Entrepreneurial Orientation and the Fate of Corporate Acquisitions

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Richard A. Hunt – *Corresponding Author*
Strategy & Entrepreneurship
Pamplin College of Business
Virginia Polytechnic and State University
880 West Campus Drive
Blacksburg, VA 24061
rickhunt@vt.edu
(720) 334-8685

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Highlights

- Corporate acquisitions totaling $57 trillion have been transacted since 2000
- Most acquisitions destroy shareholder value for the acquiring firm
- Entrepreneurial orientation (EO) plays a key role in determining acquisition outcomes
- Low and high levels of EO are associated with value destruction
- Moderate levels of EO are associated with value creation

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ABSTRACT

Does a firm's entrepreneurial orientation (EO) play a role in creating or destroying value through corporate acquisitions? Extant research has sought to assess the influence of EO across a multitude of strategic contexts, but to-date has not addressed business venturing through acquisitions. Given that worldwide deal values since 2000 total more than $57 trillion, the omission has become conspicuous. In response, this study investigates the relationship between EO and acquisitions through an analysis of 500 randomly selected deals consummated by U.S. firms between 2001 and 2012. The findings suggest EO's impact on acquisition-related outcomes is ultimately a matter of degree, with curvilinear effects driven by interactions between EO and three key contingencies: relatedness, method of payment, and acquisition premiums. For each of these moderators, high and low levels of EO are associated with value destruction, while moderate levels, on average, generate positive returns for acquiring firms. However, the relationship is not symmetrical. Firms exhibiting high levels of EO experience significantly worse acquisition-related returns than firms with low EO. The study contributes conceptual, empirical, and methodological insights for both scholars and practitioners by viewing acquisitions through the lens of EO.

Key Words: Acquisitions, Entrepreneurial orientation, M&A outcomes, Value creation, Value destruction

1. Introduction

This study explores the extent to which a firm's entrepreneurial orientation (EO) plays a role in creating or destroying value through corporate acquisitions. The link is consequential for scholars in finance, accounting, and economics, as well as entrepreneurship and strategy. Miller's (1983) original delineation of EO as a unidimensional, latent construct -- reflected in a firm's attitudes and behaviors toward innovativeness, proactiveness, and risk taking -- has deep roots in the study and practice of corporate strategy (Miller 2011), and is regarded by many scholars as being one of the most well-supported constructs comprising foundational entrepreneurship theory (Covin & Wales 2012, 2019; Wales 2016). Prior empirical work has sought to assess the impact of EO on strategic reactiveness (Green, et al., 2008), strategic alliance portfolios (Marino et al., 2002), novel sources of revenue (Covin, Green & Slevin, 2006), strategic learning (Anderson, Covin & Slevin, 2009), and the strategic intentions and actions of firms (Covin & Wales 2019).

The strategic content and purpose of EO has drawn scholars to explicitly refer to EO as a "strategic-level construct" (Covin & Wales, 2019:13) involving "key decision-making processes" (Lyon, Lumpkin & Dess 2000:1056), instigated and maintained by senior-most management, which are central to the "strategic posture of a firm" (Covin & Slevin, 1989:76), as they are demarcated through "a firm's activity and management's plans and expectations for the future" (McKenny et l., 2918a:509), especially "the extent to which the top managers are inclined to take business-related risks" (Miller, 1983:784). And yet, to-date, studies have not explored conceptually or empirically the relationship between EO and what is arguably the largest, the most expensive, and by various measures, the riskiest form of strategy-making: corporate acquisitions.

Consistent with George and Marino (2011), the use of EO is intended to be an exercise in what they call "concept travelling," which involves theorization that maintains the precision of EO while extending its generalizability. For these purposes, the strategic foundation of EO inheres directly with the managerial leadership and decision-making content of corporate acquisitions (e.g. King et al., 2004; Singh & Montgomery, 1987), which are, in turn, closely tied to the strategic considerations that drive such transactions (Haspeslagh & Jemison, 1991; Singh & Zollo, 1999). This is critical, given the strategic, operational, and financial materiality of acquisitions. Since 2000, more than 790,000 acquisitions have been consummated worldwide, with a total deal value exceeding $57 trillion (IMAA, 2020). And yet, EO has not been explicitly examined as a driver of acquisition value creation or destruction, despite recent research demonstrating that innovation and revitalization strategies through acquisitions are an important facet of entrepreneurship (Hunt, Townsend, Asgari & Lerner 2018). Scholars now consider acquisitions to be one of the primary avenues through which firms take entrepreneurial action (King, et al., 2018; Schmitt, et al., 2018).

Despite the widespread use and increasing importance of acquisitions, the underlying reality is that, on average, most acquisitions fail to create shareholder value for the acquiring firm

(Datta et al. 1992; King et al. 2004). With rare exception, buyers pay a significant premium above the prevailing market price for target firms (Cartwright & Schoenberg 2006). The classic justification for these premiums focuses on "synergies," representing the acquirer's beliefs that the favorable effects of integrating the acquirer's and target's business operations will generate incremental value (Sirower 1997). The inability to explain why firms routinely fail to achieve synergies is a notable gap in existing acquisition frameworks (Capron, et al., 1998; Hitt et al. 1998; Trautwein, 2013; Trichterborn, et al., 2016). EO offers a compelling perspective through which to address this gap precisely because it emphasizes how firm-wide entrepreneurial processes and culture contribute to a firm's capacity to be innovative, pro-active, and risk-taking (Covin & Wales, 2019; George, 2011; Jordao, Souza & Avelar, 2014; Miller, 2011).

To investigate the relationship between EO and acquisition performance, I analyze 500 randomly selected deals consummated by U.S. firms between 2001 and 2012. The study makes several distinctive contributions. First, I extend and enhance existing theories concerning the impact of EO on corporate performance (e.g. Covin, et al. 2006) by developing and testing the first framework that links EO to the domain of corporate acquisitions. As Sirower noted (1999:5), "Acquisitions are arguably the most popular and influential form of discretionary business investment." Meanwhile, entrepreneurship scholars note that EO captures "managerial proclivity towards pursuing projects with uncertain outcomes" (Anderson et al. 2015: 1583; Covin & Wales 2018), including those associated with acquisitions (Hunt et al. 2019). The empirical validation of EO as a driver of acquisition outcomes has potent cross-disciplinary implications for the manner in which scholars in management, finance, accounting, and economics conceptualize managerial decision-making involving significant corporate investments in the context of extreme uncertainty.

Second, I develop new insights concerning the precise nature of EO's role in determining firm-level outcomes. While existing research has studied the impact of EO on firm performance

(e.g. Hughes & Morgan, 2007; Rauch et al. 2009), the findings suggest EO's impact on acquisition-related outcomes is ultimately a matter of degree, exhibiting significant curvilinear effects driven by its interaction with three key contingencies: relatedness, method of payment, and acquisition premiums. For each of these moderators, high and low levels of EO are associated with value destruction, while medium levels, on average, generate positive returns for acquiring firms. By varying the level of EO across these contingencies, the study adds considerable nuance to the conceptualization of how and why EO interacts with key drivers of acquisition outcomes.

Third, the study contributes material advances in the methodological rigor applied to the measures of acquisition-related performance by using longitudinal data to establish a more complete, more expansive portal to the EO-Acquisition relationship. Extending and enhancing the methods developed by Hunt and colleagues (2019), my approach focuses on acquisition-specific outcomes through the use of data on acquirer asset impairment. The application of EO theory to corporate acquisitions addresses lingering conceptual and empirical gaps by developing a more complete explanatory model of the fate of corporate acquisitions (Stahl & Voight 2005), thereby underscoring the benefits of "concept traveling" (George & Marino, 2011) through generalizable insights drawn from the EO construct.

2. Theoretical development and hypotheses

The scorecard on acquisition outcomes is generally bleak. As King et al. (2004:196), conclude in completing their meta-analysis of acquisition research: "Thus, after decades of research the overwhelming conclusion must be that M&A activity, on average, does not positively contribute to an acquiring firm's performance." Moreover, the returns to acquiring firms have steadily deteriorated over the past fifty years, with slightly positive returns in the 1960s giving way to significant losses by the 1990s (Moeller et al. 2005). Far more interesting than averages,

however, is the variance in returns to acquiring firms. Despite the fact that some firms do succeed in creating shareholder value via acquisitions (Bruner 2009), these occurrences constitute a minority of outcomes (Sirower 1999), and it is still unclear as to what factors separate the firms that create value from those that destroy it.

2.1 Behavioral approaches to risky M&A

To address the question of why some firms are more successful than others in realizing positive economic returns from risky acquisition activities, scholars have explored how various structural factors play a role (Ferreira, et al., 2014; King et al. 2004), including: method of payment (Rappaport & Sirower 1998), industry relatedness of the target company (Lim & Lee, 2016), and whether or not the acquirer is a conglomerate (Bruner 2002). These and other variables have helped to frame the issues surrounding the variance in acquirer returns, but even the best explanatory models built on structural factors have a persistently high unexplained variance (Cartwright & Schoenberg 2006), often exceeding 70% (Stahl & Voight 2005).

Given the high level of unexplained variance, an emerging stream of research explores how the characteristics of the top management team including CEO hubris (Hayward & Hambrick, 1997), the celebrity social status of the CEO (Cho et al., 2016), prior acquisition experience (Cho & Arthurs, 2018; Haspeslagh & Jemison 1991; Peng & Fang, 2010), among other factors influence the identification of potential gains in revenue growth or cost control through value-enhancing synergies (Capron, et al., 1998; Hitt et al., 1998; Hunt et al., 2018) in order to justify high acquisition premiums. These approaches are often grounded in behavioral approaches to decision theory which link the overconfidence of the CEO and other top managers to risky acquisition behaviors (Malmendier & Tate, 2008), leading even experienced managers to overpay for risky

acquisitions based on the faulty belief they will be able to create value after overpaying for corporate acquisitions (Roll, 1986).

Despite the power and efficacy of behavioral theories to improve the explanatory power of models of M&A activities (e.g., Stahl & Zimmerer, 1984; Pablo, Sitkin, & Jemison, 1996; Shimizu, 2007; Powell, Lovallo, & Fox, 2011), much of the current evidence suggests that these behavioral biases are exacerbated by the structural conditions, including sociological factors surrounding the M&A activities. For example, Cho and colleagues (2016) find that the relative recency of a CEO winning the "CEO of the Year" award impacts the extent to which they pursue risky acquisitions. In these cases, the "Celebrity CEO" pursue more risky acquisitions if their "exalted" social status is called into question based on underperformance. However, Cho and colleagues (2016) also find that the more time that passes since the CEO had won the award, the less recent problems with underperformance induces them to undertake risky acquisitions. Fundamentally, behavioral decision approaches suggest the effects of behavioral biases are highly contingent upon the level of uncertainty in the decision environment (Busenitz 1999; Dawes 1998; Thaler 2005). When uncertainty is high, managers tends to deviate from rational models of decision-making, but as uncertainty is mitigated, managers tend to adopt more rational approaches to decision-making (Kahneman & Tversky 1979; Lerner, Hunt & Dimov, 2018; Thaler 2005).

2.2 Entrepreneurial orientation & risky acquisitions

In some cases, however, managers are prone to pursue new opportunities aggressively through M&A activities, regardless of the level of uncertainty in the decision environment (Perry & Herd, 2004). Under these conditions, behavioral approaches to explaining the variance in the returns to risky M&A activities provide a partial accounting of the antecedents to managerial risk-taking (Rowe, Boulgarides & McGrath 1984), especially when these firms appear pre-disposed to

pursue new opportunities under varying levels of uncertainty (Kaplan 2008). In light of this gap in existing research to explain why some firms appear to be pre-disposed to undertake risky M&A activities, this study explore how a firm's entrepreneurial orientation (EO) influences the extent to which organizations pursue risky M&A activities. Existing research defines an entrepreneurial orientation (EO) as "[…] strategy-making practices…that represent a frame of mind and a perspective about entrepreneurship that are reflected in a firm's ongoing processes and corporate culture" (Dess & Lumpkin, 2005: 147). Wales and colleagues (2012) argue that EO leads firms to cast aside existing norms in pursuit of new kinds of profit enhancing activities that are needed to justify synergy-driven logics. In the context of risky M&A activities, I build on this logic to assert that a firm's EO is both a source of differing perceptions of potential synergies between acquirer's and target firms, and a source of differing capacities to realize synergies that determine value creation or destruction.

However, although extensive conceptual and empirical work in entrepreneurship confirms the connection between EO and firm performance (e.g. Covin, et al. 2006; Lumpkin & Dess 1996; Rauch et al. 2009), including important refinements and greater acuity through the novel use of fuzzy set analysis (Lisboa, Skarmeas & Saridakis, 2016; McKenny et al. 2018b), the precise nature of EO, is still a matter of continuing debate (Covin & Wales, 2019). Contemporary EO research is marked by two particularly important points of departure that lead in different theoretical directions. In the first stream, scholars have built on Miller's (1983) original, unidimensional formulation to define EO as "a latent construct whose meaning is reflected in its sub-dimensions," consisting of innovation, proactiveness, and risk-taking – each of which needs to be present for EO to exist (George, 2011: 1292). Other scholars, such as Lumpkin and Dess (1996) conceptualize EO as a multi-dimensional, formative construct, where the dimensions of EO function as antecedent conditions which shape the magnitude of a firm's EO. What these approaches share,

are a core set of dimensions of EO. Innovativeness refers to a firm's willingness and ability to originate, develop, and market novel goods and services. Proactiveness refers to a firm's anticipatory posturing, the degree to which it fosters a culture primed to pursue new opportunities or forestall competitive and environmental threats. Risk-taking – in the EO context -- refers to a firm's willingness to undertake novel, market-based action in the context of *a priori* irreducible uncertainty (Townsend et al., 2018). Building on these three core dimensions, Lumpkin and Dess (1996) add autonomy and competitive aggressiveness.

While both conceptualizations of EO – the reflective and formative models – are widely used in the existing research (Covin & Wales 2019), George (2011) emphasizes that making the correct choice between reflective and formative conceptualizations is highly consequential and that improper use can result in massive misspecification. To address key aspects of this debate, McKenny and colleagues (2018b:504), extend Miller's (1983) ground-breaking work on EO, by adopting a configurational approach. In this configurational approach, McKenny and colleagues (2018b) make a case for a unitary conceptualization of EO, particularly when it is examined in a strategic decision-making context. They argue that independent consideration of EO's dimensions runs contrary to the manner in which "managers embrace complex knowledge structures" involving demonstrable "relations among the EO dimensions" (McKenny et al., 2018b:504). This approach is quite important for scholars seeking to apply EO to new contexts, as a unitary, configurational approach building on a reflective conceptualization of EO preserves conceptual fidelity, while increasing the demonstrated generalizability of EO (George & Marino, 2011).

Building on these arguments, and consistent with the McKenny et al. (2018b) formulation of the EO construct, I approach the question of whether a firm's EO impacts the enacted and eventual success of risky M&A activities by adopting a unitary configuration of an aggregated EO (Wiklund & Shepherd, 2005). Since the five-dimension, formative conceptualization developed

by Lumpkin and Dess actually decreases EO's generalizability, the most apropos basis for the investigation of EO relies upon reflective conception of EO. Given the nature of my inquiry as fundamentally "concept traveling" (Marino & George 2011:994) the focus on EO's relationship to acquisitions involves tapping into what Covin and Slevin (1989) termed EO's fundamental nature as the "strategic posture" or true strategic orientation of a firm. Given the growing recognition of M&A as a potent form of market-based corporate venturing (Hunt et al., 2018) and a key driver of corporate revitalization (King et al., 2018), I am principally concerned with the manner in which EO, as a latent, unidimensional construct is reflected in its sub-dimensions vis a vis a firm's pursuit to translate opportunities into new growth trajectories through M&A strategies.

2.3 Management behaviors, contingencies and the curvilinear influence of EO on M&A

The investigation of EO's role in determining acquisition-related outcomes positions the study at the confluence of two divergent forces. On the one hand, key strategic proclivities, suggestive of a firm's entrepreneurial "gestalt" (Marino & George 2011), are reflected in critical aspects of EO. Existing research has demonstrated that EO is often a potent, positive determinant of firm-level outcomes. A 51-study meta-analysis of EO, performed by Rauch, et al. (2009) reveals that EO favorably influences most measures of financial performance. However, despite the immense scale of acquisition-related activity (Sirower 1999) and the close relatedness of corporate acquisitions to corporate entrepreneurship and EO (Hunt et al., 2019; King et al., 2018), no existing study examined acquisition outcomes as a consequence of EO. On the other hand, entrepreneurial venturing through corporate acquisitions has been shown through studies in finance, accounting, economics, and strategic management, to destroy shareholder value for vast majority of acquiring firms (Agarwal & Jaffe 2001; Bruner 2002; Cartwright & Schoenberg 2006; Hunt & Fund, 2012). Yet, no existing study has examined EO as a driver of acquisition outcomes.

Given the strong favorable influence of EO on firm performance and the strong unfavorable influence of acquisitions on firm performance, the interaction between EO and acquisitions is complex and heavily contingent upon factors affecting each. Since this study are assesses EO through the lens of Miller's (1983) reflective construct, the degree of any given firm's EO is evidenced through innovativeness, proactiveness, and risk-taking. Entrepreneurship scholars have carefully documented the significant effect of behavioral factors attendant to decision-making biases (Busenitz & Barney, 1997). When this occurs, radically different outcomes often materialize that confound conventional models of utility maximization (Kahneman & Tversky 1979), breaking the strong linkage between EO and firm performance. Existing research underscores the substantial role played by CEOs and other C-suite executives in acquisition-related decision-making as well as the extent to which behavioral factors and predispositions, such as CEO hubris, play a prominent role (e.g. Hayward & Hambrick, 1997). As McKenny and colleagues (2018b:507) noted, the actual relationship between EO and firm performance is subject to an array of contingencies that will ultimately influence the actual result of strategic business venturing:

> "Contingency theory has been used frequently to examine the link between organizational configurations and firm performance (Ketchen et al., 1997). Contingency theory suggests that improving the alignment between strategy, structure, and environment will improve firm performance (Lawrence & Lorsch, 1967). Work grounded in contingency theory also suggests that the relationship between antecedents and performance may vary based on the performance measure used."

Even though EO provides a relatively stable set of dispositional antecedents to corporate risk-taking activities, the relationship between EO and organizational performance appears to be contingent upon a variety of structural factors (Covin et al., 2006; Li, Jiang, Pei & Jiang, 2017; Linton & Kask, 2017; Lisboa, et al., 2016; Lumpkin & Dess, 2001; Wales, Monsen & McKelvey 2011). Consistent with classic conceptualizations of contingency models (e.g. Donaldson 2001) the complex relationship between EO and acquisition success is contingent upon the manner that

EO influences the specific challenges firms face when enacting acquisitions as corporate-venturing strategies; which, as prior literature has shown, introduces an array of biases (Thaler 2005) and predispositions (e.g. Hayward & Hambrick 1997) into the behavioral decision-making processes.

In the context of risky M&A activities, the non-uniformity of EO's effects are cast across a complex landscape of intervening variables. Recent attempts to develop configurational models of EO, using fuzzy set analysis (e.g. Lisboa, Skarmeas & Saridakis, 2016; McKenny et al. 2018b) suggest that there exists an equifinality of performance outcomes across an array of different patterns comprising EO's three dimensions, meaning that in the case of strategic EO -- such as that arising in corporate acquisitions – considerable variation may arise as a consequence of any given firm's configuration (Wiklund & Shepherd, 2005). Since all three EO dimensions are necessary for the presence of EO (Covin & Wales 2019; Marino & George 2011; Miller 1983, 2011), firms exhibiting very little evidence, or perhaps even no evidence, of one or more dimensions are definitionally deficient with respect to EO. Business venturing through acquisitions in the absence of one or more EO dimension would limit the extent to which EO can exert positive influence on acquisition outcomes. Risky M&A would seem to be in peril at these very low thresholds. At the other end of the spectrum, firms that are extraordinarily high along all three EO dimensions may benefit from the favorable influence of proactiveness and innovativeness, but are likely to suffer from the multiplicative behavioral factors accompanying very high levels of risk-taking. This precise dynamic is apparent in the empirical study by Short and colleagues (2010:339). While all three EO dimensions are significant in the complete model, proactiveness ($\beta = 0.12$, $p < .05$) and innovativeness ($\beta = 0.19$, $p < .01$) have positive coefficients, while risk-taking is negative and highly material ($\beta = -0.21$, $p < .01$). Thus, at very high levels of EO, in the context of acquisitions – which carry notoriously high-risk of value destruction -- the out-sized role of risk-taking's negative influence is likely to become even more pronounced.

For these reasons – a paucity of critical ingredients at very low levels of EO and an unwanted plethora of behavioral risk at very high levels of EO -- the relationship between EO and M&A success is likely to be curvilinear, such that very low and very high EO levels are associated with value destruction through acquisition, while moderate levels of EO are expected to be associated with value creation. At the very low end, acquiring firms with little or no EO are less likely to implement the necessary changes to generate profit-enhancing activities from the combined entity, post-acquisition (Wales et al. 2012). Meanwhile, at the very high end, acquiring firms well steeped in EO may see too many entrepreneurial opportunities rather than too few. Such firms may exaggerate their capacity to implement constructive change and may pay excessive premiums for acquired assets while banking on their ability to achieve synergies. Financial Accounting Standards concerning "Goodwill and Other Intangible Assets" (e.g. SFAS 142) mandate that acquirers recognize the inability to generate anticipated revenue and expense synergies through a write-down of intangible assets related to the under-performing acquisition (Bens, Heltzer & Segal 2011). Existing M&A research reveals that these required asset write-downs are often associated with acquisition-driven external corporate venturing (e.g. Hunt et al. 2018). Thus, it is expected that low-levels and high-levels of EO would be associated with an increased incidence of acquisition-related asset impairment, while moderate levels of EO would have fewer asset write-downs, in a curvilinear fashion:

> **H1a**: *There exists a U-shaped relationship between an acquiring firm's EO and the value it derives from acquisitions, such that moderate levels of EO will generate fewer acquisition-related asset write-downs than either low or high levels of EO.*

2.4 Asymmetrical effects of EO

In the foregoing discussion, I theorize that the generalized relationship between EO and acquisition-related outcomes would be characterized by a curvilinear relationship, based on

empirical work by Short et al. (2010), McKenny et al. (2018b), and others (e.g. Rauch et al. 2009) that demonstrates varied performance outcomes as a function of the dimensions, configurations, and patterns attendant to strategic EO. In models that conceptualize and model EO as a reflective construct (Covin & Wales, 2012; George 2011) – as I have sought to do in this study -- firms must exhibit all three dimensions for EO to exist, which means that firms undertaking corporate acquisitions may do so despite being deficient in one or more dimensions constituting EO. Cast through the lens of Covin and Slevin (1989, 1997), firms low in EO may face a deficit in the entrepreneurial qualities that would otherwise support the ability and willingness to successfully engage in entrepreneurial action. Meanwhile, firms that are extraordinarily high across all three dimensions may experience an excess of entrepreneurial action. Configurational studies of EO (e.g. Lisboa, et al, 2016; McKenny et al. 2018b; Wiklund & Shepherd, 2005) lead to the conclusion that very low levels of risk-taking, innovativeness, and proactiveness are reflective of firms that do not possess a strategic "gestalt" that can most aptly be described as entrepreneurial (Covin & Slevin 1989; Marino & George 2011). Risk factors are minimized among such firms because even if risk-taking is high, the absence of innovativeness or proactiveness constrains the potential damage of having a risky predisposition. Conversely, firms that are configured to be very high in all three dimensions will make an accelerant of risk-taking – which, as noted above, carries a negative coefficient – through proactiveness and innovativeness. The management behaviors and predispositions that so often pose risks for firms undertaking corporate acquisitions (Hayward & Hambrick 1997) are exacerbated in the context of disproportionately high risk-taking in the case of very high EO levels.

Thus, while Hypotheses 1, above, predicted a curvilinear relationship between EO and acquisition outcomes, such that only moderate levels of EO are expected to produce positive returns, the interactive role of innovativeness and proactiveness with risk-taking is likely to create

an asymmetry between very low and very high levels of EO. At low levels, the negative effects of risk-taking (Short et al.2010) will be limited by low innovativeness and proactiveness. Meanwhile, risk-taking's negative effects will be exacerbated by the other two dimensions at very high levels of EO, leading to an asymmetrical relationship in which low EO exhibits performance below moderate levels of EO, but above very high levels of EO (Figure 1a).

From the M&A literature, too, several well-documented, contingent factors are also likely to influence the symmetry of this relationship: (i) the impact of industry relatedness between the acquiring and acquired firms (Palich, Cardinal, and Miller 2000; Singh & Montgomery 1987, (ii) the extent to which equity is used as payment by the acquiring firm (Chang 1998; Martin 1996), and (iii) the premium paid by the acquiring firm to consummate the purchase of the acquired assets (Cartwright & Schoenberg 2006; Hayward & Hambrick 1997; Sirower 1997). Taken in tandem, these three features are expected to make the negative effects of very high EO more pronounced than very low EO. Thus, it would be anticipated that high levels of EO will decrease acquirers' shareholder value (Figure 1a) and will correspondingly increase the probability of an acquisition-related intangible asset write-down (Figure 1b).

Insert Figure 1a and 1b About Here

H1b: *The U-shaped relationship between an acquiring firm's EO and the probability of an asset write-down is asymmetric, such that low levels of EO will generate fewer acquisition-related asset write-downs than high levels of EO.*

2.5 Interaction effects of EO and key M&A value-drivers

Although the unexplained variance is large for all models predicting acquisition performance (Agarwal & Jaffe, 2002), M&A research has identified a select profile of drivers that are reliable predictors, especially recent models that take into account new combinations of behavioral decision-making antecedents and structural contingencies which materially improve

the explanatory power of performance models (e.g. Hunt et al., 2019). Contingent factors proven to enhance predictive accuracy include: relatedness of the acquired firm's core business, method of payment, and acquisition premiums (King et al. 2005; Sirower & O'Byrne, 1998). Each is, in direct fashion, connected to the behavioral theory of the firm (Cyert & March, 1963) – and, particularly risky decision-making (e.g. Edwards, 1961; Slovic, Fischhoff, & Lichtenstein, 1977) -- insofar as both EO and acquisitions are emblematic of proclivities and actions of senior-most management and all three contingencies are the consequence of corporate executive attitudes towards risk. As Covin and Slevin (1998:218) noted, "Entrepreneurial firms are those in which the top managers have entrepreneurial management styles, as evidenced by the firms' strategic decisions and operating management philosophies. Non-entrepreneurial or conservative firms are those in which the top management style is decidedly risk-averse, non-innovative, and passive or reactive." In this sense, EO seeks to identify and describe what Miller and Friesen (1982:1) refer to as "innovative strategy of the firm," which they see as being a reflection of executive-level "goals and temperaments" and, according to Covin and Slevin's (1998) conceptualization of EO, the extent to which senior managers are inclined to take business-related risks, particularly corporate-level risk-taking manifested in M&A activity (King et al., 2018)

Studies to assess the interactions between EO and key contingencies have lengthy precedence, as Miller (2011) observed: "The largest stream of [EO] research examines the performance implications of EO under different environments and strategies, and moderating or moderated by various other conditions." Consistent with the approach taken by Covin and Slevin (1989), I explore interactions that are vital to the confluence of EO and risky decision-making in the form of acquisitions. "Context is clearly an important factor when considering strategic EO," noted McKenny and colleagues (2018b:516) and much of this context extends to the conditions surrounding senior management's approach to risky strategies (Covin, et al, 2006).

As such, existing theory supports the view that pairwise interactions of these three structural contingencies instantiated in the nature of M&A deal-making process – relatedness, payment method, and deal premiums – when expressed as product terms with EO, will amplify the negative effect of high EO on returns to acquiring firms. For example, Sirower and O'Byrne (1998) find that the combined effects of relatedness and premiums paid magnified the negative rates of return experienced by acquiring firms. King and colleagues (2004) posit the existence context-specific unobserved moderators that drive significant variance in acquisition-related returns. Alexandridis, et al. (2010) conclude that acquiring firms that most aggressively pursue acquisition targets are the most prone to significant over-payment. Consistent with these findings, I look to these magnifying interactions as driving the asymmetric impact of EO on returns.

2.5.1 Relatedness

Research on the role of relatedness in determining acquisition outcomes is deeply divisive (Sirower 1999). On one hand, Rumelt (1982) and others find support for the notion that acquisitions undertaken to promote related diversification outperform unrelated diversification (Kusewitt 1985; Palich, Cardinal, and Miller 2000; Singh & Montgomery 1987). Others, however, challenge these findings through both logic and empirical findings (e.g. Agrawal et al. 1992; Seth 1990). However, what is missing from this conversation is that the effects of relatedness have not been contemplated in the context of EO and my theory would suggest that the role of EO is an important missing piece. Behavioral approaches to decision theory have consistently noted that forays into less-related product categories, involving more "distant' searching for new growth opportunities constitutes a significantly more ambitious strategic agenda than seeking growth through related diversification (Posen et al., 2018). Current EO research suggests that higher levels of EO lead to more distant search strategies (Bhardwaj 2006) thereby amplifying the risks of the

corporate venturing strategy. For these reasons, it is predicted that firms exhibiting higher levels of EO would be more likely to journey farther afield in identifying acquisition targets, therefore, exacerbating the problems lower relatedness poses to acquisition success.

> **H2**: *Lower relatedness will amplify the negative effect that high EO has on the returns to an acquiring firm.*

2.5.2 Method of payment

Acquisitions are generally consummated through the payment of cash, equity or some combination of each (Rappaport & Sirower 1998). Research from finance suggests that acquiring firms will optimize the mix of cash and equity to maximize returns form the acquisition (Ravenscraft & Scherer 1987). Management studies have shown that equity is also used to bind acquired firms to the combined entity, especially when a significant portion of the acquisition is derived from human capital (Ranft & Lord 2000). However, the issuance of equity is correlated with higher acquisition premiums (Ravenscraft & Scherer 1987), which increases the risk of unrealized synergies and overpayment. In this sense, equity issuance may be a more aggressive financing vehicle than the use of cash. While cash may be expended to purchase a foreseeable stream of future cash flows, the use of equity may involve the expectation of unforeseeable market and product opportunities. The preferential use of equity to finance opportunity pursuit reflects one of the central puzzles in the entrepreneurial finance literature regarding why entrepreneurs pursue such speculative opportunities with poor risk-return trade-offs (Drover et al., 2017). Several maladies underpin this preference for equity issuance, including exacerbating behavioral biases such as over-optimism or inflating preferences for high risk-high reward investment opportunities (Moskowitz & Vissing-Jorgensen, 2002). Although the use of equity provides leverage for corporate ventures to expand their pursuit of new opportunities, systematic analysis of the investment returns to equity financing indicates poor risk-return trade-offs (Moskowitz & Vissing-

Jorgensen, 2002). Thus, it is expected that negative effects of high EO will be exacerbated by the use of equity issuance in M&A activity as corporate entrepreneurs aggressively expand their pursuit of speculative opportunities with increasing poor risk-return trade-offs.

> **H3**: *Higher equity issuance will amplify the negative effect that high EO has on the returns to an acquiring firm.*

2.5.3 Acquisition premiums

Prior research has shown that the premiums paid by acquiring firms range between 40% to 65% (Hayward & Hambrick 1997: Krishnan 2007). The tendency to pay significant premiums over the current market value of an acquired firm constitutes the centerpiece of the argument that corporate acquisitions generally reduce the shareholder value of the acquiring firm. With few exceptions, the great preponderance of studies has determined that the returns to acquirers are negative (e.g. Agrawal, et al. 1992; King et al. 2004) and that the leading is cause is associated with excessive premiums paid by the acquiring firm in anticipation of synergies that never materialize (Bruner 2002; Shaver 2006; Sirower 1999). The anticipation of synergies is a reflection of the acquiring firm's perception that significant value can be created in the combined firms over and above market value of the firm pre-acquisition. Since firms with high EO exhibit stronger proclivities towards risk-taking, pro-activeness and innovation, it would be expected that these firms are more optimistic about their ability to activate the changes necessary to achieve the synergies that justify acquisition premiums. Therefore, it is predicted:

> **H4**: *Higher premiums will amplify the negative effect that high EO has on the returns to an acquiring firm.*

3. Methodology and research design

To examine acquisition outcomes as a function of EO, I conducted a textual analysis (e.g. Beattie 2004; Duriau et al. 2007; Krippendorff 2012; Short et al. 2010) of public disclosures related

to a random selection of 500 U.S.-based corporate acquisitions, transacted between 2001 and 2012, drawn from a pool of 7,240 publicly traded companies, obtained from Thomson Reuters SDC Platinum. Textual content was compiled for a period dating three years before and three years after each transaction, from four sources: (i) annual reports, via EDGAR; (ii) company press releases announcing an acquisition, via PR Newswire; (iii) press articles pertaining specifically to a given acquisition, via Lexis-Nexis; and (iv) reports from Wall Street analysts, via Zack's. Financial and accounting data to measure acquisition outcomes were obtained from SEC filings, via EDGAR.

3.1 Computer-aided text analysis

Content analysis is a steadily growing, increasingly prominent family of research methods that apply a predefined set of protocols to identify and classify textual artifacts, including reports, books, articles, transcriptions, letters, emails, text messages, and a wide assortment of other communications expressed in or transformed to written formats (Duriau, Reger, & Pfarrer, 2007; Morris, 1994). Recent use of content analytical tools has been decisive in aggregating manifest content through text statistics (Krippendorff 2012) but also latent content, revealing "deeper meaning embodied in the text" (Duriau et al., 2007), which in turn allows researchers to draw inferences regarding intentions, contexts, beliefs, proclivities, mindsets, dispositions, perspectives, and other antecedent conditions (Krippendorff, 2004; Weber, 1990), including orientations (Short et al., 2010). Although textual analysis has existed for centuries in domains such as Shakespearean and Biblical studies, dramatic improvements in automated textual recognition using software tools through computer-assisted text analysis (CATA) "provide higher reliability than human coding with lower cost and greater speed (Neuendorf, 2002)" (Short et al. 2010: 321). In the field of management, the ability to extract underlying trends and meanings from organizational artifacts in relatively speedy and inexpensive fashion has precipitated increasing reliance upon CATA.

The use of CATA in EO research has found strong support (McKenny, et al. 2018a), but not without some controversy. As Covin and Wales caution (2019:8), while CATA is a useful approach to EO, it is indirect insofar as it "assesses entrepreneurship as an overall strategic posture" through quantification of the EO-related "verbiage" employed by a firm in its publicly available artifacts. Covin and Wales emphasize that since prior research has established that EO is a "behavioral construct" (e.g. Covin & Lumpkin 2011), scholars should be circumspect in their use of CATA to ensure that it is invoked to indicate entrepreneurial facets of a firm's strategy rather than the presumption of entrepreneurial behaviors derived from textual analysis. For the purposes of this study, the indirect approach to EO offered through the use of CATA amply heeds Covin and Wales' (2019) caution since the subject matter under investigation (i.e. corporate acquisitions) inherently involves matters of corporate strategic action and governance in that a publicly traded firm's corporate management committee, board of directors, and sometimes even the shareholders are required to vote on acquisitions (Jemison & Sitkin, 1986). For matters of corporate strategic action, EO assessment using CATA has some notable benefits. While formal company disclosures and survey responses are both subject to potential self-presentation biases and impression management, retrospective surveys have the added liabilities of involving post-hoc self-presentation and the selective recollection of events as well as levels-of-analysis challenges that arise when querying managers about the drivers of firm-level constructs, such as EO. Conversely, textual data – which I collect both prior to and after each acquisition -- has the benefit of being generated before, during, and after an acquisition, thereby providing a more thorough historical record of company communications and intents.

3.2 CATA design and procedures

As noted above, I employed CATA in this investigation in order to ascertain the EO of each acquiring firm for the 500 randomly selected acquisitions that constituted the analytical frame

of the study. For each acquisition, I built a library of relevant texts, consisting of SEC filings as well as acquisition-related press releases, third-party news stories, and reports from Wall Street analysts, generating a total of 7,709 textual artifacts. I opted to use 10-K filings because annual reports cover a wide array of operational and strategic activities and provide much more detailed information than just letters to shareholders, which are commonly used in management research (Courtis, 1982; Michalism, 2001). To augment the SEC filings and develop some measure of textual triangulation for a given acquisition, I also used CATA tools to extract key terms from acquirer press releases of each acquisition as well as quotes from third-party news outlets, such as *Fortune* and the *Wall Street Journal*, as well as reports authored by Wall Street investment firms. The reasons for supplementing 10-K documents are two-fold. First, 10-K filings are legal documents that tend to be highly formulaic. While critically important to assessing the general orientation of a publicly traded firm, the language is often constrained (Hunt et al., 2019). Second, press releases and news stories related to specific acquisitions are likely to convey specific reasons for a firm to consummate a given acquisition.

Using the dictionaries developed and validated in Short et al. (2010) for innovativeness, pro-activeness, and risk-taking (but not autonomy and competitive aggressiveness), I applied CATA-based procedures to the identification and quantification of EO terms. Since Miller (1983), with the support of subsequent scholars (e.g. Covin & Slevin 1989; George 2011), argues that all three dimensions must be present to constitute EO, I cataloged the term frequencies for each of three dimensions across the artifacts attendant to each of the 500 acquisitions. I also followed McKenny and colleagues' (2018a) recommendations by utilizing two different programs for the text analysis. First, I employed a user-authored coding segment from Python to create a counter and sorter of the texts I collected. To confirm the results, I used CAT Scanner (McKenny et al., 2012) to compare the results between programs. Ultimately, I relied on Python over CAT Scanner

because it required one-sixtieth the time to perform the same work (i.e. ten minutes versus ten hours). Another advantage of Python is that "wildcards" need not be added to word roots. If documents are not clean and words are merged -- which is often the case with documents scraped from the internet -- the Python string finder will still count the word. To validate the efficacy of the Python code, I compared its output with that of CAT Scanner, using a randomly drawn sample of 500 10-K filings for the "innovativeness" EO dictionary. The results of a t-test indicated that the Python code had substantively the same mean (9.34) counts as the CAT Scanner (9.19, t =0.27, p = .786) for the same dictionary and files. I also checked the correlation between the Python counts and the CAT Scanner counts to assess the distinctiveness of the two counters' results and found a .98 correlation between the two counts – the difference being Python's superior string finder. The final step to establish reliability involved validating the Python code manually by enlisting the services of seven doctoral students and three expert faculty members to code ten artifacts each using the three different dictionaries developed by Short and colleagues (2010). Inter-rater reliability for any pairing of expert coders always exceeded 95% and comparisons with the CATA tools exhibited a .97 correlation in final counts.

3.3 Dependent variable

I used a logistic regression model to assess EO's impact on acquisition-related outcomes through *Acquirer Asset Impairment* (*AAI*) (Boennen & Glaum 2014; Hayn & Hughes 2006; Hunt et al. 2019; Zucca & Campbell 1992). AAI stems from reporting requirements consequent to Statement of Financial Accounting Standards No. 142 (SFAS 142), concerning "Goodwill and Other Intangible Assets" (Bens, Heltzer & Segal 2011). Functionally, an asset write-off is required when the actual cash flows generated from acquired assets fail to achieve the levels used to justify the purchase price of the assets. In the accounting literature, write-off disclosures have been shown

to be particularly useful in providing information about decreases in an asset's economic value (Francis, Hanna & Vincent 1996) and information relating to changes in management strategies (Brush & Artz 1999). Using SEC filings, AAI was coded as a "1" in the event of a write-off and "0" if the acquisition substantively attained the level of performance implied by the purchase price. AAI is significantly more precise than either Cumulative Abnormal Returns (CAR) or even Tobin's Q in pinpointing acquisition-specific under-performance (Alciatore, et al. 1998; Boennen & Glaum 2014), particularly when assessing the long-term success or failure in achieving acquisition-related synergies (Agrawal & Jaffe 2000; Hunt et al. 2019).

3.4 Predictors

3.4.1 Entrepreneurial Orientation

In deriving EO, the predictive model applies three equally-weighted dictionaries, containing equally-weighted words, with time-weighted word counts, to the three classical dimensions of EO that are designed to convey what George and Marino (2011) termed the "overall gestalt" of a firm: innovativeness, proactiveness, and risk-taking. Moreover, use of Miller's original formulation of EO preserves the conceptual coherence of EO and its intended link to strategy (Miller 2011) while extending its generalizability to new contexts (George & Marino, 2011), such as corporate acquisitions.

EO is operationalized in the model as a continuous variable, calculated as the product of CATA-derived word counts for each of three EO dimensions of Miller's (1983) conceptualization of EO, using the dictionaries developed and validated by Short et al. (2010). Since all three components must be present (Covin & Wales 2019; George & Marino 2011; Miller 1983, 2011), I calculate EO as a product of the three dimensions to ensure that if any dimension is not evidenced

through the CATA word counts (*WC*), then EO will be calculated as zero for the acquirer at the time of a given transaction[1].

$$\text{EO} = \Sigma(WC_{\text{innov}}) * \Sigma(WC_{\text{proact}}) * \Sigma(WC_{\text{risk}}) \quad \textbf{(1)}$$

As noted above, neither the dictionaries for the three dimensions, nor the constituent words, are weighted since it is the presence of all three dimensions that characterizes Miller's (1983) reflective construct of a unitary EO. However, the model did include time-based weighting of the word counts, such that *WC* more proximal to an acquisition were weighted more heavily than *WC* that were more distal. Rather than merely calculating a firm's EO for the year in which transactions occurred, I examined a larger window since acquisitions may require years to consummate and synergies may be slow to materialize. Given that most AAIs occur within three years post-acquisition, this is a sensible period of observation. Thus, I elected to gather seven years of artifacts for each acquisition (i.e. three years pre-acquisition, the year of the acquisition, and three years post-acquisition), and applied weighting factors to emphasize the importance of artifacts closer to the acquisition date. Following research on market-based assets from finance and accounting, I used Fibonacci retracement values (Horadam 1961). For example, for EO_{innov}:

$$\begin{aligned} EO_{innov} = {} & 0.38*(WC_{t-3}) + 0.5*(WC_{t-2}) + 0.62*(WC_{t-1}) + 1.0*(WC_{t}) \\ & + 0.62*(WC_{t+1}) + 0.5*(WC_{t+2}) + 0.38*(WC_{t+3}) \end{aligned} \quad \textbf{(2)}$$

The rationale for using Fibonacci's sequence for weighting is three-fold. First, the sequence is an unbiased mathematical expression of run-time analysis (Knuth 1997), including its use in the game theoretic applications (Vorobiev 2012). Second, it captures random-walk aspects of asset price fluctuations and is widely used in finance to calculate and forecast the mathematical relationships between technical trendlines in equity trading (Chen, Cheng & Teoh 2007). Third, the sequence maintains primary focus on the year of acquisition while incorporating judicious influence of pre-

[1] Of the 500 transactions randomly selected for this study, only four had a value of "0" for any one of the three EO dimensions. All others had a $\Sigma(WC) > 0$ for all three dimensions.

and post-acquisition word counts. Sensitivity analysis demonstrated that the use other weighting schemes were materially inferior to use of the Fibonacci series.

Lastly, in concert with the prediction that there exists an inverted U-shaped relationship between EO and acquisition value creation, the focal variable is EO^2.

3.4.2 Moderators

Regression analysis using interaction terms to test hypothesized contingency relationships is an appropriate approach to directly model the moderating influence of those contingencies (Darrow & Kahl 1982). In testing Hypotheses 2 – 4, product terms for relatedness (REL*EO^2), method of payment (MP*EO^2) and acquisition premium (PREM*EO^2) were included in the model as an orthogonal set of predictors. Development of an orthogonal set for the three product terms, using contrast codes in the fashion prescribed by Judd, et al. (2011), allowed me to test the significance of 3! mean comparisons simultaneously in a complete model. This, in turn, enabled me to determine if the degree to which the results were asymmetric (Figure 1). *Acquisition Target Relatedness* (REL) is a measure of what Teece labeled "corporate coherence" (1994), taken as the distance between the acquiring firm and the target firm core businesses, calculated as the difference between each firm's primary, five-digit NAICS industry classification code (Palich, Cardinal, & Miller 2000; Pierce & Schott, 2012). Firms that shared no overlap among the five-digit codes were maximally distal, while firms with all five digits in common were maximally proximal. Higher values indicate less relatedness, which should increase the likelihood of AAI (Wang and Zajac 2007). *Method of Payment* (MP) data, obtained through SDC-Platinum, is the percentage of each transaction paid through the issuance of acquiring firm's equity. Acquiring firms have three primary alternatives in buying another company, paying with cash, company stock, or debt (Ravenscraft & Scherer 1987). Consistent with Chang (1998) and Martin (1996), both of whom

found that stock-based deals are associated with significantly negative acquirer returns, higher reliance upon equity should increase the likelihood of an AAI. Finally, *Acquisition Premiums* (AP) for are calculated, using publicly available trading data through Yahoo Finance, as the difference between the pre-announcement share price and the final acquisition price. This approach applies techniques used in a plethora of M&A studies from finance, accounting, and strategic management (e.g. Cartwright & Schoenberg 2006; Hayward & Hambrick 1997) that have found higher AP to be negatively associated with acquisition outcomes.

3.4.3 Controls

The analysis also controlled for known covariates drawn extensively from well-established measures used in prior research of M&A and EO. From M&A research, I included a number of key controls. First conglomeration effects (e.g. Loughran & Vijh 1997) were included as a discrete dichotomous variable, coded as "1" if the acquiring firm is comprised of two or more unrelated business units, consisting of 25% or more of the firm's total revenues. Existing studies have shown that conglomerates typically fail to achieve anticipated acquisition-related revenue and expense synergies (Bruner 2002; King et al. 2004). Second, a control for CEO hubris was included, based on the techniques used by Hayward and Hambrick (1997) and enhanced by subsequent scholars, (e.g. Chatterjee & Hambrick 2007; Ferris, et al. 2013; Lee, Cho, Arthurs, & Lee, 2019; Li & Tang, 2010; Malmendier & Tate 2005) which takes into account: (i) acquiring company's recent financial performance, drawn from Edgar; (ii) recent media praise for the CEO, determined through a compilation of positive LexisNexis articles; and, (iii) a measure of the CEO's self-importance, calculated through a combination of each CEO's relative pay, drawn from company's proxy statement, and the CEO's portrait size as published in the firm's annual report. Third, prior acquisition experience, captured as a dummy coded variable, with "1" indicating prior acquisition

experience of similar size and at the same three-digit-level of the target's NAICS code (e.g. Haspeslagh & Jemison 1991). Fourth, intangible assets of the target firm as a percentage of the target's total assets was included to capture the riskiness of the purchased assets since acquisitions, with very few tangible assets have been shown to be significantly more speculative (Bruner 2002).

From EO research, I included controls for acquiring firm size and age (e.g. Lyon, Lumpkin, & Dess 2000), the acquirer's principal industry (dummy coded as tech vs. non-tech, from Rausch et al. 2009), and the acquired firm's age (Hunt et al., 2019). Controls were also employed for year-specific conditions. These included four items, each of which was calculated for the three years prior to and three years following each acquisition: macroeconomic conditions, through GDP growth, inflation, and unemployment, from the U.S. Commerce Dept. (e.g. Salomon & Jin (2008); Taylor (1979), capital market movements, through U.S. equity index fluctuations, from Yahoo Finance (e.g. Hayward & Hambrick 1997); industry effects, through annual growth rates of industry peers, from MinTel (e.g. Bass, Cattin, & Wittink 1978; Cloodt, Hagedoorn & Van Kranenburg 2006; Dushnitsky & Lenox 2005), and individual firm-level effects, through revenue, profit, and total asset growth rates (e.g. Henderson & Cockburn 1994; Merino, & Rodríguez 1997).

3.5 Robustness

As with all retrospective analyses, this study involves design elements that require careful assessment with respect to robustness. Tests were performed to ensure that the results were not subject to the potentially confounding effects of endogeneity and right-side truncation. As with most studies in which both the business strategies and the outcomes of those strategies are included in the analysis, the research design is susceptible to endogeneity on three fronts: omitted variables, reverse causality, and errors-in-variables bias. To assess the possible presence of omitted variables, I used the Heckman two-step procedure (Heckman 1979). Applying Heckman, I generated an

inverse Mills ratio, which was found to be not statistically significant. As for reverse causality, I used lagged time-series variables to confirm the directionality of focal effects (Davidson & MacKinnon 1992). I also performed a Hausman test (1978), which confirmed that the model predictors are not subject to a simultaneity bias.

4. Results

The purpose of this investigation was to assess the extent to which EO is an asset or a liability for firms pursuing corporate acquisitions. Descriptive statistics drawn from the analytical model (Table 1) reveal a number of important facets of the sample and the characteristics of EO among acquiring firms.

Insert Table 1 About Here

Approximately half of the acquisitions were financed primarily through the issuance of equity, with goodwill representing 58% of purchase price, meaning that the overwhelming preponderance of each purchase involved intangible assets. This implies that acquirers are not simply buying fixed assets, but rather are anticipating incremental cash flows from revenue and expense synergies (Hunt et al. 2019). Both the directionality and magnitude of the correlations support extant theory of M&A performance and the central assertions regarding the relationships between EO, M&A, and asset impairment. For example, CEO hubris (Hayward & Hambrick 1997), method of payment (Rappaport & Sirower 1998), and acquisition premiums (Krishnan 2007) are significantly and positively correlated with asset impairment, meaning that each is associated with an increased likelihood that an acquiring firm will fail to generate value over and above the acquisition costs. Meanwhile, the relatedness of the target firm and prior experience, are negatively correlated with AAI, indicating that each will reduce the likelihood of an acquirer asset write-down.

4.1 Entrepreneurial orientation and acquirer returns

Table 2 presents a summary of the acquisitions consummated by the five hundred firms comprising the study and sub-divided into three equivalent cohorts, representing firms with low, moderate and high levels of EO.

Insert Table 2 About Here

As these descriptive indicators of post-acquisition performance suggest, acquirers exhibiting moderate levels of EO are forced to recognize acquisition-related asset impairments in less than one-third of all acquisitions (i.e. 31%), substantially less than either low or high levels of EO. Shifting to financial from accounting measures reveals a similar story. While the moderate EO cohort registers a 9% gain in cumulative abnormal returns (CAR), low and high EO are associated with significantly negative returns. Although CAR and other financial measures that are often used to assess acquisition-related performance, such as Tobin's Q, are extremely "noisy" when tested at the 5-year mark, the confirmation of AAI through financial measures supports the veridicality of these summary findings. Thus, H1a -- predicting a U-shaped relationship between EO and acquisition performance -- and H1b – predicting an asymmetric relationship in which very high levels of EO generate the worst acquisition outcomes – both find strong support. The question is: what factors are driving these marked differences in acquisition performance?

4.2 Asymmetric curvilinear outcomes

As the summary data in Table 2 reveals, the findings provide support for an asymmetric curvilinear relationship, confirming my theorizing that moderate levels of EO are, on average, value creating, while the extremes are, on average value-destroying. In economic terms, the differences are marked. For the 500 acquisitions constituting the sample, firms in the highest one-third of EO wrote off net impaired assets exceeding $70 billion. Firms in the lowest one-third wrote off a net value of intangible assets totaling $8 billion, reflecting the more cautious approach

employed by such firms towards the acquisition purchase price. Moderate EO firms, representing the middle one-third, witnessed acquisition-related gains of $22 billion.

Hypotheses 2, 3 and 4, predicted that both the curvilinear relationships and the asymmetric effects are influenced by three significant interaction effects: EO and the payment method, EO and the lack of relatedness, EO and the acquisition premiums paid by acquirers. To ascertain the validity of these relationships, I used a logistic model to regress these focal relationships over the D.V., acquisition-related asset impairment (AAI). Table 3 provides a summary of the hypotheses and key findings, while Table 4 consists of the complete model analysis.

Insert Table 3 and Table 4 About Here

The first step was to confirm, in the context of a complete model, that EO^2 is significant, over and above the profile of control variables. Models 2 and 3 indicate that this is the case. Second, in a series of single degree-of-freedom tests (Models 5, 6, and 7) (Judd et al. 2011), I sought to determine if REL, MP and PREM, are moderators of EO^2, such that each would contribute to the skewness of the U-shaped relationship evident in Table 2, above. Moreover, in the context of a complete regression (Model 8), each of the three product terms exhibited material effect sizes, with a very low probability that the findings were the consequence of chance occurrence (i.e. p-values of 0.01, or less). Importantly, the predictive value of EO was also confirmed through material improvements in explanatory power. ΔR^2 for the complete profile of predictors was +0.07, indicative of a 24% improvement in the ability of the model to explain the variance. The grand means for each of these three focal relationships is summarized in Table 3 and visually depicted in Figure 2.

Insert Figure 2 About Here

Here, too, it is apparent across all three explanatory variables that while low and high EO levels are both associated with value-destruction for acquiring firms, the negative effects for low EO

firms are less than for high EO firms, as is the extent to which firms write off impaired acquisition-related assets. Detailed investigation of the interaction terms is presented in Figures 3, 4 and 5, along with confidence intervals for the low EO and high EO cohorts.

Insert Figures 3, 4 and 5 About Here

In each instance, the asymmetric curvilinear effects are readily apparent. As predicted in Hypotheses 2, 3 and 4, low relatedness, high equity issuance, and high acquisition premiums are significant moderators that amplify the adverse of effects of high EO.

These results extend and enhance existing theories of acquisition-related outcomes in a number of ways. For example, CEO hubris – a proven driver of excess acquisition premiums (Hayward & Hambrick, 1997; Lee, et al., 2019) – diminishes in statistical significance across the models in Table 4, reflecting the extent to which the role of CEO hubris is captured in the combined of effects of EO and the model's three moderators. Similarly, prior experience, intangible assets, method of payment (Ravenscraft & Scherer 1987) and relatedness (Palich, et al., 2000) diminish in explanatory power as the effect of these variables is captured in the product terms. It appears that the asymmetric curvilinear modeling provides further refinement and heightened resolution to the specific nature of these important drivers of acquisition-related outcomes.

5. Conclusion, discussion and implications

Increasing environmental dynamism and turbulence place a premium on the corporate venturing strategies of large, established firms in order to maintain corporate vitality and growth (Wales et al., 2013; Rauch et al., 2009). A firm's EO – reflected through innovativeness, proactiveness, and risk taking (Miller, 1983) -- is a motivating force for companies to seek and pursue fresh new ideas and innovations to contend with these rapidly changing environments (Hunt & Ortiz-Hunt, 2017). Yet, both scholars and practitioners may find reason to scrutinize the manner

in which EO's influence on corporate venturing is studied, implemented, and measured. Even as research on EO proliferates, scholars increasingly recognize the potential dangers of misapplying the EO construct (e.g. Anderson, Covin, & Slevin, 2009; Covin & Wales, 2019; George & Marino, 2011), for which the perils of misspecification can be severe (George, 2011). The implications are equally pronounced for firm leaders, given the need to "recognize that EO is a strategic-level construct" (Covin & Wales 2019:13) demonstrated by the extent to which top managers are inclined to take business-related risks, or to favor change and innovation in order to obtain a competitive advantage for their firm" (Covin & Slevin, 1989:77). "As a unitary (i.e., unidimensional) construct," noted Covin and Wales (2019:4), "EO refers to an organizational attribute reflecting how ''being entrepreneurial'' is manifested in organizations." Thus, the strategic substance of EO (Covin, Green, & Slevin, 2006; Covin, Slevin, & Covin, 1990) is paramount to attitudes and actions of corporate managers in shaping corporate venturing activities. As the findings of my inquiry reveal, the inability of some firms to successfully navigate the razor's edge between too much and too little EO (Wales, Parida, & Patel, 2013) raises important questions about the trade-offs managers face when leveraging EO to build an entrepreneurial mindset within organizations; the very questions that motivate this study.

5.1 Implications for the literature on EO

As the "strategic posture" of a firm (Covin & Slevin, 1997), EO conveys the managerial *gestalt* (George & Marino, 2011), the governing lens for decision-making concerning the strategic venturing activities of the firm. It was, from the outset, Miller's (1983) aim to develop the EO construct in order to ground theories of corporate entrepreneurial action in the foundational strategy literature (Miller, 2011). Subsequent work has endeavored to assess the role of EO in all manner of firms, operationalizing managerial attitudes and actions within a wide array of strategic

contexts; but, to-date, nothing has sought to connect EO and M&A. Conceptually and empirically, then, the study contributes new insights by extending what George and Marino call "the family of EO constructs" into one of corporate strategy's most important contexts: corporate acquisitions. through the lens of McKenny and colleagues' (2018b) "Strategic EO." As such, the central purpose of this study is to explore the impact of EO in determining the performance gains of externally-sourced, corporate venturing strategies that utilize acquisitions for the purposes of opportunity pursuit (Hunt et al., 2019; King et al., 2018) in a fashion that is innovative, proactive, and risk-taking. To frame these arguments, I build on recent work in the EO literature that advances a contingency perspective regarding the impact of EO on organizational performance (Rauch et al. 2009; Wales et al., 2013; Wiklund & Shepherd, 2005). This research suggests that the performance effects of EO are contingent upon the specific actions (or inaction) varying levels of EO lead corporate venturing efforts to pursue (Wales et al., 2013). I build on this logic to explore how varying levels of EO shape the success of M&A strategies as a component of corporate venturing activities (Hunt et al., 2019; King et al., 2018).

My findings have important conceptual implications insofar as the relationship between EO and acquisition outcomes is complex and nonlinear, such that both high and low levels of EO are negatively related to the success of acquisition strategies. The curvilinear effect underlying this conclusion bears out the assertion by Marino and George (2011:991) and others (e.g. Hansen, et al. 2011) that that even well-established facets of EO, such as the Covin-Slevin scale are not invariant across diverse settings. My findings take this assertion a step further by revealing that diverse levels of EO coupled with diverse circumstances are also invariant. Moreover, in the case of high EO levels, it appears that even very good intentions can make for very bad strategies. I base these arguments on the dual premise that low levels of EO will prevent companies from engaging in the exploration activities that are crucial for continued corporate revitalization and

growth (King et al., 2018), while high levels of EO will induce companies to "see opportunities everywhere" thereby expending valuable resources and effort towards too many objectives. Given these immense trade-offs, I theorize and find support for the argument that moderate levels of EO will balance these competing challenges by unfreezing corporate venturing activities to seek out new opportunities through M&A activities but also by disciplining companies to not overextend these efforts by seeing and pursuing opportunities everywhere. Collectively, the findings provide strong support for a contingency view of EO in determining the performance of corporate venturing strategies (Rauch et al., 2009; Wales et al., 2013).

5.2 Implications for the literature on acquisitions

In addition to exploring the contingent relationship between EO and corporate acquisitions, the study also contributes to the continued advancement of research into the determinants of success in acquisition strategies for corporations (Ferreira, et al., 2014). As I noted at the outset, despite the trillions of dollars spent annually on acquisitions, the vast majority of companies fail to achieve the strategic goals and performance gains that motivated their strategies (King et al., 2004). I contribute to this important research stream by exploring how firm-wide entrepreneurial processes and culture (Dess & Lumpkin, 2005) influence the success of these strategic initiatives. First, I scrutinize the role of EO in determining the success or failure of acquisitions. The results support my central argument that moderate levels of EO produce the most favorable outcomes for M&A strategies by enabling companies to overcome inertial pressures that prevent the firm from seeing potential new opportunities while at the same time disciplining these efforts from "seeing opportunities everywhere" and thereby overextending the firm's capabilities and resources.

Second, I demonstrate the need to conceptualize acquisition outcomes through the lens of EO's interaction with key drivers of M&A performance. Existing scholarship has unearthed three

prominent contingencies that have been shown, on average, to exert linear, unfavorable impacts on acquirer returns: unrelated opportunities, equity financing, and inflated premiums for acquisition targets. As the plots in Figures 3, 4, and 5 reveal, the interaction of EO with each of these contingencies is not well-described through average, linear effects. For acquisition target unrelatedness, both low and high levels of EO exhibit dramatically higher frequencies of AAI. Low and high EO levels also exacerbate the unfavorable effects of equity financing, though to a lesser degree than the penalties accompanying unrelated targets. The most extreme effects, however, emanate from EO's interaction with acquisition premiums, evidenced by the pronounced U-shaped relationship between EO level and the probability of an AAI. The findings demonstrate that EO is a non-ignorable source of explanatory power of acquisition outcomes and that its interaction effects are non-uniform. As such, existing linear models that have focused on average acquirer returns are unlikely to detect the non-uniformity of acquisition-related contingencies. My reconceptualization, incorporating interaction terms with EO, contributes a richer, more complete theorization of why it is that acquisitions may sometimes yield remarkable outcomes, but generally fail to generate value for acquirers. The path forward clearly lies in discovering how to leverage the contingent benefits of EO more precisely to facilitate successful enactment of externally-sourced, corporate venturing strategies through M&A.

5.3 Limitations & opportunities

While the study offers several important theoretical contributions to the contingency perspectives of EO in the corporate venturing literature, I naturally had to limit the scope of my inquiry for the sake of analytical and conceptual precision. These limitations offer exciting avenues for future research. Methodologically, there are limitations attendant to the use of CATA, since SEC documents tend to be heavily vetted and tinged with legal language, reflecting the purpose

they serve as formal compliance documents (Short, et al, 2010), and making impression management an obvious concern. Conversely, much extant empirical work on EO has used executive surveys. Here, too, impression management is a risk, but there are two other maladies accompanying the use of surveys in discerning EO. First, executive surveys yield notoriously low response rates, meaning that samples are solely comprised of a pool of willing subjects, while CATA analysis of publicly available texts can be performed for every firm regardless of willingness to participate. Second, EO is a firm-level construct, so the use of executive survey responses presumes that individual actors convey perspectives that are indicative of the firm overall. Without question, SEC filings are heavily influenced by C-suite executives as well as investor relations, and Boards of Directors, but the documents are quite literally intended to serve as firm-level statements of past, present, and future performance. Therefore, no assumptions must be made regarding level-of-analysis considerations.

Additionally, there are limitations imposed by the focus on firms as the level-of-analysis. While this is consistent with the notion that EO is a firm-level construct and, as such, appropriately situates my research question, there are processes and decisions pre- and post-acquisition that occur below the level of corporate actors, even if all material transactions must be approved by the Directors, and in some cases, the shareholders. For example, the focus of this study did not allow me to examine the micro-processes of how post-acquisition integration occurred. Therefore, one question for future research would be to examine whether a potential mis-match between the relative EO levels of acquirer and acquired firms might explain some additional variance in M&A success? Perhaps moderate levels of EO enable acquirers to integrate acquisition targets more effectively who may be too extreme at the high or low end of EO? This raises a second set of questions about the negative influence of CEO hubris in shaping the formation of extreme EO cultures in organizations. Since it was outside the bounds of this study, I controlled for but did not

directly examine the role of CEO in exacerbating the problems of high EO in M&A success. The outsized and potentially negative role of CEO hubris in creating aggressively reckless EO cultures emphasizes the importance of effective governance in these organizations to harness and channel the energy of these CEOs into establishing moderate but not extreme forms of EO in the firm. In future research, examining how firm governance functions moderate the managerial discretion of hubristic CEOs might shed additional light into how firms can leverage the hubris of the CEO into positive organizational outcomes while protecting the firm from the more negative consequences of their decision-making. Of course, this raises a final set of questions about whether there are alternative CEO characteristics apart from hubris that can help raise the EO of the company to effective levels that enhance CE initiatives. I did not specifically explore these CEO characteristics apart from CEO hubris or other antecedents of EO and their role in determining the success of M&A activities, but it seems likely that other antecedents of EO also play an important role in shaping the ultimate success of M&A in a portfolio of CE strategic initiatives.

5.4 Conclusion

Extant literature in EO has sought to address the importance of "entrepreneurial mindset" among top management teams and this research helps to give that prominent notion explicit form. By applying these concepts to acquisition value destruction, my study redirects and re-energizes research on acquisition value creation or destruction by introducing a new source of explanatory variables framed through EO. This is an important step towards closing the conceptual and empirical gaps that persist in the study of corporate acquisitions. King et al. (2004:188) underscored this point when they concluded that, "post-acquisition performance is moderated by variables unspecified in existing research." They went on to note that, "changes to both M&A theory and research methods may be needed." More recently King and colleagues (2018)

suggested that M&A activities are a potent form of corporate entrepreneurship, designed to revitalize the company's pursuit of new opportunities. This study builds on the expanding literature on post-integration (Batsakis, et al., 2018; Cho & Arthurs,2018; Dhir, et al., 2019; Jordao, Souza & Avelar, 2014) by demonstrating that EO is a fruitful theoretical perspective domain for acquisition-related research because it affects both the decision-making that gives rise to anticipated synergies and the relative ability of a firm to actually realize those synergies.

Equally important, this research illuminates key facets of the corporate acquisition milieu for managers. acquisitions, as noted form the outset, are tricky business. Far more often than not, acquiring firms find themselves burdened by the legacy of excess premiums paid and unachievable expectations for the synergies needed to justify those premiums (Agarwal & Jaffe 2001; Cartwright & Schoenberg 2006; Sirower 1997). As Hitt and Pisano argued (2003), if the anticipated synergies that underlie acquisition premiums cannot be achieved, even a small premium could be considered excessive. Managers would be well-advised to assess their respective EOs as an antecedent to external venturing rather than as an expensive post-mortem.

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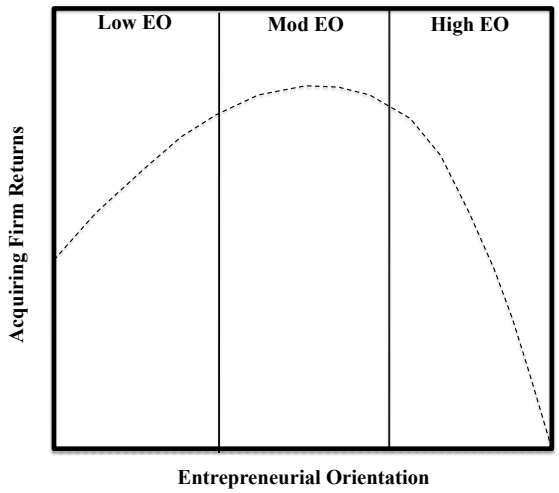
1a – Acquiring firm returns



1b – Probability of asset write-downs

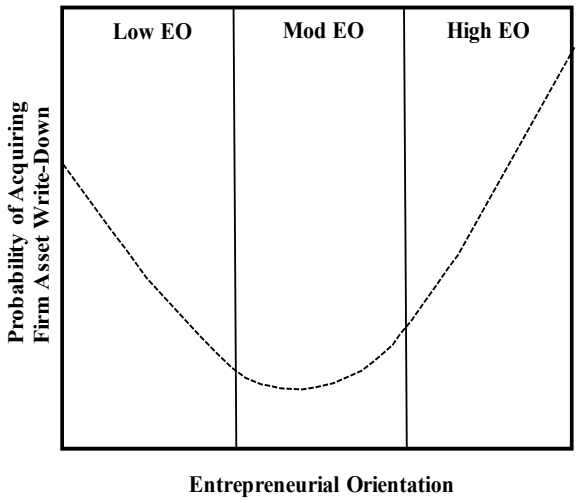


Fig. 1. Hypothesized Effects of Asymmetry Relating EO to Acquirer Returns (1a) and the Probability of an Impaired Asset (1b)

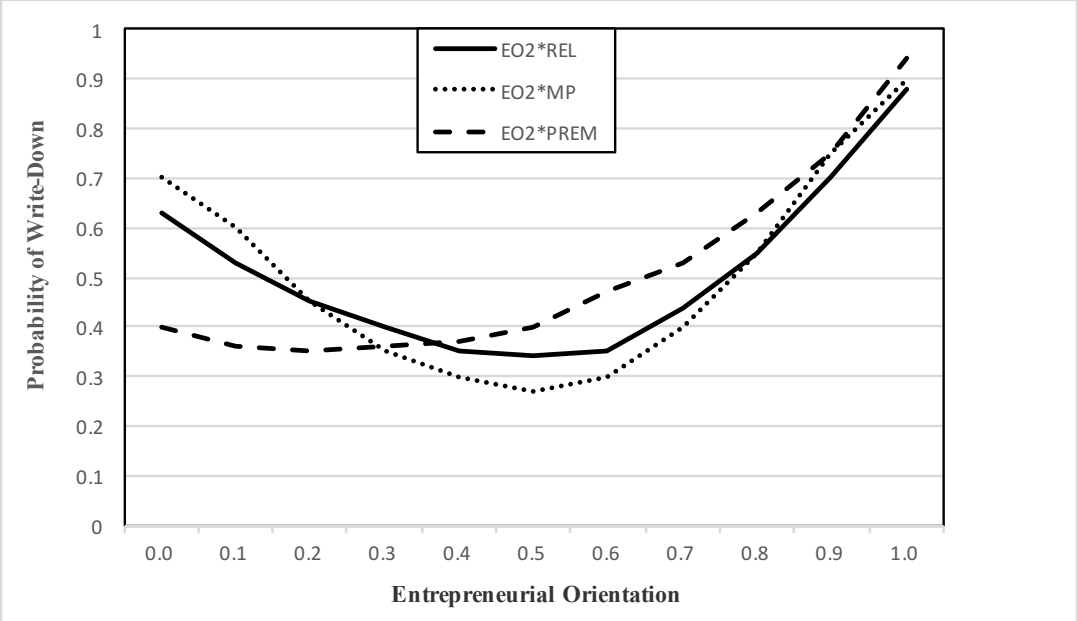


Fig. 2. Summary of Curvilinear Effects

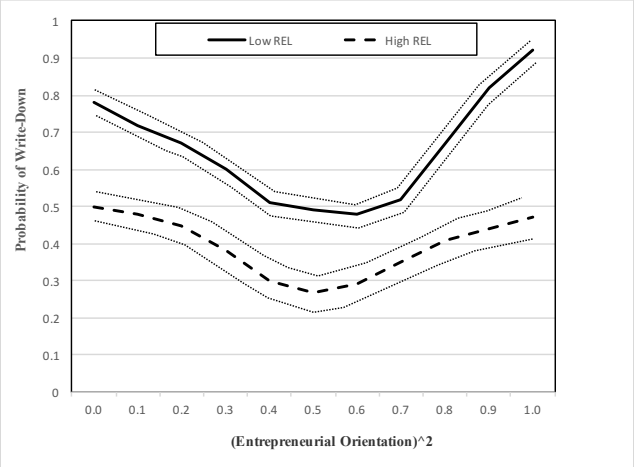


Fig. 3. EO^2 * Relatedness Interaction (95% Conf. Intervals)

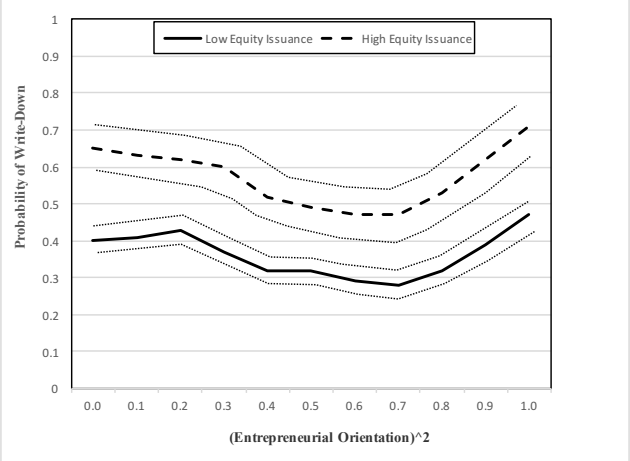


Fig. 4. EO^2 * Method-of-Payment (% Equity) Interaction (95% Conf. Intervals)

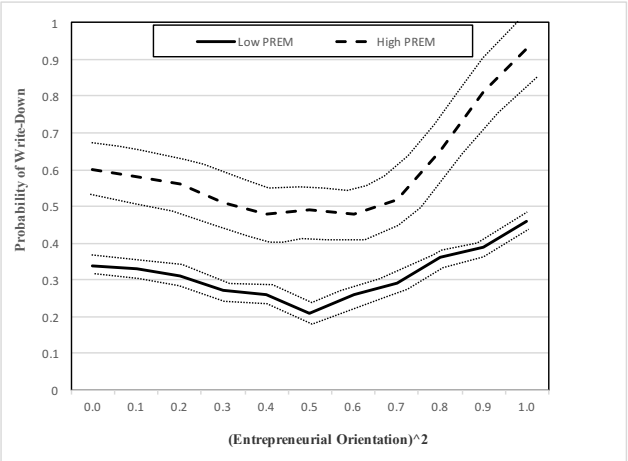


Fig. 5. EO^2 * Acquisition Premium (95% Conf. Intervals)

Table 1
Summary statistics and correlation coefficients

		Mean	Std Dev	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Asset Impairment	0.47	0.36									
2	Entrepreneurial Orientation	0.33	0.11	-0.08								
3	Acquiring Firm Size (Revs $ Bln)	14.18	7.04	0.03	*-0.17*							
4	Busi Focus (Conglomeration = 1)	0.12	0.07	-0.09	0.10	0.13						
5	Prior Acquis Experience (Acquirer)	0.37	0.14	*-0.15*	0.11	0.13	0.03					
6	Acquisition Target Relatedness	0.22	0.08	*-0.16*	-0.05	-0.02	-0.10	0.04				
7	Method of Payment (% Equity)	0.52	0.24	*0.19*	0.07	0.01	0.06	0.09	-0.02			
8	Acquisition Premium	0.72	0.21	*0.21*	*0.14*	0.00	0.04	-0.10	-0.01	*0.16*		
9	Intangible Assets as a % of Total Deal	0.58	0.87	*0.15*	*0.13*	0.04	0.06	0.03	-0.03	*0.15*	*0.22*	
10	CEO Hubris	0.55	0.19	*0.19*	0.05	0.08	*0.15*	0.11	0.02	*0.14*	*0.27*	*0.26*

Italics indicate correlation with $p < .01$

Table 2
Summary of acquisition performance at 5 years post-acquisition

EO Level	Firms in Cohort (#)	Average EO Index for Cohort (Scale 0 – 1)	EO Index Range for Cohort	CAR at 5 Years Post-Acquisition	% of Acquisitions with Asset Write-Offs
Low	166	0.08	0.0 - 0.24	- 7%	46%
Moderate	167	0.47	0.25 - 0.60	+ 9%	31%
High	166	0.81	0.61 – 1.00	- 22%	65%

Table 3
Predicted relationships and significant regressed values

Hypothesis	Focal Variable	Coefficient	p-value	Model F-Test
H1a: *There exists a U-shaped relationship between acquirer EO and the occurrence of an AAI*	EO^2	-0.83	< 0.001	84.2
H1b: *The probability of an AAI is asymmetric, such that firms with low EO will have proportionally fewer AAI's than firms with high EO*	EO^2	-0.83	< 0.001	84.2
H2: *Lower relatedness will amplify the negative effect of high EO*	EO^2*REL	-0.27	< 0.01	71.5
H3: *Higher equity issuance will amplify the negative effect of high EO*	EO^2*MP	-0.35	< 0.001	74.0
H4: *Higher premiums will amplify the negative effect of high EO*	EO^2*PREM	-0.41	< 0.001	89.3

Table 4
Logistic regression

	Likelihood of Acquirer Recognizing Acquisition-Related Impaired Assets							
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Independent Variables								
Macro-Economic Effects	0.15*	0.14*	0.14*	0.12*	0.12*	0.12*	0.12*	0.11*
	(0.03)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.01)*	*(0.02)*	*(0.01)*
Industry Effects	0.12*	0.12*	0.11*	0.09	0.09	0.09	0.09	0.08
	(0.04)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*
Firm Effects	0.17*	0.15*	0.15*	0.14*	0.13*	0.13*	0.13*	0.13*
	(0.08)	*(0.06)*	*(0.05)*	*(0.05)*	*(0.04)*	*(0.05)*	*(0.04)*	*(0.04)*
Acquiring Firm Size	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05
	(0.02)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*
Busi Focus (Conglomeration = 1)	0.18*	0.18*	0.17*	0.15*	0.17*	0.13*	0.13*	0.12*
	(0.04)	*(0.04)*	*(0.04)*	*(0.03)*	*(0.05)*	*(0.02)*	*(0.03)*	*(0.03)*
Prior Acquis Experience (Acquirer)	-0.28***	-0.17**	-0.15*	-0.13*	-0.18*	-0.11*	-0.11*	-0.11*
	(0.08)	*(0.05)*	*(0.05)*	*(0.04)*	*(0.06)*	*(0.02)*	*(0.03)*	*(0.02)*
Acquiring Firm Age	0.09	0.08	0.07	0.07	0.06	0.06	0.06	0.05
	(0.02)	*(0.02)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
CEO Hubris	0.27***	0.20**	0.17**	0.12*	0.12	0.08	0.08	0.05
	(0.11)	*(0.09)*	*(0.08)*	*(0.06)*	*(0.04)*	*(0.04)*	*(0.04)*	*(0.03)*
Intangible Assets as a % of Total Deal	0.14*	0.11*	0.10*	0.08	0.08	0.10	0.07	0.05
	(0.03)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*
Target Firm Age	-0.13*	-0.12*	-0.138	-0.10*	-0.09	-0.10*	-0.09	-0.07
	(0.03)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*
Entrepreneurial Orientation (EO)		-0.47.***	0.16*	0.14*	0.14*	0.11*	0.09	-0.03
		(0.22)	*(0.08)*	*(0.07)*	*(0.06.)*	*(0.04)*	*(0.04)*	*(0.01)*
EO^2			-0.83***	-0.69***	-0.34***	-0.61***	-0.38***	-0.31***
			(0.41)	*(0.28)*	*(0.16.)*	*(0.29)*	*(0.17)*	*(0.14)*
Acquisition Target Relatedness (REL)				-0.24**	-0.17**	-0.15**	-0.18**	-0.16**
				(0.13)	*(0.08)*	*(0.07)*	*(0.09)*	*(0.07)*
Method of Payment (MP)				0.33**	0.31**	0.14*	0.29**	0.23**
				(0.22)	*(0.15)*	*(0.08)*	*(0.14)*	*(0.10)*
Acquisition Premium (PREM)				0.51***	0.44***	0.48***	0.25**	-0.18**
				(0.20)	*(0.18)*	*(0.26)*	*(0.13)*	*(0.11)*
EO^2*REL					-0.27**			-0.22**
					(0.14.)			*(0.08)*
EO^2*MP						-0.35***		-0.25**
						(0.19)		*(0.12)*
EO^2*PREM							-0.41***	-0.19*
							(0.14)	*(0.11)*
Constant	0.63***	0.82***	1.12***	0.93***	0.85***	0.74***	0.92**	0.67***
	(0.20)	*(0.31)*	*(0.44)*	*(0.38)*	*(0.32)*	*(0.27)*	*(0.33)*	*(0.18)*
Log Likelihood	287.4	284.1	333.9	427.6	412.5	483.0	449.2	438.4
χ^2	245.1	288.3	309.6	313.8	357.8	318.7	423.9	477.6
Generalized R^2 (McFadden)	0.318	0.429	0.501	0.527	0.539	0.532	0.544	0.616
ΔR^2	-	0.111	0.183	0.209	0.221	0.214	0.226	0.298
Predictive Accuracy	62.4%	71.2%	84.1%	85.6%	85.9%	86.3%	85.7%	89.4%

N = 500
Italicized values are standard deviation
***p <..001; **p < .01; p < .05