.177)	0.168 (0.177)
RSIZE	-0.295** (0.140)	-0.248* (0.142)	-0.296* (0.181)	-0.289* (0.181)
Year Effect	yes	yes	yes	yes
Constant	19.228 (16.072)	12.403 (17.903)	21.293 (21.407)	23.161 (21.542)
Observations	529	529	529	529
R-squared	0.114	0.119	0.108	0.117

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1