

BEHAVIORAL ANALYSIS OF MERGERS AND ACQUISITIONS DECISIONS

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Abstract

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Mergers and acquisitions (M&A) are among the key strategic decisions that firms make. But the problem is that they often result in failure and impairment loss, with the fair value of the acquisition price becoming an issue that poses the risk of overvaluation. The purpose of this paper is to explain the nature of this risk by shedding light on the errors and biases of decision-making managers and directors and their effect on decision-making processes which involve a high degree of discretion and judgment. The paper finds that biases causing overvaluation include overconfidence by managers; an escalation of bidding prices leading to winner's curse; anchoring in pricing; the endowment effect; and hindsight and confirmation biases. Corporate governance architecture can be designed to mitigate these biases while preserving the positive aspects of overconfidence, such as its promoting of productive and creative activities and coherent internal management. But it is not a panacea since independent directors also have biases and conflicts of interest inherent in the mechanism. Advancements in the understanding of human emotion and psychology promise to protect shareholders by deepening our understanding of corporate decisions.

Keywords: Mergers and Acquisitions, Corporate Governance, Decision Making, Cognitive Science, Behavioral Finance

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1. INTRODUCTION

Mergers and acquisitions (M&A) are among the key strategic decisions that firms make. According to Dealogic, the global value of M&A transactions in 2018 reached a record high of \$3.35 trillion, reflecting a trend toward market consolidation and a strong demand to capture global market growth. Despite this boom, Christensen, Alton, Rising, and Waldeck (2011) point out that 70 to 90 percent of M&A fail. Similarly, Bazerman and Samuelson (1983) state that one-third of all acquisitions end in failure and an additional one-third fail to live up to expectations. As if backing up this assertion, some high-profile transactions have led to losses, notably in Japan, where M&A transactions reached their

highest value in 2018 as well. In that year their value reached \$270 billion, indicating that firms were using mergers and acquisitions to adapt to a shrinking domestic market and explore new markets outside the country. Toshiba, for instance, having acquired Westinghouse's nuclear power business, incurred a loss of \$6 billion in 2018 which forced it to sell its crown jewel, its semiconductor business, in order to stay solvent. Japan Post, a privatized postal and distribution service provider, suffered a loss of \$4 billion in 2017 after acquiring Toll of Australia. Nomura, after acquiring part of Lehman Brothers and Instinet, listed a loss of \$800 million in 2018. Economically, these losses show that the firms overpaid for their acquisitions. Critics wondered in hindsight whether it was inevitable, but *ex-ante*, for

boards of established Japanese firms to make such bad decisions. Alerted by such failures, Japan's Ministry of Economy, Trade and Industry even issued a warning for prospective acquirers, complete with checklists to study before closing on an M&A transaction (METI, 2018).

As Thaler and Sunstein (2009) argue, the assumption of rational decision-making by *homo economicus* does not hold in the real world. In our daily lives we make mistakes, forget things, lose our temper, and feel better again, all of which affect our decisions. M&A transactions are among the most important decisions made by people serving on boards of directors. In valuing a firm, practitioners typically deploy the one-factor capital asset pricing model (CAPM), although its empirical robustness has been questioned from early on, as shown by Black (1993). The use of this model, if involving substantial elements of human discretion and judgment, will not guarantee that the value will be objective. Recent technological developments in artificial intelligence make us look at the properties of our thought and decision processes, helping us to understand more about how emotion and psychology affect our judgments and decision making. While economics has traditionally dealt with decisions from a rational perspective if we know that the decisions we see as rational are not always free from human errors and biases, do we not need to consider the effects of emotion on decisions involving M&A and valuation? This question takes on added importance given that M&A involves major risk-taking decisions which must be made amidst much uncertainty and typically within a limited timeframe, and with the potential to significantly affect a firm's future trajectory.

We generally think of risk as something which should be priced into value, as is the case with insufficient liquidity and size. But if emotion poses another type of risk, it may well deserve equivalent attention in the decision making and valuation processes. This relates to the fiduciary duty and duty of care of directors, who are expected to protect shareholders by recognizing risks pertaining to deals on the table. The problem's practical significance becomes clear when we consider that a spate of Japanese firms ended up incurring non-negligible losses for their shareholders by executing big-ticket, cross-border M&A transactions. Based on these observations, the purpose of this paper is to consider the effect of emotion and psychology on M&A decisions and valuations across the board.

Rationality and objectivity have been valued, and emphasized, ever since Descartes in modern times. When applying these concepts to M&A decisions and valuations, we believe that rational managers and directors should be able to recognize a firm's objective value. However, recent developments in behavioral economics show that this might not be true, as managers and directors are governed by human nature. A decision on value is no more an objective truth than it is a judgment by human beings in an uncertain world. We know that people make mistakes, but the problem is whether those mistakes are systematic tendencies or mere episodes that occur from time to time. We may not notice that we err, even when we do, or do (can) not correct errors even if we are aware of them, because we think about sunk costs, for instance, or

feel a need to keep face. If we acknowledge that as humans we are all liable to make mistakes, we must recognize that risk when we make M&A decisions and valuations requiring meticulous care. Winner's curse, as we discuss later, suggests such systematicity. In understanding judgment and decision making, the lack of full integration between the traditional CAPM and the effects of emotion is similar to the situation existing between traditional and behavioral economics, or between elements of rationality and emotion.

This paper is organized as follows. Section 2 reviews the literature regarding the relationship between cognitive science and M&A. Section 3 describes the research methodology by which this paper analyzes the processes of M&A. Section 4 shows the results of the analysis. Section 5 discusses the results and relates them to corporate governance issues. Section 6 concludes the paper.

2. LITERATURE REVIEW

Researchers have long been puzzled by the negative tendencies of acquirers' stock return at the time of an M&A announcement (Malmendier, 2018). Black (1989) shows those negative tendencies empirically, with results which have been confirmed repeatedly (Moeller, Schlingemann, & Stulz, 2005). If firms know that shareholders are not happy with their acquisitions, why do they go on with them? A loss arising from an acquisition means that the target firm was overvalued by the acquirer, even if it was a strategic fit and the logic of the acquisition was right. Black (1989) argues that two major causes of overvaluation are the overconfidence of managers and their ignorance of the phenomenon of winner's curse.

Overconfidence also relates to the agency problem (Jensen & Meckling, 1976), when overconfident managers engage in empire-building behavior to enlarge their private benefits while subjectively believing that to do so will benefit shareholders as well. The premium paid by acquirers is justified by synergy alone. M&A transactions can be agreed upon when the premium paid is less than the expected synergy. But synergy is not negotiated between acquirers and sellers, but estimated by acquirers on their own; here is where overconfidence can set in as efforts to rationalize acquisitions lead to excessive synergy estimates in relation to managerial ability and the market environment. As shown by Bargeron, Schlingemann, Stulz, and Zutter (2008), the premium paid by an acquirer varies according to its type. Financial buyers, which lack the business base to realize synergies and whose deal-specific financial performance is carefully monitored by their investors, pay less than strategic buyers. The valuation of a target firm is typically provided with some range. It includes a variety of uncertain elements of estimates which may require subjective judgments. Including the premium, an acquisition price is a matter of negotiation between the acquirer and the seller, leaving further room for subjective emotion to set in among humans dealing with uncertainty.

The behavioral perspective regarding M&A is first proposed by Roll (1986), who hypothesizes that overconfidence (or hubris) explains the observed negative stock performance of acquirers. At the

same time, there were experiment-based advancements in cognitive science relating to judgments and decisions, as exemplified by Kahneman and Tversky (1974, 1984) and Kahneman, Knetsch, and Thaler (1991). These findings are increasingly being applied to explain actual human behavior and set actual economic and social policy, as proposed by Thaler and Sunstein (2009). Camerer and Malmendier (2007) conduct an application to finance, including M&A, while Zamir and Teichman (2018) and Malmendier (2018) update the findings of cognitive science in relation to mergers and acquisitions and investment decisions. Notably, associations are observed between CEO overconfidence and other financial phenomena such as M&A decisions, the risk of a crash in the firm's stock price, and earnings management (Malmendier & Tate, 2008; Kim, Wen, & Zhang, 2016; Hsieh, Bedard, & Johnstone, 2014). Empirical analyses dealing with the overconfidence of CEOs have also been developed, such as Hayward and Hambrick (1997), Banerjee, Humphery-Jenner, and Nanda (2015), and Malmendier and Tate (2015), all of whom empirically confirm overconfidence and corporate decisions in line with the hubris hypothesis earlier proposed by Roll (1986). With these advancements, the behavioral analysis of M&A has come to cover corporate governance as well. On the legal and institutional aspects, Black (1989) and Langevoort (2011) develop research on cognitive effects on M&A. These multiple lines of research - theoretical, empirical and legal - form a behavioral foundation for the analysis of human judgment and decision-making that can also be applied to financial decisions, and more specifically to M&A.

3. RESEARCH METHODOLOGY

In this paper, we use concepts and empirical results obtained from cognitive science research to analyze M&A decisions made by managers and directors who, like all humans, are susceptible to errors and biases (corporate laws generally stipulate that board directors be natural persons. See, for example, Delaware General Corporation Law Section 141(b)). M&A is a promising area in which to do this given that it is a key managerial decision involving a high degree of discretion and judgment. This behavioral approach is methodologically consistent with Bainbridge (2002), Winter (2018), and Asaoka (2018), which apply cognitive-scientific findings to board decisions generally, and with Langevoort (2011), which deals specifically with M&A.

This methodology adds a new perspective to traditional empirical findings on the effects of M&A decisions. One could alternatively adopt an empirical approach to assess the impact of M&A, thereby quantitatively extracting elements that affect the value of firms conducting it. As observed, managers' overconfidence typically appears in the form of a decline in share prices upon announcement of an acquisition. This line of research is clearly useful in that it shows systematic tendencies of sample firms as opposed to individual firms and looks at the relative strength of the effects of extracted elements. Since behavioral traits such as overconfidence are hard to specify or measure given that they exist inside people's minds, they are typically proxied by other measures available, such as delayed exercise of

in-the-money stock options (Malmendier & Tate, 2008) and textual analysis of press reports and registration statements (Hirshleifer, Low, & Teoh, 2012; Boulton & Campbell, 2016). However, the negative tendencies of the acquirer's stock performance extracted by means of the event study do not explain per se why and how this would be the case, even assuming that psychological elements are best proxied. Therefore, it is useful to examine the internal M&A decision process by applying findings on people's behavior, where research obtained by experiments in the field of cognitive science is of help. While generalized experiments in a laboratory do not necessarily reflect conditions at a real firm (DellaVigna, 2009), shedding light on M&A decisions from this angle should deepen our understanding of these decisions, which often fail. This paper digs into the process by incorporating discoveries made by cognitive scientists regarding decision-making settings. These provide a perspective to explain "puzzling" negative tendencies at the time of an M&A announcement and "surprising" losses for shareholders. In that, it deepens our understanding of the observed acquirer's "curse," process-wise, the paper also complements the traditional empirical approach.

In summary, the objective and intended contribution of this paper is to apply cognitive-scientific findings to the M&A decision-making process, and more broadly to corporate governance, mainly as they concern the psychology of acquirers' managers and directors that results in overvaluing target firms. This approach also allows us to enlarge the area of application of these findings, and thereby to deepen our understanding of capital markets where negative reactions by shareholders and actual failures by firms are common phenomena.

4. RESULTS

This section describes the results obtained by the behavioral approach in which errors and biases are detected in M&A decisions. Following Malmendier and Tate (2008), Thaler (1988), and Black (1989), we first analyze two major elements - overconfidence and winner's curse - and then deal with other types of errors and biases.

4.1. Overconfidence

Overconfidence, or over-optimism, is the circumstance in which managers pay excessively for a target firm by overvaluing their competency to run it (Roll, 1986). Overconfidence also relates to an illusion of control, a bias causing people to see uncontrollable factors existing outside their firm as controllable (Weinstein, 1980). Overconfidence is known to be lower when people are given detailed information (Camerer & Malmendier, 2007). For instance, people are less likely to be overconfident about their driving ability when asked about the chance of an accident in a traffic jam or on a snowy day than when asked about their driving ability in general (Dunning, Meyerowitz, & Holzberg, 1989). In terms of M&A, this means that people are more prone to be overconfident about M&A decisions, which are based on limited information and experience, than about internal capital investment or research and development projects with which they have more information and longer experience. Also,

Malmendier and Tate (2008) show that managers with a higher degree of overconfidence conduct more M&A transactions, and more which negatively affect the acquirer's stock performance, when their overconfidence level is proxied by their financial commitment to their firms, as measured by their delay in exercising granted stock options in the belief the stock price will increase further than its actual point of profit maximization and the media's positive portrayal of their management performance. When managers are overconfident, they overvalue not only the target firm but their own firm as well; the result is a reluctance to draw on external funds and a tendency to conduct M&A and investments only when internal funds are available (Malmendier & Tate, 2015).

Ex post, however, overvaluation can commingle with other factors, such as changes in the macro economy, markets and technology, and evaluating the performance of acquisition takes time. Managers and directors have less opportunity to receive feedback from the results, and use it to improve their decisions, than they do with internal capital expenditure and research and development projects conducted on a continuous basis. Or, they may leave their posts before seeing the results of the M&A transactions they have approved, motivated to "set a path for future growth" by executing M&A deals while they are in office - and leaving to their successors the tougher part of realizing expected and prepaid synergy.

In the Japanese failures noted, overconfidence seems at odds with a general perception that Japanese culture values humbleness and humility. However, it is also true that in Japan's collective corporate culture, people tend to avoid making outspoken critiques of plans and strategies at meetings, preferring to pursue a consensus, often with help of corporate secretaries, before the proposal reaches the boardroom. Meetings thus become a formality. And once a direction is established, even if it is just an atmosphere shared within the firm rather than an explicit statement, people will follow it, sparing the need for criticism. A "collectivistic culture" (Licht, 2018) is compatible with overconfidence in that people will collectively follow a direction even if it appears wrong. The result is that a firm will pursue an M&A transaction even in an industry or region where it has little experience, based on a perceived need to "survive in a world of fierce competition" or "accelerate globalization," though with insufficient assessment of future earnings, risks and management capability. Further, if the firm sets its internal goals to recoup the M&A investment retroactively in order to justify the agreed acquisition value, a new risk arises in regard to its feasibility.

On the other hand, overconfidence can be closely related to personal traits and the attractiveness and popularity of managers. Overconfidence has positive aspects, such as promoting productive and innovative activities and attentiveness to others (Taylor & Brown, 1988). In innovation-driven industries, moreover, it has been found that overconfidence can accelerate innovation inside the firm (Hirshleifer et al., 2012). Clear conviction in a chosen course of action can help rally the firm's management around a common goal, which is useful from an internal managerial

perspective (Paredes, 2005). Striking a desirable balance between these positives and negatives is a necessary condition for firm management, and the design of corporate governance is essential to this purpose, as we discuss in the next section.

Finally, in terms of gender, men tend to be more overconfident than women. While firms with more female directors tend to pay a lower premium in M&A, reflecting less overconfidence (Levi, Li, & Zhang, 2014), firms run by male managers conduct more M&A transactions, more value-destroying ones, and ones that produce less stock return at the time of announcement compared to those run by female managers (Huang & Kisgen, 2013).

4.2. Winner's curse

Winner's curse is a widely observed phenomenon with a relation to overconfidence. The term originated with bidders for oil drilling rights winning at auction through overvaluation, and bearing the "curse" that entailed (Capen, Clapp, & Campbell, 1971). Having been confirmed repeatedly in various areas, the phenomenon shows that winners may not be positioned to celebrate their winnings (Bazerman & Samuelson, 1983). The price formed through an auction is sometimes seen as an objective market price, compared to a negotiated price in a closed setting, but the format itself does not necessarily indicate the validity of the price.

People value an object more when they are told it is rare or has become rarer (Worchel, Lee, & Adewole, 1975). Value depends on the context. Just as the value of a painting is not determined per se, value and context relate to each other. Similarly, each firm has certain uniqueness in that no identical one exists. In terms of M&A, context means a combination of various elements: the business and market environment surrounding the firm; the managerial capability to run a target firm differently from its predecessor as a new owner; the probability of coming across other, equally attractive M&A opportunities in the future; and a timing at which a specific transaction opportunity appears for consideration. In a competitive bid, tapping and subsequent disclosure of private information are often made to a limited number of potential acquirers. By contrast, government bonds, which have no such uniqueness or limited information, are sold only through public auction. From a seller's perspective, closed biddings are attractive primarily because the information disclosed is often sensitive, and, given that not all firms value target firms equally owing to differences in their contexts, it is most efficient to tap those with the presumably greatest willingness to pay. This limitation, however, gives the deal an impression of rarity to potential acquirers, making them more keenly aware that their competitors might acquire the target firm.

Winner's curse arises not only by overvaluation but also in combination with escalation, as shown in the following example of competition among bidders (Bazerman & Moore, 2017). Suppose that there are firm C, with a value of \$100 million, and its potential acquirers, firms A and B. If either A or B succeeds in acquiring C, the acquirer would be able to lift the value of C up to \$120 million, but the other firm would incur a loss of \$500 million because of the negative effect of the acquisition on its competitive

position. When real-world managers and directors are asked about this situation, they typically answer that their bidding price would be \$110 million, with a net synergy of \$10 million (\$120 - \$110 million). However, B, predicting an offer by A of \$110 million, would offer a break-even price of \$120 million. In response, A would offer \$130 million, for a loss of \$10 million (\$130 - \$120 million). In the end, an equilibrium bidding price would be \$170 million, at which point both A and B would incur a loss of \$50 million, either through overpayment or loss of competitive position. By contrast, C's shareholders would gain \$70 million (\$170 - \$100 million), which exceeds its potential synergy of \$20 million (\$120 - \$100 million). This value reflects the competition existing between A and B and the value of the influence that C would have on the relationship. This example assumes the potential loss is known *ex-ante*. However, potential losses incurred as a result of a competitor's action are typically opaque, and thus are dependent on subjective estimates and fears of uncertainty. Uncertainty and fear create a base for irrational escalation and winner's curse, along with the aforementioned bias for rarity.

Further, there is a subtle but important difference in the way people perceive what happens and what does not. People tend not to pay attention to, or praise, something that does not happen. They are more impressed with what they can observe in front of them than with something that is avoided, such as a potential loss, through deliberate decisions or efforts (Taleb, 2007). A loss that a firm could have incurred, but averted by choosing to pass over an M&A opportunity, is invisible, even if it represents the truth. By contrast, profits and losses that arise by executing an M&A transaction are visible. Therefore, the only decision that has a chance to receive positive evaluation or praise is the decision to take the risk of moving forward with an M&A. In addition, people put more emphasis on loss than on gain, in the sense that the amount of pain from a loss is greater than the amount of pleasure from an equivalent gain, and tend to take greater risk to avert a loss than to seek a gain (Kahneman & Tversky, 1984). This bias also causes people to risk betting on an M&A transaction. Rather than passing on the M&A, and risk potential loss arising from regret for passing up a "rare" opportunity, they will escalate their commitment out of fear that other firms will step in and make the deal.

4.3. Other biases

In addition to the two major errors and biases of overconfidence and the winner's curse, there exist other types of biases that managers and directors face in M&A transactions. These are analyzed below.

4.3.1. Anchoring

In negotiations over the price of an M&A transaction, valuation is affected by the initial offered price. A value judgment is affected by a reference point comprising the numbers people are initially shown, even when they know these are irrelevant to their decision (Tversky & Kahneman, 1974). In M&A, an offered price is certainly relevant, as it conveys the seller's thinking on pricing and its strategic position in the negotiation. People seek clues around them

when faced with uncertainty (Ariely, 2010), and corporate value is notably uncertain. For instance, it is known that offer prices are biased toward peak prices (Baker, Pan, & Wurgler, 2012). Further, negotiation per se adds to uncertainty process-wise, as it involves intentions and tacit strategies that are unobserved by the other side. An offered price is more likely to be overvalued rather than undervalued, reflecting the possibility of a reduction in price in subsequent negotiations (and the unlikelihood of a rise in price after the offering) and thus creating an anchor. With an anchor, an agreed price is more likely to be overvalued than undervalued. This means that an acquirer, even if "successful" in discounting the price, may well have been biased by a reference point. Given that people do not notice anchoring, it might even be helpful for acquirers to set some form of internal self-constraint, in order to avoid seeing the offered price before deciding on a walk-away price on their own.

4.3.2. Endowment effect

People come to value something assigned to them as their own more than something assigned to other people, even if the assignment is made randomly. Kahneman et al. (1991) show that people put a higher price on a drinking mug (involving no asymmetric information) once it is assigned as their own than to a mug assigned to other people, indicating irrational attachment to a cup. In the context of M&A, once a deal opportunity is seen as one's own target, it is viewed through foggy eyes; were it handled by another, the same target would have been viewed more objectively. This is true of firms, and of divisions within firms: A firm (division) values its own targets more highly than other firms (divisions) would. This also holds true for the belief of managers in their own managerial capability, as it relates to their overconfidence and inclination to defend their own position by rejecting or inhibiting hostile takeover offers. Bidders, meanwhile, value their abilities higher than those of the incumbents. Since people value what they have, the effect creates a basis for status-quo bias as well (Samuelson & Zeckhauser, 1988).

The endowment effect percolates through the post-deal period. From the acquirer's perspective, a transaction value includes advisers' fees and managerial resources spent post-deal, which borne by the acquirer alone. The success of a post-merger integration planned *ex-ante* is already reflected in the price paid. Thus, failure in executing the strategy *ex-post* means that the deal was overvalued, in that the acquirers overvalued their post-deal managerial capability in order to recoup the transaction costs. Prepayment makes it important to pursue post-merger integration, even to reach a break-even point. However, if the managers and staffers in charge of negotiating and closing the deal for the acquirer are succeeded by others after the acquisition through internal promotion or rotation, the deal may appear to their successors as belonging not to themselves, but to others. This may lead to underinvestment in post-merger integration, as the project is seen as less valuable. Underinvestment in integration efforts, rooted in the endowment effect, may be expected but not considered *ex-ante*. If so, the result will be an overvaluation of estimated synergy.

4.3.3. Hindsight bias and confirmation bias

Competition in the bidding process often lifts the price by sparking a series of offers and counteroffers and may create the need for justification after an agreement. A potential problem here is that prices raised through escalation are justified afterwards, not beforehand, by relevant data and plans. This is an example of hindsight bias, where people regard something as if they perceived it beforehand, even if they did not (Roese & Vohs, 2012). Similarly, there is confirmation bias (Nickerson, 1998), where people ignore inconvenient information, such as pertinent risks which could obstruct or delay a deal, and gather only that information which is consistent with their conclusions and reinforces arguments in favor of the deal. In such a situation, acquirers are locked into a timeframe and a decision already made. In examining why deals have failed, we often find that lack of due diligence is listed as a reason. While this is true to some extent, in the sense that acquirers are typically required to make decisions within a limited timeframe based on limited access to information, the ubiquitous presence of confirmation bias suggests that people do have presentiments of failure but ignore them, only to be "surprised" afterwards.

These errors and biases form a foundation, often left unnoticed, for overvaluation in the pricing of M&A transactions; they explain the systematic tendency for shareholders to incur losses when deals are announced. The next section discusses how we deal with such errors and biases from an institutional perspective.

5. DISCUSSION

5.1. The decision making process and control of overconfidence

A decision to acquire usually requires the approval of a company's board of directors, but shareholders are typically positioned as passive voters on proposals put forward by management, even for deals requiring their approval, such as stock-for-stock acquisitions and mergers. Therefore, the problem of errors and biases by managers and directors involved in M&A relates to the problem of shareholder protection, raising the question of how to address it through the design of corporate governance mechanisms. If, as already noted, overconfidence has positive aspects which promote unity and creativity within the organization, so can a good mechanism for making key decisions make this internal unifying force compatible with controlled investment decisions. The idea of committing oneself to voluntarily limiting one's discretion *ex-ante*, by recognizing the limits to one's decision-making ability, is hardly a new one. In the *Odyssey*, Ulysses resists the temptation of the Sirens' songs by having himself bound to the mast and putting wax in the ears of his crew before sailing past them. He thus managed to achieve a safe voyage while experiencing the beauty of the songs.

Designing and introducing a corporate governance mechanism, as exemplified by Sarbanes and Oxley, tends to mitigate overinvestment based on overconfidence, raising, or at least mitigating the

loss of, corporate value through M&A deals conducted under those internal controls (Banerjee et al., 2015). Strong and independent boards help overconfident CEOs avoid honest mistakes when they seek to acquire other companies (Kolasinski & Li, 2013). Clearly, then, the design of corporate governance affects risk in M&A. This point is also consistent with Hayward and Hambrick (1997). When managers have a high level of overconfidence - as measured by corporate performance, favorable praise in the media, and self-importance proxied by the pay gap between the CEO and the second-highest-ranking officer - the premium paid by firms, and the loss incurred by shareholders, tends to be large. However, this tendency is mitigated by a relatively strong corporate governance mechanism providing for a lower ratio of internal directors and separation of the CEO and chairman of the board.

However, setting in place an apparently appropriate decision-making process does not in itself guarantee that the firm will make appropriate decisions. For instance, board-authorized cash flow projections are often the foundation for valuing firms, but the existence of this procedure does not guarantee that such projection will be correct: Even experts err in calibrating a range of possible future scenarios by underestimating or passing over downside risks (McKenzie, Liersch, & Yaniv, 2008). Similarly, detailed future management plans, despite their usefulness in creating a clear, shared vision for an organization's future actions, do not increase the likelihood of a vision's realization, since the more detailed a plan is, the less probable that it will be realized exactly as written - even though we tend to see a detailed plan as more feasible than an abstract one (Tversky & Kahneman, 1983).

5.2. Outsiders and conflict of interest

Independent outside directors are expected to protect shareholders by looking objectively at M&A transactions from an outsider's point of view. As overconfidence is mitigated by outside monitoring (Camerer & Malmendier, 2007), independent outside directors serve to control managers' overconfidence. In Japan, independent outsider directors are required for the boards of listed firms under the corporate governance code introduced in 2015 by the Tokyo Stock Exchange as the comply-or-explain exchange rule.

However, since independent outside directors are natural persons, they, too, are affected by emotion and psychology. They might avoid conflicts with managers simply out of reciprocity (Langevoort, 2001), or exhibit deference to them (Morck, 2008). Independent outside directors, despite the title, depend for their compensation on the firms they monitor. Importantly, there is an unconscious tendency to positively evaluate one's own financial sponsor (Harvey, Kirk, Denfield, & Montague, 2010). Hence, a bias toward positive evaluation arises on the side of independent outside directors for the firms that essentially elect and pay them, subject to their shareholders' passive approval. Checks and balances become insufficient compared to what is expected from, and perceived by, the payee. Further, in the case of M&A, information forming the basis for decisions is provided to independent outside directors by the firms they serve; typically, this

information is sensitive and private, requiring a high degree of confidentiality. Managers have more knowledge about the firms they run than do independent outside directors. Managers also have greater access to private information on the context of a deal. This makes it harder for outside directors to judge the validity of the deal. Even managers face the same problem within a firm if some are delegated to internal divisions where even top managers can have trouble grasping all private information pertaining to a division considering an M&A transaction.

Conflicts of interest are an inherent problem for outsiders in that they are usually connected to entities outside the firms in charge. The talent pool for independent outside directors is limited, and it is often the case that an experienced individual, such as a former top manager in industry, concurrently sits on several boards in different industries. Similarly, firms often obtain outside advice from experts such as lawyers, consultants and investment banks, but these often give advice to competing clients in the same industry simultaneously, though typically by separating teams and building an internal firewall between them. And since these experts are paid more when a deal goes through than when it is abandoned midway, and are rewarded only when their services suit their clients' apparent needs, they have little incentive to obstruct a deal. Among all outside experts, investment banks have an added incentive to raise transaction values as their reputation is contingent upon league-table

rankings based on these values. They may also have conflicting financial or relational positions that would profit them through a higher valuation of target firms.

A standard response in dealing with such conflicts of interest is to disclose them. However, it is known that once disclosure is made, people tend to become bolder, as if disclosure provides a moral excuse for their behavior. Their actions then show a widening degree of conflict: They may give advice, about price, for instance, that benefits the advisor but is detrimental to its recipients, while the recipients, insufficiently discounting the degree of trust even after learning of the existence of such conflicts, continue to trust the conflicted advisor (Cain, Loewenstein, & Moore, 2005). Therefore, disclosure, while widely adopted and necessary, is not a panacea for resolving conflicts of interest. Hence it is arguable that recipients of advice from a conflicted advisor cannot be protected by disclosure, and that regulation of the conduct of conflicted advisors is necessary.

To summarize, we humans have various types of biases, and decisions by firms are not free from bias in that they are made by humans. Though there is some empirical evidence that corporate governance mechanisms may mitigate such biases, the repeated appearance of biases and related tendencies suggests inherent risk in M&A and its valuation. The table below summarizes the errors and biases applied and analyzed in the paper.

Table 1. Errors and biases in M&A

<i>Bias</i>	<i>Consequence</i>	<i>Main research</i>
Overconfidence, illusion of control, miscalibration and underestimation	Overvaluation, overoptimistic prediction	Roll (1986), Black (1989), McKenzie et al. (2008), Malmendier and Tate (2008), Weinstein (1980), Tversky and Kahneman (1983)
Winner's curse, rarity bias, loss aversion	Overvaluation, excessive risk-taking	Bazerman and Samuelson (1983), Worchel et al. (1975), Kahneman and Tversky (1984)
Anchoring, endowment effect, hindsight bias, confirmation bias	Overvaluation, irrational preference, overoptimistic prediction	Tversky and Kahneman (1974), Kahneman et al. (1991), Roese and Vohs (2012), Nickerson (1998)
Favorable decision for sponsors, excessive trust in conflicts of interest	Insufficient monitoring, overvaluation	Harvey et al. (2010), Morck (2008), Cain et al. (2005)

Source: Author's elaboration

6. CONCLUSION

This paper analyzed decisions on M&A, among the key strategic decisions that firms make, from the viewpoint of human errors and biases. These decisions often result in failure and impairment loss, and the fair value of the acquisition price listed at the time of an M&A becomes an issue raising the risk of overvaluation. The purpose of this paper was to explain the nature of this risk by shedding light on the errors and biases of the managers and directors responsible for decision-making. Biases that cause overvaluation include overconfidence by managers; an escalation in bidding price leading to winner's curse; anchoring in pricing; the endowment effect; and hindsight and confirmation biases. These are both conscious and unconscious, and may not be corrected even if recognized. These biases affect the M&A decisions of managers and directors can result in overvaluing target firms. Overvaluation leads in turn to impairment loss, which flows through to losses incurred by shareholders. Research on behavioral finance asks if we hold predictable,

systematic biases. If such biases are indeed systematic, rather than random incidents observed from time to time, they pose a risk to valuations based on the traditional CAPM. A growing body of research on cognitive science suggests the existence of such risk. On the other hand, some aspects of overconfidence are conducive to productive and creative activities as well as coherent internal management. Corporate governance can be designed to incorporate these positive aspects while controlling negative ones. But it is not a panacea, since independent outside directors also have biases, and conflicts of interest are inherent in the mechanism.

There are some limitations to this research. One is that cognitive-science experiments are typically conducted in laboratories, which do not necessarily reflect corporate environments. Firms are likely to deal with unique surroundings in making M&A decisions, such as the competitive landscape involving the target firm, the context of each deal, bargaining power, potential synergies, and internal dynamics. These are admittedly hard to

replicate in laboratory experiments. However, there is no evidence that these specificities override the systematic biases that people have in making decisions. Despite a shared knowledge of these biases, failures and losses are observed repeatedly, over and above these specificities, indicating that they deserve to be recognized as a separate risk. On the contrary, these specificities might obfuscate the effects of biases, giving managers and directors an excuse for errors stemming from them and hindering their learning from experience. As long as complex decisions such as M&A are made by humans, it is worth recognizing the human biases that bear on such decisions to avoid losses that will ultimately be felt by shareholders.

There are some avenues for future research. One would be to look at ways to mitigate human biases once they are recognized. The architectural design of corporate governance, a possibility that was discussed in the paper, would include further refining the processes by which boards make decisions, with a focus on addressing potential biases. Research on group decisions would be helpful for this purpose. Appointing a devil's advocate is a classic example which could translate into, for instance, an added role for independent

directors designed in terms of errors and biases. Another avenue would be to explore the complementary roles of data in complex human decisions aided by technology. Mining the data of the universe of potential target firms for strategic fits is at a fledgling stage of practical application, but advancements in this direction should aid human decisions and mitigate even the most inevitable errors and biases.

It is often stated that management and valuation are art forms. Human experience and creativity, and thus emotion and psychology, must work in tandem with a presumably established, objective methodology. Deepening our understanding of such elements contributes not only to success in managing firms, but also to the design of a better architecture for protecting shareholders and stabilizing capital markets. It is our hope that this paper will help to further the understanding of how emotion and psychology influence our decisions, a subject of increasing importance in firm management. Advancements in the understanding of human emotion and psychology promise to protect shareholders by deepening our understanding of corporate decisions.

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