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THE INFLUENCE OF ENTREPRENEURIAL ORIENTATION ON FIRMS' CORPORATE  
SOCIAL RESPONSIBILITY RATINGS AND IDIOSYNCRATIC RISK

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THE INFLUENCE OF ENTREPRENEURIAL ORIENTATION ON FIRMS' CORPORATE  
SOCIAL RESPONSIBILITY RATINGS AND IDIOSYNCRATIC RISK

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Doctor of Business Administration

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ABSTRACT

This research discusses empirical testing of 20 separate hypotheses regarding relationships between entrepreneurial orientation factors and two key business characteristics. The first essay examines the degree to which the entrepreneurial orientation factors of autonomy, competitive aggressiveness, innovation, proactiveness, and risk-taking each relate to three corporate social responsibility ratings, those in the environmental, social, and governance (ESG) categories. The second essay investigates relationships between those five entrepreneurial orientation factors and firms' idiosyncratic stock price risk.

These issues have been discussed in the theoretical entrepreneurial orientation literature, but they have had little empirical investigation. Both essays address intellectual conflicts that have arisen in that context. Some have suggested that being entrepreneurially focused and striving to advance social progress are antithetical objectives, while others have suggested these concepts can co-exist within an organization. Furthermore, some have suggested that firms that adopt an

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entrepreneurial orientation manifest higher risk levels, while others have suggested that the increase in innovation that typically occurs in entrepreneurial settings leads firms to lower, not higher, risk profiles. Both debates can benefit from additional empirical analysis.

The sample for the first essay included 395 companies, mostly large capitalization firms as they are the only ones with reported social responsibility ratings. Due to wider availability of risk-based data, the sample for the second essay included 1,010 companies, including small-cap, mid-cap, and large-cap firms. For both essays, computer-assisted text analysis (CATA) of quarterly earnings call transcripts was used to estimate the entrepreneurial orientation factor levels for each firm.

The individual entrepreneurial orientation factors affected corporate social responsibility ratings and firm-level risk in different ways. Autonomy was not related to any of the corporate social responsibility ratings, nor was it related to firm-level risk. Competitive aggressiveness was negatively related to ratings in the social and governance categories but was not related to the environmental rating nor to firm-level risk. Innovation was positively related to a firm's environmental rating and negatively related to its risk level but not related to the social or governance scores. Proactiveness was positively related to all three social responsibility ratings but not related to firm-level risk. Risk-taking was positively related to firm-level risk but not related to any of the social responsibility ratings. These differential effects reinforce the notion that the entrepreneurial orientation factors are independent. This research revealed that whether entrepreneurial firms can advance social progress and whether entrepreneurial orientation increases risk are not simple questions but ones that have nuanced answers.

*Keywords:* entrepreneurial orientation, social responsibility, risk, content analysis

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### The Influence of Entrepreneurial Orientation on Firms' Corporate Social Responsibility Ratings and Idiosyncratic Risk

Much of the academic management community has taken on faith that adopting an entrepreneurial orientation is a necessary positive step for any corporation (Wiklund, 1999). Furthermore, some academics also have suggested that engaging in socially responsible non-economic corporate activities will not interfere with, and will likely enhance, the ability of corporations to pursue economic goals, such as those sought under an entrepreneurial orientation (Carroll & Shabana, 2010). In addition, many in academia have believed that entrepreneurially-oriented firms will by definition manifest higher risk profiles than their non-entrepreneurially-oriented counterparts (Wales, 2016).

Nevertheless, a careful reading of the literature casts doubts on these conclusions as general truths. The empirical evidence has suggested that in terms of financial performance, the benefits of adopting an entrepreneurial orientation have not been as substantial as theory would suggest (Lyon, Lumpkin, & Dess, 2000), implying that in some cases being entrepreneurially-oriented could harm performance (McClelland, Liang, & Barker, 2010).

The evidence on the relationship between corporate social responsibility and firm economic performance has been mixed (Grewatsch & Kleindienst, 2017), with separate findings suggesting that the relationship between the two constructs is positive (Orlitzky, Schmidt, & Rynes, 2003); negative (Aupperle, Carroll, & Hatfield, 1985; Friedman, 1970); U-shaped (Barnett & Salomon, 2012); inverted U-shaped (Lankoski, 2008); and nonexistent (Surroca, Tribo, & Waddock, 2010). This research investigated this issue but did so in two ways that departed from the mainstream approach. First, it was assumed that economic factors influence a firm's willingness to engage in socially responsible action, rather than assuming that such social

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action drives economic performance (Waddock & Graves, 1997). Second, rather than using economic performance measures, such as return on invested capital, to represent the economic domain, this research focused instead on economic attitudes and behaviors as represented by a firm's entrepreneurial orientation factor levels of autonomy, competitive aggressiveness, innovation, proactiveness, and risk taking (Lumpkin & Dess, 1996).

With respect to the role that risk plays in the entrepreneurial orientation framework, one need look no further than a classic article in the field to see cracks in the intellectual foundation supporting the idea that being entrepreneurial necessarily means embracing risk: "Prior research suggests that entrepreneurs simply don't 'see' the risks that others see, or, alternatively, they see non-entrepreneurial behavior as far more risky" (Lumpkin & Dess, 1996, p. 1,995). This objection on the part of practitioners as to the risk-seeking nature of an entrepreneurial outlook is consistent with the assertion of Drucker (1993) who consulted with many entrepreneurially-oriented firms and suggested that a corporate entrepreneurial focus is designed to reduce risk, not increase it, pointing to firms such as 3M and Johnson & Johnson, both of which have been universally viewed as having entrepreneurial cultures but which at the same time have had among the least risky stocks trading in the market.

Much of the entrepreneurial orientation research has viewed the component factors as related, that is, assuming they co-vary (George, 2011). Recent research has suggested that such an approach fails tests of internal reliability (Chabaud & Sattin, 2019), supporting Lumpkin and Dess (1996) who posited that the factors are independent. This research adopted the independent factor viewpoint. Rather than looking for overarching answers as to how entrepreneurial orientation affects corporate social responsibility and firm-level risk as most of the prior research has attempted, this study examined specific links between those individual independent

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entrepreneurial orientation factors and the dependent variables. That is, it analyzed links between the five individual entrepreneurial orientation factor levels and firms' specific corporate social responsibility ratings (Essay 1) and links between those five individual entrepreneurial orientation factor levels and observed firm risk (Essay 2).

### Research Questions

The specific issues addressed in this study were: how do the five individual entrepreneurial orientation factors relate to three specific aspects of corporate social responsibility (which led to 15 separate hypotheses), and how do those five individual entrepreneurial orientation factors relate to firm-level risk (leading to five separate hypotheses).

The precise research questions were as follows:

1. How do each of the five entrepreneurial orientation factors relate to corporate social responsibility ratings for the ESG categories?
2. How do each of the five entrepreneurial orientation factors relate to firms' idiosyncratic risk levels?

I expected that some aspects of entrepreneurial orientation, for example, a proactive mindset, would increase the likelihood that a firm engages in socially responsible action, while other aspects, such as a competitively aggressive stance, would make it less likely for a firm to behave in that manner. Similarly, I expected that some aspects of entrepreneurial orientation, for example, a pro-innovation culture, would lead firms to adopt improved technologies sooner, thereby reducing the risk of being stuck with obsolescent equipment. I expected that other aspects, for example, the existence of autonomous cultures that allow lower-level employees to unilaterally make strategic decisions, would lead to higher levels of risk.

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Like entrepreneurial orientation, corporate social responsibility is multi-dimensional. Sustainalytics is an independent organization that rates firms on ESG activities. Its ratings have been widely used as measures of corporate social responsibility in the management literature (Graafland & Smid, 2015). Combining the five entrepreneurial orientation factors with these three social responsibility measures yielded 15 testable hypotheses.

With respect to entrepreneurial orientation's impact on firm risk as a performance measure, there is theoretical literature (Wiklund & Shepherd, 2011) but little empirical analysis (Wales, 2016). This research addressed this gap. The risk metric of choice in this study was the firm's idiosyncratic stock price volatility, measured as the standard deviation of excess returns in the financial market. That excess return was determined by netting out any contribution to volatility caused by general stock market movements. This isolated the portion of the volatility that reflects firm-specific risks, the factors that management can influence, and which entrepreneurial attitudes would affect (Panousi & Papanikolaou, 2012).

### Research Design and Methods

Most entrepreneurial orientation research has relied on surveys or interviews of executives to measure the factor levels. Those approaches often produce low response rates (Wiklund, 1999) and are subject to self-report bias (Duriiau, Reger, & Pfarrer, 2007). This research applied a different approach: content analysis of quarterly earnings call transcripts, estimating entrepreneurial orientation factor levels using previously validated dictionaries (Short, Broberg, Coglisier, & Brigham, 2010). This method, though deemed to be useful, has been noticeably underutilized in the entrepreneurial orientation literature.

Despite the availability of previously validated CATA [computer-assisted text analysis] measures of EO [entrepreneurial orientation] (Short et al., 2010), only limited research on

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EO using CATA has been conducted. This is surprising given that CATA of firm disclosures, which are likely carefully prepared by several top managers, helps overcome some of the inherent limitations associated with the frequently employed single informant reports on firm EO. (Wales, 2016, p. 13)

Another often overlooked advantage of the content analysis approach is that earnings call transcripts are widely available—almost all firms in the Standard & Poor's (S&P) large-cap, mid-cap, and small-cap indices conduct earnings calls. This allowed for a much larger sample of companies and used conversations in natural business settings to determine executive mindset.

The content analysis used to measure the entrepreneurial orientation factor levels represents the common link between the two studies, which might lead to the question as to why this research could not have been completed as one joint investigation with a single model that combined all effects. That may be possible in the future, but at this point social responsibility ratings are available for only the largest firms ( $N_1 = 395$ ), while the number of firms that could be included in the risk assessment is much larger ( $N_2 = 1,010$ ). To develop a single model would have eliminated much of the information for the risk study; therefore, two separate models were estimated.

Answering the research questions set forth here improved understanding of the entrepreneurial orientation construct and provides a foundation for additional future research. By treating entrepreneurial orientation as consistent with its multi-dimensional, independent-factor design and allowing for separate relationships between those factors and measures of corporate social responsibility and risk, I gained insights that would not have been discernible if I required that all the entrepreneurial orientation factors affect those outcomes in a similar way.



## Results

Table 1 provides a high-level summary of the study's findings, revealing that of the 20 hypothesized relationships examined in the two studies, eight were confirmed. All significant relationships had mathematical signs consistent with those set forth in the hypotheses.

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Table 1

*Summary of Study Findings: Confirmed Hypotheses*

Entrepreneurial Orientation Factor	Study 1			Study 2
	Environmental CSR Score	Social CSR Score	Governance CSR Score	Idiosyncratic Risk Level
autonomy	ns	ns	ns	ns
competitive aggressiveness	ns	negative*	negative*	ns
innovation	positive*	ns	ns	negative†
proactiveness	positive†	positive*	positive*	ns
risk-taking	ns	ns	ns	positive**

*Note.* Sample size for study 1 = 395; sample size for study 2 = 1,010 CSR = corporate social responsibility; ns = not statistically significant \*\* p < .01 \* p < .05 † p < .10

### Discussion

The independent-factor assumption of Lumpkin and Dess's (1996) entrepreneurial orientation framework was borne out by these studies. I saw different mathematical signs on some coefficients for individual factors across and within the regression models, and I saw that in many cases some entrepreneurial factors showed no association with the dependent variable. These differential results would not have been obtained if the entrepreneurial orientation factors co-varied, representing a single overarching construct.

The results suggested that being entrepreneurially oriented does not necessarily preclude firms from making social progress, especially if they are proactive. They also showed that while firms that are explicit about the riskiness of their ventures tend to have higher risk profiles, focusing on innovation could offset that risk to some extent. This in turn suggests that relationships between entrepreneurial orientation and corporate social responsibility, and entrepreneurial orientation and firm-level risk, are more nuanced than theory would suggest.

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ESSAY 1: ENTREPRENEURIAL ORIENTATION LEVELS AND CORPORATE SOCIAL  
RESPONSIBILITY RATINGS

ABSTRACT

This study examined 15 separate relationships between five entrepreneurial orientation factors (autonomy, competitive aggressiveness, innovation, proactiveness, and risk taking) and three corporate social responsibility ratings (environmental, social, and governance). Those factors were derived for each firm using content analysis of quarterly earnings call transcripts. Proactiveness was found to be positively related to all three corporate social responsibility scores. Competitive aggressiveness was found to be negatively related to social and governance scores but showed no significant association with environmental scores. Innovation was found to be positively related to firms' environmental scores but showed no significant associations with social or governance scores. Autonomy and risk-taking showed no statistically significant associations with any of the corporate social responsibility ratings. These results revealed that the relationship between a firm's economic mindset and its socially responsible actions is likely nuanced rather than straightforward.

**Keywords:** social responsibility, autonomy, competitive aggressiveness, innovation, proactiveness, risk, content analysis, seemingly unrelated regressions



### Essay 1: Entrepreneurial Orientation Levels and Corporate Social Responsibility Ratings

The Association to Advance Collegiate Schools of Business (AACSB) requires that accredited educational institutions “demonstrate a commitment to address, engage, and respond to current and emerging corporate social responsibility issues” (AACSB, 2018, p. 6). It also suggests that business schools can be catalysts for change in providing training to take advantage of the economic opportunities associated with entrepreneurial activity (AACSB, 2018). This dual focus highlights the importance of both concepts. But can firms simultaneously pursue both social and economic objectives? Some researchers have suggested that assuming they can achieve both goals misinterprets the very nature of markets (Doane, 2005). Others have argued that attempting to pursue both will ensure that the firm achieves neither (Jensen, 2010). Yet, still others have suggested the two objectives are complementary, not antithetical (Carroll & Shabana, 2010; Freeman, 1984).

After decades of research, the empirical evidence as to links between socially responsible corporate action and firm performance has been decidedly mixed (Grewatsch & Kleindienst, 2017). Some have suggested that the relationship between the two constructs is positive (Orlitzky, Schmidt, & Rynes, 2003). Others have reported a negative relationship between the two (Aupperle, Carroll, & Hatfield, 1985; Friedman, 1970). Others have found U-shaped relationships, with some finding a conventional U-shape (Barnett & Salomon, 2012) and others an inverted U-shape (Lankoski, 2008). Still others have found no relationship (Surroca, Tribo, & Waddock, 2010).

The failure to reach consensus on this topic may be due in part to the fact that the studies often have been plagued by difficult-to-address measurement and econometric concerns (Margolis & Walsh, 2003; McWilliams & Siegel, 2000). Of particular relevance to this research

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is the tendency of those studies to treat corporate social action as an independent, exogenously-determined variable, examining its influence on firm performance as the dependent variable.

Waddock and Graves (1997) noted that the causality likely runs in the opposite direction, suggesting that firms with high profitability and slack resources have greater ability to engage in socially responsible activities. This notion rests on the resource-based view of the firm (Barney, 1991). This research followed this track but with a twist, investigating whether a firm's economic mindset, not its economic performance, affects its willingness to take socially responsible action. More specifically, it asked whether firms with high individual entrepreneurial orientation factor levels are more or less likely to also seek to contribute to social progress, as represented by the firm's corporate social responsibility ratings.

The limited research that has been conducted using this framework has several shortcomings (Sung, Choi, Kim, & Lee, 2014; Sung & Park, 2018). It has used surveys of executives to measure entrepreneurial orientation, an approach which creates self-report bias issues (Barringer & Bluedorn, 1999). It also has relied on the original three entrepreneurial orientation factors (Covin & Slevin, 1989). A later version of the entrepreneurial orientation construct theory suggests a five-factor model (Lumpkin & Dess, 1996), which was used in this research.

The past research also has asked an overarching question: is an entrepreneurial orientation consistent with a corporate social responsibility ethic? But both entrepreneurial orientation and corporate social responsibility activities contain independent factors, ones that might move in different directions. More importantly for this research, the independent entrepreneurial orientation factors might have different effects on the tendencies of firms to engage in particular socially responsible actions.

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This study approached these issues in different ways than those used in prior entrepreneurial orientation research. To address the self-report bias issue, this study instead relied on content analysis of earnings call transcripts to measure entrepreneurial orientation. The research investigated whether each of the five Lumpkin and Dess (1996) entrepreneurial orientation factors related to each of three corporate social responsibility ratings. Rather than seeking to find one general association, it tested 15 individual relationships, which is in keeping with the multi-dimensional nature of both constructs.

This research relied on, among other theories, Ocasio's (1997) attention-based view of the firm, which suggests that executives develop skill sets, routines, and practices that determine how they approach all problems their businesses face. This in turn suggests that executives may process information about corporate social responsibility using the same cognitive practices, analytical tools, and mindsets that they apply when analyzing entrepreneurial opportunities, implying that the two concepts may be linked (Ocasio, 1997).

Lumpkin and Dess (1996) suggested that firms with an entrepreneurial orientation have organizational cultures that manifest five characteristics: autonomy, competitive aggressiveness, innovation, proactiveness, and risk taking. This study examined associations between these factors and three corporate social responsibility ratings, those in the environmental, social, and governance categories. It considered the following: How do the entrepreneurial orientation factors relate to corporate social responsibility ratings?

This research contributed to the literature in several ways. In addition to reversing the typically assumed direction of the association between the economic and social constructs, it measured entrepreneurial orientation, not economic performance. In terms of methods, it used content analysis, an underutilized technique in entrepreneurial orientation research compared to

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surveys or interviews, to measure firms' entrepreneurial orientation factor levels (Short, Broberg, Coglisier, & Brigham, 2010; Wales, 2016). This addressed concerns about self-report bias issues that arise when surveys are used (Duriiau, Reger, & Pfarrer, 2007). Since there were three dependent variables, the research design involved a system of equations. To improve statistical efficiency, the study employed the seemingly unrelated regressions technique to estimate the parameters of the model to capture information contained in the cross-correlations of the residuals from the three equations.

### **Corporate Social Responsibility**

Over the past several decades, the topic of corporate social responsibility has risen to prominence in the academic literature (Wang, Tong, Takeuchi, & George, 2016). To put this in perspective, a search on Google Scholar using the phrase corporate strategy, arguably one of the most fundamental concepts in the management field, produced links to 3.3 million documents; a similar search using the phrase corporate social responsibility produced a figure in the same neighborhood (2.8 million documents).

Different researchers studying corporate social responsibility have used varying definitions of the concept (Jones, 2003). Dahlsrud's (2008) literature review found 37 distinct definitions of that construct. For this study, I used the straightforward definition offered by Mackey, Mackey, and Barney (2007, p. 818): "voluntary firm actions designed to improve social or environmental conditions." This seemed to be consistent with the definition applied by those organizations that rate firms on their corporate social responsibility activities.

Today, the notion that corporations should act at least to some extent in socially responsible ways, rather than focusing solely on shareholders, is taken for granted (Denning, 2017). In recent years, 90% of the world's 250 largest firms issued social responsibility reports

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(Blasco & King, 2017). Furthermore, 70% of executives believe that corporate social responsibility is a key component of their firms' long-run profitability (Vogel, 2005); whether this is true is another matter.

Detractors of the notion that firms have a responsibility to think about more than their profits have been present since the inception of the idea, with roots tracing back to the 1950s (Levitt, 1958). The attack goes to the essence of the concept; advocates of corporate social responsibility have suggested that pursuing that objective means that in some cases firms will need to accept lower present values of cash flows to produce gains in social welfare (Mackey et al., 2007), which has led to strong criticism from certain researchers, especially those in the fields of economics and corporate finance (Friedman, 1970; Jensen, 2010).

Friedman (1962) went so far as to say that social responsibility, should it take hold globally as a standard corporate objective, would destroy the notion of economic freedom and promote movement toward socialist states. As we near the end of the second decade of the 21st century, one must wonder whether 60 years ago Friedman was envisioning the brand of corporate social responsibility practiced by corporations today (Schreck, 2011). Despite widespread acceptance of corporate social responsibility, Friedman's (1962) fear of an associated movement away from competitive markets to socially-driven resource allocations has not come to pass. Today, there are more democratic, market-driven economies than at any time in modern history (Radelet, 2018).

The applied strategy literature has suggested positive potential links between the two concepts can be achieved if corporations analyze social responsibility issues through the same lens that they apply when making other strategic decisions (Porter & Kramer, 2006). This is consistent with Ocasio's (1997) attention-based view of the firm, in which it was suggested that

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due to constraints on the ability of humans to process vast amounts of information over time, executives develop skill sets, routines, and practices that influence decisions regarding all aspects of their business. If that is the case, corporate social responsibility may not drive a firm's economic engine; rather its traditional economic culture may influence whether it sees value in engaging in socially responsible activities.

In keeping with this notion, Grewatsch and Kleindienst (2017) suggested that treating corporate social responsibility as an independent variable relegates its status to that of a black box. They suggested that there is a need to understand how firms decide to take socially responsible action, an issue that this research addressed (Grewatsch & Kleindienst, 2017). Ocasio (1997) invited researchers to look at the firm's overarching strategic decision framework. One way of describing that framework is through the entrepreneurial orientation construct.

### Literature Review

#### **Entrepreneurial Orientation**

Before proceeding to a detailed description of entrepreneurial orientation, it is important to distinguish between it and entrepreneurship. Entrepreneurship is an action, for example, introducing a new product or entering a new market; entrepreneurial orientation describes the firm's focus in terms of investigating potential opportunities, for example, a willingness to analyze and consider the possibility of entering new markets even though doing so might be risky (Lumpkin & Dess, 1996). In keeping with the notion that entrepreneurial orientation describes the processing of information, Certo, Moss, and Short (2009, p. 319) defined entrepreneurial orientation as: "the strategic practices that organizations use to identify and launch new businesses."

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The use of the word orientation is important in this regard as it implies a firm-level, long-term commitment to an idea or viewpoint, not a transitory phenomenon (Basso, Fayolle, & Bouchard, 2009). Researchers have suggested that entrepreneurial orientation represents an all-encompassing strategic dimension, with all firms arranged at some point along the spectrum; that is, entrepreneurial orientation is a matter of degree, not a binary condition (Wales, 2016).

Although some researchers have used other variants (Covin & Slevin, 1989), the latest major revision to the entrepreneurial orientation construct is that set forth in Lumpkin and Dess (1996); they suggested that entrepreneurially oriented firms manifest corporate cultures that encourage autonomy, competitive aggressiveness, innovation, proactiveness, and risk taking. They noted, however, that the factors are independent, so individual firms might exhibit some of the factors and not others (Lumpkin & Dess, 2001). This important point has been ignored by many entrepreneurial orientation researchers (Miller, 2011).

Autonomous firms encourage independent decision making and self-directed action (Rauch, Wiklund, Lumpkin, & Frese, 2009). External events or internal changes do not dissuade the decision makers from acting (Lumpkin & Dess, 1996). Autonomous firms often have rule-breakers who bypass procedures (Shane, 1994). This suggests that firms that manifest autonomy chart their own courses, even if shareholders prefer a different one. This introduces the specter of potential principal-agent conflicts (Jensen & Meckling, 1976; Lumpkin, Moss, Gras, Kato, & Amezcua, 2013).

Competitive aggressiveness is about adopting an offensive position in existing markets. Lumpkin and Dess (1996) noted that some researchers equate proactiveness and competitive aggressiveness. One of Lumpkin and Dess's (1996) key contributions to the entrepreneurial orientation literature was to suggest that these two factors are distinct:

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Proactiveness refers to how a firm relates to market opportunities in the process of new entry. It does so by seizing initiative and acting opportunistically to "shape the environment," that is, to influence trends and, perhaps, even create demand. Competitive aggressiveness, in contrast, refers to how firms relate to competitors, that is, how firms respond to trends and demand that already exist in the marketplace. (pp. 146–147)

Per this view, competitive aggressiveness is about dealing with competitors in current markets and under current conditions; proactiveness is about focusing on changing conditions in existing markets or on finding new ones.

Proactiveness involves adopting a forward-looking stance, addressing problems before they get too large, and anticipating future opportunities (Lumpkin & Dess, 1996). It can involve creating demand for products and services, spawning interest among customers for items that they did not know they would need or want (Rauch et al., 2009). The evidence has suggested that proactive firms are early to market with new products, rather than imitating actions of others (Miller & Camp, 1985).

Innovation is about introducing something new—bringing new products and services to market or applying new technologies to production, administration, or delivery processes (Rauch et al., 2009). Martin (1982) stressed that innovation in entrepreneurial creativity is different from artistic creativity because entrepreneurs typically adopt ideas and technologies already developed, rather than inventing their own. In a business strategy sense, innovation is then more often about implementation than invention.

Innovation is a key aspect of Schumpeter's (1942) creative destruction concept; per this view, new firms and new combinations of products and services displace existing firms and existing offerings. Not surprisingly, innovative firms have more scientists and engineers (Hage,



1980), they are more technocratic than their counterparts (Miller & Friesen, 1982), and they spend more on research and development (Miller, 1987, 1988).

Risk-taking is about allocating substantial resources to activities in uncertain environments (Rauch et al., 2009). The theory suggests that firms guided by an entrepreneurial orientation will, on average, undertake more unsuccessful activities than will a more conservative firm (Wiklund & Shepherd, 2011). Nevertheless, such firms also are more likely than their conservative counterparts to hit economic homeruns, with the net result yielding average returns that exceed those earned by the conservative organizations (Wales, 2016). While this is the conventional view, there is little empirical analysis studying whether this is true (see Essay 2).

### Theory

Given the multi-dimensional characteristics of both constructs, it makes little sense to suggest that entrepreneurial orientation in general is positively or negatively related to all aspects of a firm's socially responsible actions. With five entrepreneurial orientation factors and three corporate social responsibility rating categories, there are 15 distinct relationships linking the two concepts. The directions of those relationships were explored in this study.

### **Autonomy**

The impact of autonomy on corporate social responsibility was perhaps the most complicated of the five entrepreneurial orientation factors to consider because there are two types of autonomy that could come into play: individual autonomy and corporate autonomy. Let us start with individual autonomy and then later demonstrate how corporate autonomy can in some cases act as an offset to the individual type.

Autonomous individuals are self-directed. This invites consideration of types of individualism. One hallmark of American history and political inspiration is that of the rugged individual. In the 1960s, presidential candidate Barry Goldwater articulated what this meant in a business setting, albeit in a gender-biased manner relative to today's standards, "When a man invests his property in a business, he has the legal right to conduct that business any way he wants to just so it doesn't do damage to other businesses" (Hammerback, 1972, p. 179). This sort of all-persons-for-themselves attitude is in many ways the antithesis of social responsibility. Vestiges of this thinking exist among modern-day libertarians, who value individual autonomy and tend to distrust advocates of corporate social responsibility (Stieb, 2009).

Yet, pro-environmental and pro-social individuals often have autonomous personalities, as well (Cooke, Fielding, & Louis, 2016). While autonomous rugged individuals can ignore social issues, autonomous pro-environment and pro-social individuals can embrace actions that address concerns in those areas. We live in a world different from the one suggested by Goldwater in 1960. Today, many executives see value in pursuing social agendas (Vogel, 2005). The firm can undertake such actions, however, only if it has what business ethicists refer to as rule autonomy, a form of corporate autonomy.

There are three types of corporate autonomy: rule, executive, and control (Roloff & Aßländer, 2010). Rule autonomy allows the firm to select its objectives (Roloff & Aßländer, 2010). Executive autonomy allows managers to create corporate cultures consistent with the firm's objectives (Roloff & Aßländer, 2010). Control autonomy is the ability to sanction non-conforming behavior within the organization (Roloff & Aßländer, 2010).

Limitations on corporate autonomy come from several sources, including clients, suppliers, society, and shareholders (Roloff & Aßländer, 2010). In the first two cases (clients

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and suppliers), the firm in question is in a weaker position than other market participants. Those participants may then dictate terms that are inconsistent with the weaker firm's objectives. In the third case (society), it may be customary, for example, in some countries to treat foreign entities poorly relative to the treatment afforded to domestic firms, even though the contracts for the firms may be the same.

It is the fourth case, the limitations by shareholders, that has special relevance here. Friedman's 1970 notion that managers should focus only on profits is in many ways the antithesis of autonomy, as it severely restricts managerial action to a tightly bound set of options (Silver, 2005). For the firm to move beyond the shareholder value maximization objective, it must be autonomous in this respect.

The fact that executives may have autonomy over shareholders gives them freedom to pursue socially responsible activities if they wish, but that does not necessarily mean that they will. There must be a reason for the executives to do so. Some executives might have an environmental or social ethic, which could be a motivator. Today, most executives seem to lean in the direction of being socially responsible where they can be, which means that they should be biased in the direction of being socially responsible, absent other constraints (Blasco & King, 2017). Yet, not all executives are internally motivated in that respect (Tang, Qian, Chen, & Shen, 2015).

Interestingly, a new motivator has emerged in this area. Many U.S. firms have begun to make it financially attractive for executives to make socially responsible decisions, basing CEO compensation in part on their firms' social responsibility actions, a practice referred to as corporate social responsibility contracting (Flammer, Hong, & Minor, 2019). In 2003, 12% of S&P 500 firms included social responsibility components in executive compensation plans; 10

years later that figure had tripled (Flammer et al., 2019). Linking corporate social responsibility to executive pay increases the likelihood that autonomous executives freed from sole adherence to a shareholder value maximization objective will consider the environmental and social aspects of their decisions.

Therefore, high levels of executive autonomy would allow two groups of executives to take socially responsible action, even if such actions are not necessarily value enhancing for shareholders: (a) those who are ethically inclined to be socially responsible, which is a long-standing driver, and (b) those who are paid to be socially responsible, which is a more recent phenomenon. As a result, I expected positive associations between firm autonomy and both environmental and social corporate social responsibility ratings.

*H<sub>1</sub>*: A firm's level of autonomy is positively related to its corporate social responsibility rating for environmental issues.

*H<sub>2</sub>*: A firm's level of autonomy is positively related to its corporate social responsibility rating for social issues.

Abdullah and Valentine (2009, p. 88) defined corporate governance as “a set of processes and structures for controlling and directing an organization.” The impact of autonomy on corporate governance requires a bit more thought, contrasting corporate autonomy with individual autonomy. One of the characteristics of autonomous individuals is that they can be rule breakers (Shane, 1994). While bending the rules around minor internal procedures may not cause significant concerns, the situation could be problematic if the organizational culture cannot police such activities and therefore ethical violations occur (Peltier-Rivest & Lanoue, 2015). If this situation exists, the relationship between autonomy and corporate governance should be negative. Yet, the last form of corporate autonomy, control autonomy, allows executives to ride

herd on rule breakers to keep them in line. In this respect, corporate autonomy limits individual autonomy.

Firms that exert financial control over individuals through actions such as surprise audits have lower incidents of fraud (Peltier-Rivest & Lanoue, 2015). Firms that monitor and impose penalties on managers who deviate from accepted practices also experience lower fraud rates (Barra, 2010). Therefore, high levels of corporate control autonomy—the freedom of executives to enforce codes of conduct, for example—is antithetical to individual autonomy.

This leads to an essential question—were Lumpkin and Dess (1996) thinking about individual autonomy or corporate autonomy when they included the concept of autonomy in the entrepreneurial orientation factor list? Reviewing their research suggests that it was individual autonomy (Lumpkin & Dess, 1996). This in turn suggests that employees are free to roam, so to speak, which could result in ethical lapses or even fraud. Therefore, it is likely that high levels of individual autonomy, which was measured here, will be negatively related to corporate social responsibility ratings for corporate governance, the category which addresses fraud and ethical violations.

*H<sub>3</sub>*: A firm's level of autonomy is negatively related to its corporate social responsibility rating for corporate governance issues.

### **Competitive Aggressiveness**

To understand the way aggressive competition affects a firm's willingness to engage in socially responsible action, it may be helpful to first examine its impact on firm financial performance as this can provide initial insights as to executive mindset. Once established, the likelihood that the mindset would support corporate social responsibility can be examined.

At first blush, one might think that all firms would want to compete as aggressively as possible, which is the view offered by neoclassical economic theory (Shepherd, Betz, & O'Connell, 1997). Many applied economists have suggested, however, that much action in real markets reflects cooperative arrangements among competing firms (Thurow, 1984). In many cases, such harmonious conditions stabilize markets, which benefits the firms and their customers (Brandenburger & Nalebuff, 1996; Thompson, Peteraf, Gamble, & Strickland, 2014).

But can firms avoid competing aggressively and still thrive? While studies typically have shown that other dimensions of entrepreneurial orientation relate positively to firm performance, competitive aggressiveness has been found to either be negatively related (Jancenelle, Storrud-Barnes, & Javalgi, 2017) or not related in that regard (Short et al., 2010). Why then would firms choose to compete aggressively if as a result economic performance suffers or at best doesn't improve?

Many executives view success as being measured by dominating the market in terms of maximizing market share rather than maximizing shareholder value, two fundamentally different objectives (Venkatraman, 1989). This is a form of principal-agent conflict (Jensen & Meckling, 1976). In other cases, adopting a competitively aggressive orientation may not be a choice. It may be that low corporate returns drive firms to compete aggressively. That is, firms may be forced into a competitively aggressive position because such an approach is necessary to survive under hostile industry conditions (Lumpkin & Dess, 2001).

The degree to which firms engage in competitively aggressive behavior typically is not viewed by executives as a form of reputation management, which is often a primary motivator for corporate social responsibility (Kozubíková, L., Sopková, G., Krajčík, V., & Tyll, L. (2017). Differences in the defining aspect of a firm's competitive aggressiveness is often a focus on cost

control along with price cutting (Grimm, Lee, & Smith, 2005; Porter, 1995). Once the firm decides that cost is the key parameter, its willingness to make discretionary environmentally-related investments—to control pollution or save energy, for example—is limited (Porter, 1995). While this may not be a significant issue for firms with small environmental footprints, for those with larger impacts of this sort, the more the competitive position is important, the less environmentally-related activity will occur, especially of the discretionary type. In contrast, firms that focus more on product differentiation, rather than highly competitive cost control, might view socially responsible corporate activities as ways of showcasing their progressive environmental characteristics.

*H<sub>4</sub>: A firm's level of competitive aggressiveness is negatively related to its corporate social responsibility rating for environmental issues.*

I expect to see the impact of competitive aggressiveness on responsible corporate action in the social issues category, as well. If the firm is focused on cost control, the first items to be cut are those representing discretionary spending (Porter, 1995). That will leave fewer funds for community investment. Furthermore, the more earnings pressure a firm faces, the higher its rate of employee accidents (Caskey & Ozel, 2017), which suggests firms subject to competitive pressure may be underinvesting in safety measures. This should lead to lower ratings in this category.

*H<sub>5</sub>: A firm's level of competitive aggressiveness is negatively related to its corporate social responsibility rating for social issues.*

Firms that adopt aggressively competitive positions tend to pay their CEOs more, even though such an approach in some cases can reduce firm value (Offstein & Gynawali, 2005). This can cause executives to increase competitive pressure to gain market share, even when other

approaches may be more valuable for shareholders (Offstein & Gynawali, 2005). There is no clear evidence to suggest that higher CEO salaries lead to enhanced firm performance (Jensen & Murphy, 1994). This mismatch sets the stage for principal-agent conflicts related to business strategy. Evidence has suggested that executives are not acting in the interests of investors, flowing from a competitively aggressive position, which should lead to lower corporate social responsibility ratings for corporate governance.

*H<sub>6</sub>: A firm's level of competitive aggressiveness is negatively related to its corporate social responsibility rating for governance issues.*

### **Innovation**

In many ways innovation is at the heart of entrepreneurship and entrepreneurial orientation (Drucker, 1993). Entrepreneurial activity involves doing something new—introducing new products, entering new markets, or implementing new production processes (Lumpkin & Dess, 1996). So, while it is conceivable that a firm could be entrepreneurial without necessarily having an autonomous culture or being competitively aggressive, it is difficult to imagine it being so without an innovative culture.

Research has suggested that some firms now recognize environmental social responsibility as opportunities for innovation, not just risk management (Rexhepia, Kurtishib, & Bexhetic, 2013; Wu, Liu, Chin, & Zhu, 2018). Innovative firms tend to be early adopters of technology, and solutions to many environmental problems involve technological fixes (Preuss, 2011). This is reinforced by the tendency of innovative firms to have more scientists and engineers in-house, giving them a natural advantage in developing innovative solutions in the environmental arena. There are real-world examples of innovation-based corporate social responsibility affecting environmental performance:



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General Mills cereal once paid \$100 a ton to have oat hulls from Cheerios transported to the landfill. Through the creative process, however, they developed a use for the hulls.

An innovative plan to use hulls as fuel to heat their buildings evolved into a plan to sell any unused hulls to other companies. Because the hulls provide clean burn, they are highly desired in the industrial world. General Mills now makes more than \$100 a ton when they sell the hulls; when one considers the fuel savings from the hulls they burn, the savings is even higher. Similar innovations have paid [off for] Wal-Mart, Dell, Texas Instruments, Unilever, and Sun Microsystems. (Bellow, 2012, p. 42)

Innovation often streamlines production, reducing waste, or makes use of renewable resources, which today tend to be less expensive than fossil fuels (Dudley, 2018). These innovations produce the type of results General Mills delivered—reduced environmental impact and cost reductions, which flow to the bottom line.

*H<sub>7</sub>*: A firm's level of innovation is positively related to its corporate social responsibility rating for environmental issues.

While the impact of an innovative mindset in the social issues area is a bit less obvious than in the environmental area, investigation finds examples there as well.

AT&T worked with its unions to develop a system of daycare centers for communities in which it had facilities, providing benefits to the communities and improving relationships with its unions (Preuss, 2011). Innovation tends to exist at high levels in technology firms, and, not surprisingly, one finds those firms producing creative solutions to social problems. Vodafone's M-PESA innovation in Kenya allowed consumers to use text messaging to transfer money to each other and to businesses (Forte, 2013). Less than

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25% of the Kenyan population has a bank account (Forte, 2013) The Vodaphone innovation solved that problem by clearing the funds electronically through the web.

Nestle is known for innovation as it has created numerous new products over its 130-year history. The company applied its innovative skills in India to develop a commercial market for milk (Kiran & Sharma, 2011). Prior to Nestle's entry into the milk market, most farmers in India had a single cow, which they used to feed their families (Kiran & Sharma, 2011). Other firms would not develop the market due to the lack of means to deliver fresh milk to ultimate consumers (Kiran & Sharma, 2011) (Kiran & Sharma, 2011). Nestle developed an innovative system of distributed regional refrigerated collection points, which allowed farmers to sell milk to wholesalers who could keep it fresh. By 2010, 75,000 Indian farmers were engaged in the commercial milk market (Kiran & Sharma, 2011). This not only helped Nestle develop its market in India, it has substantially increased the standard of living for thousands of Indian milk producers.

These examples suggest that innovative firms not only can create value for investors, they are capable of developing creative solutions to social problems, as well. Therefore, a firm's innovation level should be positively related to its corporate social responsibility score in the social category.

*H<sub>8</sub>: A firm's level of innovation is positively related to its corporate social responsibility rating for social issues.*

Innovation seems less relevant in corporate governance. Remedies to governance problems tend to be well-established. To make boards of directors more accountable, separate the roles of CEO and chair (Abels & Martelli, 2013). To reduce the likelihood of fraud,

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implement a system of internal audits (Peltier-Rivest & Lanoue, 2015). This suggests little need for innovation in the corporate governance arena.

Nevertheless, some researchers have suggested that boards of directors have become more involved in understanding innovation in the firms they lead (Musa, Ismail, & Othman, 2008). Innovation at the board level should then relate positively to the firm's chance of long-run survival (Schumacher & Wasieleski, 2013), which should receive high marks by those rating such firms. I therefore suggested that innovation levels relate positively to corporate social responsibility ratings in the governance category.

*H<sub>9</sub>*: A firm's level of innovation is positively related to its corporate social responsibility rating for governance issues.

### **Proactiveness**

Proactiveness is the aspect of entrepreneurial orientation most likely related to corporate social responsibility in that both constructs involve the use of forward-looking analysis.

Proactive thinking likely affects economic, social, and environmental aspects of a business.

“Proactive CSR [corporate social responsibility] is represented by a pattern of responsible business practices adopted voluntarily by firms that simultaneously support sustainable economic, social and environmental development at a level above that required to comply with government regulations” (Torugsa, O'Donohue, & Hecker, 2013, p. 384). In essence, a proactive firm is not likely to be proactive only in a single dimension of business. This is in keeping with Ocasio's (1997) attention-based theory of the firm.

Proactive individuals tend to be more successful along a variety of dimensions. For example, proactive sales representatives build stronger relationships with customers, resulting in greater purchase volumes (Mallin, 2016). Proactiveness melds a future outlook with a tendency

to act (Parker, Bindl, & Strauss, 2010). Peters and Waterman (1982) in their classic book *In Search of Excellence* found that one of the qualities that successful firms manifest is a bias for action (proactive), rather than reacting once conditions have changed (reactive).

In contrast, reactiveness is about compliance, not anticipating future events. Specifically, with respect to environmental actions, executives of firms in reactive compliance mode generally do not review environmental issues as a matter of course (Dixon-Fowler, Slater, Johnson, Ellstrand, & Romi, 2013). Outside parties, usually regulators, determine which issues the firms must respond to and to what extent (Dixon-Fowler, et al., 2013). The proactive firm is more likely to be engaged in this process at all levels, looking for mutually acceptable solutions (Dixon-Fowler, et al., 2013). Thus, there is a clear expected positive relationship between proactiveness and environmental corporate social responsibility.

$H_{10}$ : A firm's level of proactiveness is positively related to its corporate social responsibility rating for environmental issues.

Key considerations that arise under the social issues category are community involvement and employee safety. A proactive executive would tend to work with community leaders to develop good relationships and actively seek input on an ongoing basis (Granovetter, 1985). This is consistent with the idea of social embeddedness, which holds that businesses are an integral part of the community, not exogenous to it (Granovetter, 1985). Proactive firms will invest in the communities in which they operate, formally integrate community activities in business planning, create institutional structures that permit employee support of community activities, such as paid time off for volunteer efforts, and measure the impact they have on communities (Scott, 2015). Corporations can do more than just donate to established charities

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and community organizations; they can contribute business acumen to create new economic opportunities for small businesses and non-profit organizations (Porter, 1995).

As is the case for environmental issues, social issues, if left unattended, could develop into problems down the road. Goldsby, Kuratko, Bishop, Kreiser, and Hornsby (2018) suggested a spectrum of possibilities as to which types of firms react most strongly to social issue challenges. At one end, reactive firms deny any responsibility; at the other end, proactive firms not only accept responsibility, they seek to be leaders in solving problems (Goldsby, et al. 2018). Unlike proactive firms, which incorporate employee health and safety standards into their strategic planning (Erickson, 1997), reactive firms tend to wait until problems—for example, accidents—occur before acting. That is likely to be viewed negatively by organizations that rate firms on the social dimension. In contrast, proactive firm should have fewer problems and more successes in this category, leading to higher ratings.

*H<sub>11</sub>*: A firm's level of proactiveness is positively related to its corporate social responsibility rating for social issues.

Firms that receive high corporate governance scores have a high proportion of outside directors, separate board chair and CEO, managers with significant holdings of stock in the company, good relations with institutional investors, and work to establish procedures to reduce internal fraud (Bassen, 2005). In many ways the relationship with investors is akin to the relationship with the community—one of overt involvement.

A proactive board complements a proactive executive team. The board helps to guide executives in setting the overall direction of the firm. Taking a long view is essential in that regard in not only identifying opportunities but also in seeing potential pitfalls. If a board is being more than a rubber stamp for management, then it is likely proactive (Bassen, 2005).

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Firms that are proactive throughout the organization should have higher corporate governance ratings.

A proactive firm will work with institutional investors to potentially find solutions that balance the wishes of investors with those of management (Bassen, 2005). That is not to say that investors and managers will always agree. It is to say that communication lines will likely be open as a means of anticipating and addressing problems where possible (Gillian & Starks, 2003). Reactive firms will wait for problems with institutional investors to surface before addressing them, likely in a combative mode (Berman, Wicks, Kotha, & Jones, 1999).

*H<sub>12</sub>: A firm's level of proactiveness is positively related to its corporate social responsibility rating for governance issues.*

### **Risk**

Corporate social responsibility is in many ways about risk management (Godfrey, 2004). By acting on its own volition, a company can decrease the possibility of consumer boycotts and reduce the likelihood of aggressive regulatory intervention (Preuss, 2011). Risk-averse firms are therefore more likely to embrace corporate social responsibility. Husted (2005) applied real options analysis and found that firms that have substantial downside risk are less likely to engage in socially responsible activities. In this way, purposeful risk-taking and a heavy commitment to corporate social responsibility seem incompatible in that much of the interest in corporate social responsibility is driven by risk aversion, not risk-seeking behavior. This would apply to both environmental and social activities.

*H<sub>13</sub>: A firm's level of risk taking is negatively related to its corporate social responsibility rating for environmental issues.*

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*H<sub>14</sub>*: A firm's level of risk taking is negatively related to its corporate social responsibility rating for social issues.

There is likely to be an especially strong relationship between risk-seeking behavior and corporate governance ratings. Boards of directors show increasing concern about risk-related matters (Ballou, Heitger, & Stoel, 2011). Firms that are risk-seeking make it a more challenging task for the board to perform its function. Those with cultures supporting risk may also be willing to take unethical actions to capture economic gain, which creates potential for additional corporate governance issues.

*H<sub>15</sub>*: A firm's level of risk taking is negatively related to its corporate social responsibility rating for governance issues.

A schematic of all hypothesized relationships is shown in Figure 1.

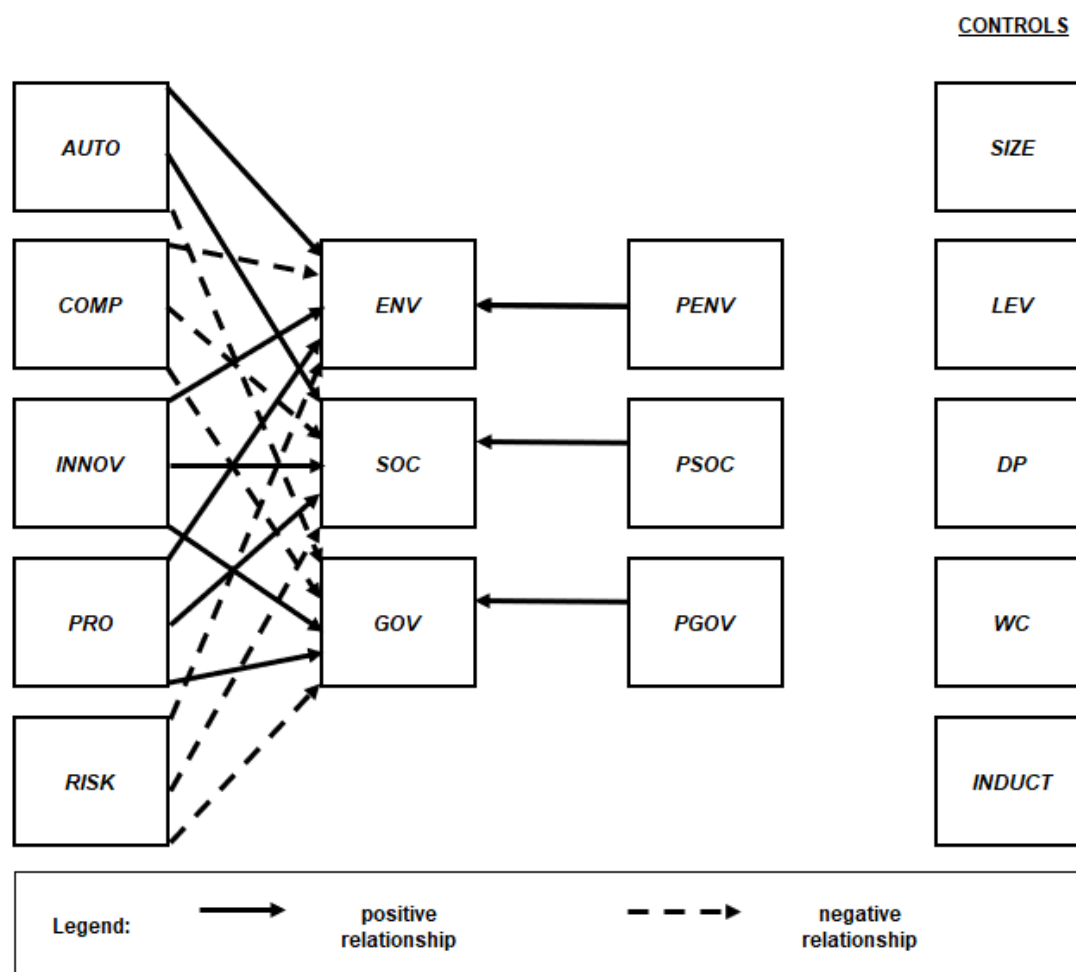


Figure 1. Visual representation of hypotheses.

*Note:* ENV = firm's environmental score, SOC = firm's social issues score, GOV = firm's corporate governance score, AUTO = log of 1 + autonomy word frequency %, COMP = log of 1 + competitive aggressiveness word frequency %, INNOV = log of 1 + innovation word frequency %, PRO = log of 1 + proactiveness word frequency %, RISK = log of 1 + risk word frequency %, PENV = average environmental score of peers, PSOC = average social issues score of peers, PGOV = average corporate governance score of peers, INDUCT = log of 1 + inductively-derived word frequency %, WC = number of words contained in the firm's earnings call transcript, SIZE = log of total enterprise capitalization, LEV = firm's total divided by total assets, and DP = dividend payer (1 = yes, 0 = no).



### Methods

#### **Sample Frame**

The focus of this research was on large corporations. In principle, the sampling frame was all firms in the S&P 1500, but since only the largest firms receive social responsibility ratings, in effect the frame ended up being primarily the S&P 500, with a small number of mid-cap firms that also had received ratings being included in the sample. The research sample size was reduced for two additional reasons. First, much business research studying firms in general has excluded two sectors as being fundamentally different from the other sectors, namely regulated utilities and financial institutions (Shivdasani & Yermack, 2002). Second, earnings transcripts from the third quarter of 2018 formed the basis for the content analysis, which estimated levels of the entrepreneurial orientation factors. In a limited number of cases, firms did not hold earnings calls.

#### **Dependent variables: Sustainalytics ESG scores.**

Sustainalytics is an independent organization that provides corporate social responsibility scores that have been widely used in management research (Graafland & Smid, 2015). Sustainalytics' March 2019 ESG scores were used in this study, as provided by Yahoo! Finance. In addition to providing firm-specific ratings, Sustainalytics assigns each company to one of 42 peer groups and provides peer group average ratings for the ESG scores (Wharton Research Data Services, 2018). These peer group scores were used in this study to control for industry effects.

The Sustainalytics rating process for the ESG factors uses more than 70 specific measurements: it examines firm preparedness for possible future events, disclosure of existing issues, and performance in terms of meeting social goals; for the environmental category, issues such as pollution and resource sustainability are investigated; in the social category, the focus is

on community support and employee relations, including health and safety; in the governance categories, key issues include institutional arrangements between the board of directors and management and levels of fraud or ethical concerns (Wharton Research Data Services, 2018).

The environmental responsibility score for each firm ( $ENV_i$ ) was the Sustainalytics rating for that category, which ranged from 1 (worst) to 100 (best). The same scale applied to the firm's social issues score ( $SOC_i$ ) and its corporate governance score ( $GOV_i$ ).

**Independent variables: Entrepreneurial orientation factor levels.** Most of the research on entrepreneurial orientation has focused on executives' perceptions, measuring entrepreneurial attitudes using surveys or interviews (Miller, 2011). That approach invites self-report biases into the data collection process (Nuendorf, 2017). When interacting with researchers, subjects may adjust responses because they are aware that others are observing or will observe their responses, they have expectations as to the proper role of the interviewee or survey respondent, they are concerned that their responses may have consequences for them, they have preconceived notions as to proper responses, or they are influenced by the interview or survey question wording (Webb, Campbell, Schwartz, & Sechrest, 1966).

An alternative approach, computer assisted text analysis (CATA), is less susceptible to these self-reporting biases (Duriau et al., 2007). Content analysis dictionaries developed for CATA can be applied to corporate documents such as CEO letters to shareholders, press releases, regulatory filings, and transcripts of quarterly earnings calls with stock analysts (Short, Payne, Brigham, Lumpkin, & Broberg, 2009). Content analysis is unobtrusive because the statements analyzed are those offered by the subjects in the normal course of their daily business activities, not under experimental or research conditions (Krippendorff, 2015; Morris, 1994; Nuendorf, 2017).

## EO, SOCIAL RESPONSIBILITY, AND RISK

Short et al. (2010) developed six dictionaries for entrepreneurial orientation dimensions. For their five factors Lumpkin and Dess (1996) relied on deductive reasoning by a panel of management experts; they also derived an additional dictionary through inductive analysis of CEO letters to shareholders. Short et al. (2010) tested their derived dictionaries for content validity (whether the measures captured the entire domain of the issue under review), external validity (whether the measures could be used in other generalized settings), reliability (whether the measures yielded similar values in repeated application), dimensionality (whether the measures were associated with a single factor or multiple factors), and predictive validity (whether the measures accurately predicted other constructs which theory suggested should be related to them).

The dictionaries contain 36 words for autonomy, 86 for innovation, 27 for proactiveness, 58 for competitive aggressiveness, and 37 for risk taking and can be found in the Appendix. Interrater reliability scores based on Holsti's (1969) method for the factors were: autonomy (0.80), innovativeness (0.88), proactiveness (0.85), competitive aggressiveness (0.75), and risk taking (0.83). Short et al. (2010) supplemented their deductive study with an inductive analysis based on a review of CEO letters to shareholders using a measure referred to as the insistence score, which reflects the frequency with which a word is repeated within a given text (Jancenelle, Storrud-Barnes, Iaquinto, & Buccieri, 2016). This process led to an additional dictionary category with 41 words, also shown in the Appendix. The interrater reliability for this process was nearly perfect (0.97). Short et al. (2010) suggested that this factor may represent commercialization, that is converting the knowledge associated with an entrepreneurial orientation mindset into a market action.

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The entrepreneurial orientation scores for autonomy ( $AUTO_i$ ), competitive aggressiveness ( $COMP_i$ ), innovativeness ( $INNOV_i$ ), proactiveness ( $PRO_i$ ), risk-taking ( $RISK_i$ ), and the one inductively derived factor ( $INDUCT_i$ ) were measured using the dictionaries just discussed. The words in each dictionary were loaded into the Linguistic Inquiry and Word Count content analysis program to allow for computerized processing of the earnings call transcripts (Pennebaker, Booth, Boyd, & Francis, 2015). The inductive variable was also included in the content analysis, but it entered as a control variable with no associated hypothesis since it is not part of the entrepreneurial orientation theory.

These dictionaries from Short et al. (2010) were used to develop word frequencies associated with each factor, using earnings call transcripts from the third quarter of 2018. To reduce the influence of unusual items, the natural log of one plus the frequencies was calculated. Given that the log of zero is undefined, adding 1 to the frequency allowed for the possibility that some raw frequencies could be zero. To adjust for different transcript lengths, the natural log of the document word count ( $WC_i$ ) was included as a control variable, which is a standard procedure in content analysis (McClelland, Liang, & Barker, 2010).

**Control variables.** Additional control variables included the peer group corporate social responsibility scores for each category, that is, peer environmental responsibility score ( $PENV_i$ ) for the  $ENV_i$  equation, peer social responsibility score ( $PSOC_i$ ) for the  $SOC_i$  equation, and peer corporate governance responsibility score ( $PGOV_i$ ) for the  $GOV_i$  equation. The peer groups' scores are those reported by Sustainalytics. I also included firm size, measured as the natural log of total enterprise market capitalization ( $SIZE_i$ ), the firm's financial leverage, measured by total debt divided by total assets ( $LEV_i$ ), and an indicator variable whether the firm currently pays dividends ( $DP_i$ ). Values for these variables were obtained from the Compustat data base.

### Estimation Methods

The estimation procedure began with ordinary least squares regression. Those original parameter estimates served as inputs to the seemingly unrelated regressions estimation process. Since there were three equations estimated for the sample of companies, I expect to find cross-correlated residuals for the models, a violation of the assumptions of ordinary least squares regression. The seemingly unrelated regressions technique incorporated this information to produce more efficient parameter estimates (Benelemlih, 2017; Srivastava & Giles, 1987).

**Equations.** The following equations were used in the analysis.

$$ENV_i = \beta_{10} + \beta_{11}AUTO_i + \beta_{12}COMP_i + \beta_{13}INNOV_i + \beta_{14}PRO_i + \beta_{15}RISK_i + \beta_{16}PENV_i + \beta_{17}INDUCT_i + \beta_{18}WC_i + \beta_{19}SIZE_i + \beta_{1A}LEV_i + \beta_{1B}DP_i + \varepsilon_{1i} \quad (1)$$

$$SOC_i = \beta_{20} + \beta_{21}AUTO_i + \beta_{22}COMP_i + \beta_{23}INNOV_i + \beta_{24}PRO_i + \beta_{25}RISK_i + \beta_{26}PSOC_i + \beta_{27}INDUCT_i + \beta_{28}WC_i + \beta_{29}SIZE_i + \beta_{2A}LEV_i + \beta_{2B}DP_i + \varepsilon_{2i} \quad (2)$$

$$GOV_i = \beta_{30} + \beta_{31}AUTO_i + \beta_{32}COMP_i + \beta_{33}INNOV_i + \beta_{34}PRO_i + \beta_{35}RISK_i + \beta_{36}PGOV_i + \beta_{37}INDUCT_i + \beta_{38}WC_i + \beta_{39}SIZE_i + \beta_{3A}LEV_i + \beta_{3B}DP_i + \varepsilon_{3i} \quad (3)$$

### Results

The data gathering process yielded complete information for 395 publicly-traded corporations, most of which are members of the S&P 500 large capitalization index. Table 1 shows the descriptive statistics for all variables used in the analysis.

While the firms in the study used terms related to innovation and proactiveness more frequently than terms related to autonomy, competitive aggressiveness, and risk, the inductive

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category developed by Short et al. (2010) captured more words than any of the five core entrepreneurial orientation factors suggested by Lumpkin and Dess (1996). The descriptive results also revealed that about three-quarters of the firms paid dividends. This reinforces the notion that the study reflected the characteristics of large, well-established companies rather than newer, fledgling firms. Table 2 shows the correlations among the variables included in the study.

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Table 1

## *Descriptive Statistics*

Variable	Minimum	Maximum	Mean	SD
<i>ENV</i>	32	98	58.83	12.88
<i>SOC</i>	34	88	55.33	10.70
<i>GOV</i>	42	88	62.89	6.86
<i>AUTO</i>	0.00	0.41	0.06	0.06
<i>COMP</i>	0.00	0.37	0.07	0.06
<i>INNOV</i>	0.04	0.72	0.26	0.12
<i>PRO</i>	0.04	0.65	0.23	0.09
<i>RISK</i>	0.00	0.17	0.03	0.03
Control Variables				
<i>PENV</i>	49	75	62.82	5.47
<i>PSOC</i>	50	70	58.05	5.46
<i>PGOV</i>	59	76	63.39	2.88
<i>INDUCT</i>	0.00	0.67	0.27	0.12
<i>WC</i>	6.82	9.71	9.14	0.26
<i>SIZE</i>	5.12	13.00	9.50	1.24
<i>LEV</i>	0.00	3.30	0.27	0.34
<i>DP</i>	0	1	0.78	0.41

*Note:* *ENV* = firm's environmental score, *SOC* = firm's social issues score, *GOV* = firm's corporate governance score, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 + competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *PENV* = average environmental score of peers, *PSOC* = average social issues score of peers, *PGOV* = average corporate governance score of peers, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no).

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Table 2

## Pairwise Correlations

Pair	Variables															
	ENV	SOC	GOV	AUTO	COMP	INNOV	PRO	RISK	PENV	PSOC	PGOV	INDUCT	WC	SIZE	LEV	DP
ENV	1.00															
SOC	0.57**	1.00														
GOV	0.29**	0.39**	1.00													
AUTO	0.07	0.13**	0.02	1.00												
COMP	0.06	-0.09	-0.08	-0.09	1.00											
INNOV	0.09	-0.07	-0.02	-0.01	0.20**	1.00										
PRO	0.14**	0.07	0.04	0.00	0.04	-0.07	1.00									
RISK	0.04	0.01	0.01	0.00	0.03	-0.03	0.08	1.00								
PENV	0.38**	0.18**	-0.02	0.04	0.02	-0.08	0.19**	0.06	1.00							
PSOC	0.05	0.47**	0.19**	0.16**	-0.09	-0.20**	-0.02	-0.02	0.41**	1.00						
PGOV	-0.15**	0.24**	0.24**	0.15**	-0.10*	-0.20**	-0.15**	-0.02	-0.07	0.62**	1.00					
INDUCT	0.21**	0.12*	0.01	0.02	0.17**	0.38**	0.12*	0.09	0.17**	-0.10*	-0.15**	1.00				
WC	0.07	0.03	0.04	-0.03	0.12*	0.07	-0.12*	0.13**	-0.05	-0.09	-0.09	0.06	1.00			
SIZE	0.32**	0.26**	0.05	0.13	0.01	-0.01	0.03	0.10*	-0.04	-0.03	0.04	0.17**	0.18**	1.00		
LEV	-0.08	-0.02	0.01	0.21**	0.01	-0.10*	0.03	0.04	-0.06	0.01	0.10*	0.01	0.02	0.24**	1.00	
DP	0.19**	0.23**	0.25**	-0.08	0.02	-0.07	-0.05	-0.01	0.04	0.25**	0.22**	-0.15**	0.07	0.17**	-0.07	1.00

*Note.* ENV = firm's environmental score, SOC = firm's social issues score, GOV = firm's corporate governance score, AUTO = log of 1 + autonomy word frequency %, COMP = log of 1 + competitive aggressiveness word frequency %, INNOV = log of 1 + innovation word frequency %, PRO = log of 1 + proactiveness word frequency %, RISK = log of 1 + risk word frequency %, PENV = average environmental score of peers, PSOC = average social issues score of peers, PGOV = average corporate governance score of peers, INDUCT = log of 1 + inductively-derived word frequency %, WC = number of words contained in the firm's earnings call transcript, SIZE = log of total enterprise capitalization, LEV = firm's total divided by total assets, and DP = dividend payer (1 = yes, 0 = no). \*\* significant at  $p < .01$  \* significant at  $p < .05$ .



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Examining the correlations, I noted that the three corporate social responsibility ratings showed significant associations with the respective ratings of firms in their peer comparison group. I also saw that firm size seemed to have noticeable influence, with larger firms being more likely to have high social responsibility scores than smaller firms. One might expect to see an even stronger relationship between corporate social responsibility ratings and firm size across groups if eventually one can obtain those ratings for smaller firms, not just the large-cap firms used in this study.

As noted previously, the ordinary least squares regression procedure is not the most appropriate statistical estimator in this situation. Estimating three equations using the same companies introduced the possibility of correlated errors across equations, which is a violation of the assumptions supporting the ordinary least squares estimation method as applied to a system of equations. As expected, the correlations of the residuals from the three equations were statistically significant, ranging from 0.35 to 0.64. The seemingly unrelated regressions approach incorporated these correlations in re-estimating the coefficients for each model. Table 3 presents the seemingly unrelated regressions estimates for the three corporate social responsibility equations.

Table 3

*Seemingly Unrelated Regression Estimates*

Variable	Dependent: <i>ENV</i>		Dependent: <i>SOC</i>		Dependent: <i>GOV</i>	
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
<i>Constant</i>	-47.045**	-55.835**	-38.575**	-45.936**	6.832	-1.224
<i>PENV</i>	0.948**	0.971**				
<i>PSOC</i>			1.064**	1.042**		
<i>PGOV</i>					0.632**	0.653**
<i>WC</i>	1.195	1.501	0.746	1.618	1.416	2.016
<i>INDUCT</i>	11.897*	6.481	12.404**	12.882**	4.772	4.114
<i>SIZE</i>	3.282**	3.300**	2.245**	2.169**	-0.100	-0.126
<i>LEV</i>	-4.531**	-4.571**	-2.756*	-2.891*	0.093	0.157
<i>DP</i>	4.060**	4.217**	1.751	2.030*	3.415**	3.507**
<i>AUTO</i>		12.060		5.100		-0.645
<i>COMP</i>		3.727		-16.768**		-13.137**
<i>INNOV</i>		11.401*		0.120		0.416
<i>PRO</i>		9.325†		8.929*		7.928*
<i>RISK</i>		-11.020		-7.064		-1.002
Adjusted <i>R</i> <sup>2</sup>	0.286	0.292	0.306	0.311	0.089	0.119

*Note.* *ENV* = firm's environmental score, *SOC* = firm's social issues score, *GOV* = firm's corporate governance score, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 + competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *PENV* = average environmental score of peers, *PSOC* = average social issues score of peers, *PGOV* = average corporate governance score of peers, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no). \*\* significant at  $p < .01$  \* significant at  $p < .05$  † significant at  $p < .10$

### Review of the Hypotheses

Hypothesis 1 predicted a positive relationship between autonomy and the environmental score. The regression results showed a positive relationship between *AUTO* and *ENV*, but the coefficient was not statistically significant. Therefore, Hypothesis 1 was not supported.

Hypothesis 2 predicted a positive relationship between autonomy and the social issues score. The regression results showed a positive relationship between *AUTO* and *SOC*, but the coefficient was not statistically significant. Therefore, Hypothesis 2 was not supported.

Hypothesis 3 predicted a negative relationship between autonomy and the governance score. The regression results showed a negative relationship between *AUTO* and *GOV*, but the coefficient was not statistically significant. Therefore, Hypothesis 3 was not supported.

Hypothesis 4 predicted a negative relationship between competitive aggressiveness and the environmental score. The regression results showed a positive relationship between *COMP* and *ENV*, which was the opposite sign from that expected. The coefficient was also not statistically significant. Therefore, Hypothesis 4 was not supported.

Hypothesis 5 predicted a negative relationship between competitive aggressiveness and the social issues score. The regression results showed a significant negative relationship ( $p < .05$ ) between *COMP* and *SOC*, providing support for Hypothesis 5.

Hypothesis 6 predicted a negative relationship between competitive aggressiveness and the governance score. The regression results showed a significant negative relationship ( $p < .05$ ) between *COMP* and *GOV*, providing support for Hypothesis 6.

Hypothesis 7 predicted a positive relationship between innovation and the environmental score. The regression results showed a significant positive relationship ( $p < .05$ ) between *INNOV* and *ENV*, providing support for Hypothesis 7.

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Hypothesis 8 predicted a positive relationship between innovation and the social issues score. The regression results showed a positive relationship between *INNOV* and *SOC*, but the coefficient was not statistically significant. Therefore, Hypothesis 8 was not supported.

Hypothesis 9 predicted a positive relationship between innovation and the governance score. The regression results showed a positive relationship between *INNOV* and *GOV*, but it was not statistically significant. Therefore, Hypothesis 9 was not supported.

Hypothesis 10 predicted a positive relationship between proactiveness and the environmental score. The regression results showed a significant positive relationship ( $p < .10$ ) between *PRO* and *ENV*, providing support for Hypothesis 10.

Hypothesis 11 predicted a positive relationship ( $p < .05$ ) between proactiveness and the social issues score. The regression results showed a significant positive relationship between *PRO* and *SOC*, providing support for Hypothesis 11.

Hypothesis 12 predicted a positive relationship ( $p < .05$ ) between proactiveness and the governance score. The regression results showed a significant positive relationship between *PRO* and *GOV*, providing support for Hypothesis 12.

Hypothesis 13 predicted a negative relationship between risk taking and the environmental score. The regression results showed a negative relationship between *RISK* and *ENV*, but it was not statistically significant. Therefore, Hypothesis 13 was not supported.

Hypothesis 14 predicted a negative relationship between risk taking and the social score. The regression results showed a negative relationship between *RISK* and *SOC*, but it was not statistically significant. Therefore, Hypothesis 14 was not supported.

Hypothesis 15 predicted a negative relationship between risk taking and the governance score. The regression results showed a negative relationship between *RISK* and *GOV*, but it was not statistically significant. Therefore, Hypothesis 15 was not supported.

Table 4 summarizes all hypotheses and the corresponding test results. As is the case in any study, the lack of supporting evidence for some of the hypotheses could be due to Type II errors related to study sample size. Nevertheless, relative to many studies in the entrepreneurial orientation literature, this sample size ( $N = 395$ ) was relatively large (Murphy, Myors, & Waloch, 2014). Gathering additional companies for the investigation was hampered because medium to smaller size companies do not have social responsibility ratings. So even if this relatively large sample were in some sense deemed to be too small (which would in turn cast doubt on most of the other studies in the entrepreneurial orientation literature), it is not clear what could be done to remedy that issue. I expect that over time more companies will have corporate social responsibility ratings, which would at that point allow for further investigation of this issue.

Table 4

*Summary of Hypothesis Test Results*

Hypothesis Number	Independent Variable	Dependent Variable	Hypothesized Relationship	Result
1	<i>AUTO</i>	<i>ENV</i>	positive	not supported
2	<i>AUTO</i>	<i>SOC</i>	positive	not supported
3	<i>AUTO</i>	<i>GOV</i>	negative	not supported
4	<i>COMP</i>	<i>ENV</i>	negative	not supported
5	<i>COMP</i>	<i>SOC</i>	negative	Supported
6	<i>COMP</i>	<i>GOV</i>	negative	Supported
7	<i>INNOV</i>	<i>ENV</i>	positive	Supported
8	<i>INNOV</i>	<i>SOC</i>	positive	not supported
9	<i>INNOV</i>	<i>GOV</i>	positive	not supported
10	<i>PRO</i>	<i>ENV</i>	positive	Supported
11	<i>PRO</i>	<i>SOC</i>	positive	Supported
12	<i>PRO</i>	<i>GOV</i>	positive	Supported
13	<i>RISK</i>	<i>ENV</i>	negative	not supported
14	<i>RISK</i>	<i>SOC</i>	negative	not supported
15	<i>RISK</i>	<i>GOV</i>	negative	not supported

*Note.* *ENV* = firm's environmental score, *SOC* = firm's social issues score, *GOV* = firm's corporate governance score, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 + competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *PENV* = average environmental score of peers, *PSOC* = average social issues score of peers, *PGOV* = average corporate governance score of peers, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no).

### Discussion

The objective of this research was to investigate potential associations between a firm's economic mindset, as represented by its entrepreneurial orientation factor levels, and its social responsibility activities, as represented by its Sustainalytics corporate social responsibility ratings. The research found that some, but not all, of the entrepreneurial orientation factors are associated with specific corporate social responsibility scores. Some of the factors showed positive relationships with certain corporate social responsibility ratings, some showed negative relationships, and other showed no relationships. This was as expected because both entrepreneurial orientation and corporate social responsibility are multi-factor constructs driven by somewhat independent forces. The surprising result was that all the entrepreneurial orientation factors related to all the corporate social responsibility category ratings in a similar way (e.g., that all five entrepreneurial orientation factors showed negative associations with all three corporate social responsibility ratings).

These results contribute directly to the debate in the entrepreneurial orientation literature. Some researchers have suggested that entrepreneurial orientation is a single, unobserved factor with several co-varying and identifiable sub-factors (Miller, 2011; Covin & Slevin, 1989). This research challenges that assertion. The differential effects of the five entrepreneurial orientation factors on corporate social responsibility ratings suggest that it makes little sense to assert that entrepreneurial orientation in general is—or in general is not—compatible with socially responsible corporate action. As this study suggests, while some aspects of entrepreneurial orientation may inhibit the ability of a firm to contribute to social progress, other entrepreneurial orientation factors appear to be complementary in that regard. If the factors all co-varied in the same direction, that result would not have emerged.

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The results provided insights as to individual factor effects. It was noted in the theory development section that the relationship between autonomy and the corporate social responsibility ratings was perhaps the most difficult to intuit. There appears to be ambiguity surrounding the meaning of the autonomy concept. Different types of autonomy lead to different organizational procedures and decision-making processes (Lumpkin, Cogliser, & Schneider, 2009). Autonomous individuals can be social champions (Cooke et al., 2016), but they also can be arch conservatives (Hammerback, 1972; Friedman, 1970). Due to the complex and somewhat countervailing aspects of the phenomenon, knowing whether individuals or firms have autonomous tendencies appears to tell us little about their interest in taking social action. This may explain why autonomy showed no significant relationships, positive or negative, with the corporate social responsibility ratings.

The results for competitive aggressiveness matched more closely to the theory, at least with respect to the social and governance ratings. Firms engaged in competitive battles may be forced into myopic mindsets, which is antithetical to the long-term nature of most social issues (Ridge, Kern, & White, 2014). Under this condition, executives' ability or willingness to focus on community concerns or to be flexible in terms of corporate governance may be limited by the need to focus on narrow economic matters.

These results suggested no significant relationship exists between competitive aggressiveness and firms' environmental ratings, a somewhat surprising result given the strength of the two other relationships. This result may have occurred because environmental expenditures are perhaps less discretionary than they might seem. Today, recognizing the notion that large carbon emissions may lead regulators to someday impose environmental regulations on the firm may make additional environmental actions (those in excess of current requirements)



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strategic for some firms. That is, if the firm moves now to attempt to reduce its environmental footprint, it may be required to do less than it would if it waits for regulators to act.

As a case in point, Exxon Mobil today supports a carbon tax, which earns the company high marks on the environmental front (Mufson, 2018). Such a tax will hurt Exxon Mobil in a financial sense as it would raise the prices of its products. Why would the company then support such an action? Game theory concepts may be helpful in analyzing this issue. If Exxon Mobil is involved in the discussion and crafting of tax legislation, it may be able to limit the damage. If it waits for things to get worse, its political clout may be reduced, and it might have to face a more onerous tax. Thus, Exxon Mobil may see a first-mover advantage with respect to the carbon tax issue (Dixit & Nalebuff, 2008).

This would be an example of a competitive firm getting high marks on environmental actions even when on the surface it might seem counterproductive for the firm to take the actions that earned it the high rating. Other competitively-engaged firms may have no such strategic opportunities along these lines, so avoiding discretionary spending on environmental matters may be the optimal course for them. This suggests that some firms that behave in competitively aggressive ways might view environmental issues differently from firms that are similarly aggressive but for which environmental issues have less significance (Laurent, Olsen, & Hauschild, 2010). Therefore, simply knowing that a firm is competitively aggressive may not reveal much about its environmental practices, as this research suggested.

Innovation's positive relationship to the environmental score supports the idea that there might be a technology factor at play. Many environmental improvements come in the form of technology innovations (Schiederig, Tietze, & Herstatt, 2012). Reducing air and water pollution typically require technological fixes (Hocking, 1993). Reducing energy use is made easier by

more-efficient appliances and software innovations such as lighting controls (Roison, Bodart, Deneyer, & D'Herdt, 2008). The technology savvy-environmental leader combination makes sense in this context.

Innovation is more difficult to describe for the social and governance categories, and that sort of innovation would certainly be in the domain of different types of individuals at firms. Technology innovation is generally an engineering specialty (Wicklein, 2006). Social innovation requires engagement with stakeholders, as does innovation in the governance space (Gould, 2012). A firm might excel in one area and not in others (Christensen, Raynor, & McDonald, 2015). The results here are driven by executives' word choices. While they might be comfortable using many innovation-related words in describing technology applications, their word choices may be different when talking about social and governance issues (Pol & Ville, 2009). All these phenomena may muddy the relationship between innovation and corporate responsibility for the social issues and governance ratings.

Proactiveness is the entrepreneurial orientation factor most closely related to the general concept of social responsibility (Torugsa et al., 2013). Proactive firms look beyond current circumstances to identify potential business threats and opportunities, which is akin to the perspective typically applied to analyzing social issues (Bird, Hall, Momente, & Reggiani, 2007). True to form, in this research proactiveness was positively associated in statistically significant ways to all three of the corporate social responsibility ratings. These results were not surprising given that proactiveness as a mindset tends to be consistent across different decision-making domains (Bateman & Crant, 1999). That is, an executive who takes a proactive view of market opportunities is likely to view social issues through a similar lens. This supports Ocasio's (1997) attention-based view of the firm.

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Perhaps the most unexpected finding was that risk-taking showed no statistically significant association with any of the corporate social responsibility scores. The hypothesis relating the two was based on the notion that firms may be taking socially responsible actions to reduce risk (Godfrey, Merrill, & Hanson, 2008). Therefore, a purposeful embracing of risk as an entrepreneurial mindset would seem to conflict with one of the key goals of social action, suggesting a strong negative relationship between risk-taking and social responsibility scores. Nevertheless, this study found no such link in any social responsibility category. This may be the result of the firms looking at risk differently (Gigerenzer, 2014), and the result of firms' different estimates of the magnitude of the risk even if they apply the same definitional construct (Kahneman, 2011). It could also be the case that not all executives see corporate social responsibility as necessarily risk reducing as there is evidence that while corporate social responsibility in the environmental arena decreases risk in the industrial sector, it increases risk in the service sector (Cai, Cui, & Jo, 2016). So, perhaps the link between risk-taking and corporate social responsibility is not as obvious as it might first appear.

It is important to reiterate that the positive relationships between proactiveness and all three corporate social responsibility scores and the negative relationships between competitive aggressiveness and the social and governance scores reinforce not only the idea of factor independence in general, but Lumpkin and Dess's (1996) particular point about the differences between these two factors as they saw missing pieces in the original entrepreneurial orientation framework developed by Miller (1983) and Covin and Slevin (1989). Lumpkin and Dess (1996) added autonomy and competitive aggressiveness. They drew a strong distinction between competitive aggressiveness and proactiveness, suggesting that the former is about dealing with day-to-day market actions while the latter is about taking the long view and perhaps creating new

products (Lumpkin & Dess, 1996). The idea that these factors are fundamentally different also has intuitive appeal. Imagine a person who is competitively aggressive, then imagine a person who is proactive. It is unlikely that the same person would come to mind for each of these categories.

### **Contributions and Managerial Implications**

This study contributed to the literature in several ways. It is one of the few studies to rely on content analysis to assess entrepreneurial orientation (Wales, 2016). By testing hypotheses about the specific entrepreneurial orientation factors, it allowed for the possibility that those factors may have different impacts on socially responsible activities, which is what the research found. The study also expanded the measure of corporate social responsibility to three categories instead of just one overarching category (Sung, Choi, Kim, & Lee, 2014). In investigating 15 separate hypotheses, the study introduced a system of equations approach rather than the more typical single-equation model approach.

This study lays the foundation for further research in this area. The entrepreneurial orientation factor autonomy seems to lack a precise definition. More discussion of what autonomy means in different situations may shed light on this issue. There also appears to be lack of transparency as to how one should assess innovation in the social and governance categories. Sustainalytics provides cryptic descriptions of its review process. A research article that provides more details about that process would be invaluable.

Short et al. (2010) found a sixth entrepreneurial orientation factor through an inductive process, suggesting that an important aspect of the construct may be missing. When validating the content analysis dictionaries, Short et al. (2010) found a strong positive relationship between this inductively-derived factor and firm financial performance. In this study, that inductive

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factor showed a strong positive association with the social issues corporate social responsibility score. Yet, it is not clear what that inductive factor represents. Research that focuses on that factor would be useful.

### Limitations

This research assumed unidirectional causal flows. There could be endogenous relationships among the variables, which were not modeled here. For example, if actions that cause the firm to earn high ESG ratings in turn improved economic performance, the firm may have more discretion to pursue entrepreneurial action, which, if successful, may permit it to take additional socially responsible actions. The models applied in this research did not allow for this feedback possibility.

The research also assumed that the conversations that executives have on earnings calls reflect the entrepreneurial mindsets of their organizations. The time perspective discussed in those calls, at least on the surface, appeared to be only the most recent quarter, which could raise concerns about missing the long-term perspective, which is more in keeping with the entrepreneurial orientation concept. But upon closer inspection of the transcripts, I saw that many of the analysts' questions asked about the companies' futures and their long-run strategies, so there was some discussion beyond the most recent quarter. The relevant issue is whether there was enough of such longer-term focus in the transcripts, which is difficult to assess.

The research discussed here explored data from a single period. More robust conclusions might be forthcoming under a longitudinal study. Moderating and mediating variables could also be included in future research. Since so little work has been done using this framework, however, it seemed appropriate to first establish foundational relationships before exploring higher-order versions.

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One final note: the study focused almost exclusively on larger firms, not by choice, but because there were no social responsibility ratings for most smaller firms. Caution is therefore advised in making general statements as to how the individual entrepreneurial orientation factors relate to socially responsible activities of medium-sized and smaller firms.

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Appendix

The following lists are the content analysis dictionaries for each of the entrepreneurial orientation factors, including the inductive factor, all as adapted from Short, Broberg, Coglistter, and Brigham (2010).

**Autonomy:** at-liberty, authority, authorization, automatic, autonomous, autonomy, decontrol, deregulation, distinct, do-it-yourself, emancipation, free, freedom, free-thinking, independence, independent, liberty, license, on-one's-own, prerogative, self-directed, self-directing, self-direction, self-rule, self-ruling, separate, sovereign, sovereignty, unaffiliated, unattached, unconfined, unconnected, unfettered, unforced, ungoverned, unregulated

**Competitive aggressiveness:** achievement, aggressive, ambitious, antagonist, antagonistic, aspirant, battle, battler, capitalize, challenge, challenger, combat, combative, compete, competer, competing, competition, competitive, competitor, competitiveness, conflicting, contend, contender, contentious, contest, contestant, cutthroat, defend, dog-eat-dog, enemy, engage, entrant, exploit, fierce, fight, fighter, foe, intense, intensified, intensive, jockey-for-position, joust, jousting, lock-horns, opponent, oppose, opposing, opposition, play-against, ready-to-fight, rival, spar, strive, striving, struggle, tussle, vying, wrestle

**Innovation:** ad-lib, adroit, adroitness, bright-idea, change, clever, cleverness, conceive, concoct, concoction, concoctive, conjure-up, create, creation, creative, creativity, creator, discover, discoverer, discovery, dream, dream-up, envisage, envision, expert, form, formulation, frame, framer, freethinker, genesis, genius, gifted, hit-upon, imagination, imaginative, imagine, improvise, ingenious, ingenuity, initiative, initiator, innovate, innovation, inspiration, inspired, invent, invented, invention, inventive, inventiveness, inventor, make-up, mastermind, master-stroke, metamorphose, metamorphosis, neoteric, neoterism, neoterize, new, new-wrinkle, novel,

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novelty, original, originality, originate, origination, originative, originator, patent, radical, recasts, recasting, resourceful, resourcefulness, restyle, restyling, revolutionize, see-things, think-up, trademark, vision, visionary, visualize

**Proactiveness:** anticipate, envision, expect, exploration, exploratory, explore, forecast, fore-glimpse, foreknow, foresee, foretell, forward-looking, inquire., inquiry, investigate, investigation, look-into, opportunity-seeking, proactive, probe, prospect, research, scrutinization, scrutiny, search, study, survey

**Risk:** adventuresome, adventurous, audacious, bet, bold, bold-spirited, brash, brave, chance, chancy, courageous, danger, dangerous, dare, daredevil, daring, dauntless, dicey, enterprising, fearless, gamble, gutsy, headlong, incautious, intrepid, plunge, precarious, rash, reckless, risk, risky, stake, temerity, uncertain, venture venturesome, wager

**Inductively-derived:** advanced, advantage, commercialization, customer-centric, customized, develop, developed, developing, development, developments, emerging, enterprise, enterprises, entrepreneurial, exposure, exposures, feature, features, finding, high-value, initiated, initiative, innovations, innovative, introductions, launch, launched, leading, opportunities, opportunity, originated, out-doing, outthinking, patents, proprietary, prospects, prototyping, pursuing, risks, unique, ventures



ESSAY 2: ENTREPRENEURIAL ORIENTATION AND IDIOSYNCRATIC RISK

ABSTRACT

Risk-taking is a key component of entrepreneurial orientation but observed risk levels for entrepreneurial firms are rarely studied as a performance measure in management research. Incorporating observed firm risk in entrepreneurial orientation studies is critically important as finance principles make it clear that economic value is a function of both risk and return. The entrepreneurial orientation construct has five independent factors, which, in addition to risk-taking, include autonomy, competitive aggressiveness, innovation, and proactiveness. This study of 1,010 companies used content analysis of earnings call transcripts to measure levels of those five entrepreneurial orientation factors for each firm and then estimated relationships between those factor levels and firms' idiosyncratic risk as revealed through stock price changes. The study showed that while firms that frequently used terms related to risk-taking not surprisingly tended to manifest higher levels of observed firm risk, those firms that stressed innovation-related terms tended to have lower levels of observed firm risk. The degree to which executives used words related to levels of autonomy, competitive aggressiveness, and proactiveness showed

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no statistically significant associations with their firms' observed idiosyncratic risk. The results have practical implications as they might suggest to managers which of the individual components of entrepreneurial orientation, if adopted, are likely to affect firm-specific risk.

**Keywords:** autonomy, competitive aggressiveness, innovation, proactiveness, risk, content analysis

### Essay 2: Entrepreneurial Orientation and Idiosyncratic Risk

The management literature has held the image of an entrepreneurially-oriented firm in high regard (Miller, 2011), with some researchers going so far as to suggest that all executives should adopt entrepreneurial attitudes (Wiklund, 1999). This adoration of the entrepreneurial perspective has roots that trace back to Schumpeter (1934) who suggested that the bulk of an economy's employment growth results from the actions of entrepreneurs, implying that those who undertake such activity serve not only their own interests but society's as well.

Yet, stepping back to objectively examine the picture in its entirety, one cannot help but wonder whether the entrepreneurial ethic merits such unequivocal praise. With respect to societal benefits, Shane (2009) found that entrepreneurial actions often create less value for the overall economy than do those conducted by established firms. Shane (2009) argued that from a public policy perspective there is too much entrepreneurial activity, not too little.

With respect to firm-level impacts, which is the focus here, when society as a whole admires entrepreneurial success, it may be influenced by survivorship bias (Brown, Goetzman, Ibbotson, & Ross, 1992). We all know stories of entrepreneurial success, but may be less aware of the numerous entrepreneurial failures. Consistent with this notion, some management researchers have called to our attention the fact that actual entrepreneurial orientation experiences often fall short of expectations.

Many companies regard entrepreneurial behavior as essential if they are to survive in a world increasingly driven by accelerating change. This belief may stem, in part, from the normative bias prevalent in both the academic and popular press suggesting an inherently positive influence of entrepreneurial activity on performance. Despite considerable research, the strength of direct relationships between

entrepreneurship and performance is generally less robust than the normative belief would indicate. (Lyon, Lumpkin, & Dess, 2000, p. 1,005)

Furthermore, the evidence is even cloudier when considering that corporate return comparisons between entrepreneurially-oriented firms and their more conservative counterparts typically are not adjusted for risk, which makes drawing economically-valid conclusions difficult. Wiklund and Shepherd (2011) suggested that the entrepreneurial orientation literature has focused too much on potential return enhancements and not enough on how adopting that mindset affects firm risk.

This idea was particularly relevant in this research because one of the defining qualities of entrepreneurial orientation is a willingness to embrace risk (Covin & Slevin, 1989). Society tends to worship risk takers, as such action taken by heroes is generally portrayed positively in literature and movies (Vogler, 1998). Finance theory has taken a noticeably less value-laden view of risk; it is simply a characteristic associated with an uncertain event, one that describes the likelihood of experiencing consequences (either good or bad) should one engage in that activity (Holton, 2004). Risk taking is neither inherently good nor inherently bad (McClelland, Liang, & Barker, 2010).

To be clear, this research did not investigate whether entrepreneurial orientation should be viewed as inherently positive. Rather, it investigated whether components of entrepreneurial orientation are related to firm-level risk, and hence, what components of entrepreneurial orientation might be desirable for firms to employ to manage their risk. The key point is that entrepreneurial orientation is not just about a willingness to take risk; it is also about having an organizational culture that supports autonomy, competitive aggressiveness, innovation, and proactiveness (Lumpkin & Dess, 1996).

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While adopting a risk-taking attitude should affect firm-level risk, the four other aspects might bear on firm risk as well. Some of those characteristics seem consistent with a higher-risk profile. For example, maintaining an autonomous culture, one that fails to reign in maverick behavior on the part of key individuals, may increase firm risk. On the other hand, a firm with a proactive mindset may anticipate problems and take actions to steer the firm away from potentially disastrous situations, thereby possibly decreasing risk. This led to the research question addressed in this study: How do each of the five entrepreneurial orientation factors (autonomy, competitive aggressiveness, innovation, proactiveness, and risk taking) individually relate to overall firm-level risk? In addressing this question, firms' idiosyncratic risk levels were used to measure firm-level risk, represented by the volatility of each company's stock returns net of that attributable to general stock market changes. Idiosyncratic risk is the preferred metric for such a study as it reflects the portion of overall firm risk that the managers can influence (Sassen, Hinze, & Hardeck, 2016).

Idiosyncratic risk is substantial, typically accounting for over 80% of a firm's total stock price volatility (Bansal & Clelland, 2004). It has been a widely studied metric across the business literature. It has been shown to relate negatively to corporate social performance (Lee & Faff, 2009). Higher levels of idiosyncratic risk in family firms are associated with improved corporate governance structures, possibly as compensation for that higher risk (Nguyen, 2011). Most importantly, in the context of this research, firms with lower levels of idiosyncratic risk have been found to have more flexibility in developing strategic alternatives than their higher-risk counterparts (Chatterjee, Lubatkin, & Schulze, 1999).

With respect to measuring entrepreneurial orientation, rather than using surveys to measure factor levels, this research applied validated content analysis dictionaries from Short,

Broberg, Cogliser, and Brigham (2010) to the latest available quarterly earnings call transcripts (results for third quarter 2018). Content analysis has been underutilized in this line of research (Wales, 2016). To the best of my knowledge, this is the first study using content analysis to examine potential links between entrepreneurial orientation and idiosyncratic risk.

This research contributed to the body of knowledge in several important ways. In addition to employing content analysis in the entrepreneurial orientation arena, it brings the power of finance theory to the entrepreneurial orientation field. That field of management implicitly assumes that adopting an entrepreneurial mindset necessarily increases firm-level risk, but that might not be true in practice. That invites the sort of empirical analysis conducted here, which to date has not been done, at least not at this level of specificity or with such a large sample size ( $N = 1,010$ ). Additionally, the results might indicate to managers which, if any, individual components of entrepreneurial orientation are worth adopting or pursuing and whether they might affect firm-specific risk.

### Literature Review

Before discussing the entrepreneurial orientation construct, it may be helpful to lay a foundation regarding the notion of risk. This describes the structure applied in this research.

#### **Conceptions of Risk**

There are two fundamental versions of risk: objective (Knight, 1921) and subjective (Savage, 1954). The former definition rests on the notion that risk-based probabilities are real entities. The foundation of the latter definition assumes that probabilities in general are created to understand chance, but they exist only in the minds of humans, not in physical reality.

Moving from the esoteric to the practical, Holton (2004) provided an initial working definition of risk: “Exposure to a proposition of which one is uncertain” (p. 22). By exposure

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Holton (2004) meant that if the proposition turns out to be different from that expected, the individual would be affected in a way that matters to him or her. Note that risk includes outcomes that are both better than average and worse than average (Damodaran, 2008). This is poorly understood. Many view risk as necessarily bad because they view it as relating only to negative outcomes. Ignoring the upside risk (rewards) provides a distorted view of risk. If risk only led to bad outcomes, no one would take a risk (Beecher & Kihm, 2016). We all take risks daily because we hope the upside results outweigh those on the downside.

Those looking for quantitative measures of risk must recognize that it is necessarily forward-looking, which in most business settings makes it unknowable. In financial practice we use proxies to develop perceptions or indications of risk. Those measures, such as the variance or standard deviation of corporate returns or the volatility of stock prices, are by necessity backward-looking. Therefore, they cannot be true measures of forward-looking risk. Nevertheless, Holton (2004) suggested that given the fact that one can never measure true forward-looking risk, a different question is in order: are those historic risk proxies useful? While a stock's volatility could be higher or lower in the future than it was in the past, the historical metrics often provide informative reference points—not perfect, but nevertheless useful, measures.

### **Systematic, Idiosyncratic, and Total Risk**

Stock prices are volatile. Some of that volatility is driven by factors that affect all stocks. An extreme example of such an effect is that manifested on Black Monday, October 19, 1987. On that single day, all stocks, including some of those at the time considered to be the least risky in the market, experienced big losses: Consolidated Edison (-16%), General Electric (-17%), Exxon (-23%), and Procter & Gamble (-17%), based on data from Yahoo! Finance. These stock

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price changes likely had little to do with specific activities at these companies—the prices of all stocks in the market fell that day, as revealed in the Yahoo! Finance data. The impact of major factors, either economic (recession) or psychological (panic), that drive broad market shifts, either up or down, is referred to as systematic risk or market risk. Executives at individual firms have no ability to affect that risk because it is a market-wide phenomenon. Put another way, diversifying one's stock portfolio does not reduce exposure to systematic risk because it affects all stocks.

Firm-specific activities also drive individual stock prices. One can see those risks, too, by examining stock price changes under the right circumstances. General Electric has been on a downward slide lately as financial difficulties at the conglomerate continue to emerge (Rausch, Onaran, & Smith, 2019). On May 24, 2018, after its CEO raised additional concerns, the company's stock price declined by 7% (Colvin, 2019). Was May 24, 2018 another special date in market history? No. It was essentially a non-event. The other stocks in our four-company portfolio experienced the following price changes on that day: Consolidated Edison (+1%), Exxon (now Exxon Mobil; +1%), and Procter & Gamble (0%) based on data from Yahoo! Finance.

General Electric's stock price change on May 24, 2018 was a manifestation of idiosyncratic risk, that which affects only the company in question (Doukas & Li, 2009; Rashid, 2017; Sassen et al., 2016). Uncovering accounting irregularities at one company, for example, has nothing to do with financial reporting at other companies. Executives can influence idiosyncratic risk because firm-specific actions cause it. That means that entrepreneurial activities will likely affect idiosyncratic risk, not systematic risk.



Mathematically, firm-specific risk is measured as the standard deviation of excess returns on an individual stock (Mishra & Modi, 2013). The excess return is that net of the return due by changes in broad market prices, as will be discussed later. Variability in a variety of measures, such as leverage ratios, profit margins, and cash holdings, along with firm age and firm size, are the general underlying drivers of this risk (Brown & Kapadia, 2007). Rather than independently measuring risk based on changes to these components, this research relied on the aggregate measure of firm-specific (idiosyncratic) risk revealed in stock returns, as provided by Wharton Research Data Service's Beta Suite, which is typically used in academic research. (Heavilin & Songur, 2018; Schulz & Flickinger, 2018).

Prior research has suggested that individual firm investment decisions are related to its idiosyncratic risk (Datta, Iskandar-Datta, & Singh, 2017; Panousi & Papanikolaou, 2012). In assessing risk, if one examines a firm's unadjusted stock price volatility (total risk), this mingles effects of systematic factors (over which executives have no control) and those of idiosyncratic factors (which they do control, at least in part). To obtain an unadulterated measure of the impact of firm-specific risk, therefore, one must eliminate the effect of systematic risk from total stock price volatility for each firm.

**Market models to remove impacts of systematic risk factors.** To estimate idiosyncratic risk, I need to net out systematic risk from total stock price volatility on a stock-by-stock basis (Mishra & Modi, 2013). I therefore need a model that estimates the contribution of general market movements to the variance of individual stock prices. The search for the model that describes the way investors incorporate risk levels into security prices has been a long journey, which in its modern form dates to Markowitz (1952), whose work led to the

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development of the capital asset pricing model, or CAPM (Lintner, 1965; Mossin, 1966; Sharpe, 1964).

The CAPM assumes that the only risks that matter to investors who hold a stock are those that cannot be diversified away (Brealey, Myers, & Allen, 2017). The influence of firm-specific risks, which tend to vary randomly from firm to firm, can be eliminated in a diversified portfolio, as decreases in value driven by specific activities at some firms tend to be offset by unrelated increases in value driven by specific activities at other firms (Brealey, Myers, & Allen, 2017). The risk that cannot be diversified away, the systematic risk, is that which is related to changes in general business conditions that affect all companies to some extent (e.g., recessions). The key component in the CAPM is the beta coefficient, which measures the sensitivity of the individual stock prices to changes in business conditions (Brealey, Myers, & Allen, 2017). A stock with a low beta coefficient has less sensitivity to changes in general market conditions than a stock with a high beta coefficient.

The other components of the model include a risk-free interest rate and an estimate of the equity risk premium, the expected return above the risk-free rate that investors require to invest in stocks in general (Brealey, Myers, & Allen, 2017). The beta coefficient is applied to the equity risk premium so that low beta stocks have lower required returns than high beta stocks.

The model is expressed as follows:

$$r_i = r_f + \beta_i(r_m - r_f) \quad (1)$$

Where  $r_i$  is the expected return on asset  $i$ ,  $r_f$  is the expected return on a risk-free asset,  $\beta_i$  is the degree to which changes in asset  $i$ 's value relate to general market changes, and  $r_m$  is the expected return on the market portfolio of all assets. While in theory the CAPM should be implemented based on analysis of all assets worldwide (Haugen, 1995), including stocks, bonds,

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and real estate, both publicly traded and privately held, as well as intellectual capital, in practice the market portfolio is proxied by a traded stock index, usually the Standard & Poor's (S&P) 500.

With the CAPM parameters estimated, the impact of changes in general market conditions on an individual firm's expected return can be estimated. For example, if a stock had a beta coefficient of 0.50, the return on the risk-free asset was 3.0%, and the market portfolio declined by 7.0% in one year, then the expected change for the stock in question over that same period would be:

$$r_i = 0.03 + 0.50(-0.07 - 0.03) = -0.020 \text{ or } -2.0\% \quad (2)$$

Stocks with low betas include those in the consumer staples sector. Demand for their products, laundry detergent and bread, for example, do not change dramatically when economic conditions change. So, while an economy-wide downturn might cause noticeable reductions in product sales for a typical company, leading to our 7% reduction in stock prices in general in the example, I expect a much smaller loss for the consumer staples companies related to this downturn, as the CAPM suggests. Stocks with high beta coefficients, for example oil and gas producers, are more sensitive to broad market changes. If the beta coefficient were 1.50, under the conditions listed above, the expected price change for such stocks would be -12.0%.

When the market declined by 7%, if the low-beta (0.50) stocks declined by 2% and the high-beta (1.50) stocks declined by 12%, then in both cases the entire change would be attributable to general market conditions. If, on the other hand, a stock with a beta of 0.50 declined by 5%, instead of 2%, the difference between the two returns would be attributable to firm-specific, or idiosyncratic, risk factors (a downside risk). Similarly, if a stock with a beta of

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1.50 declined by only 1%, instead of 12%, I could assume that positive firm-specific news (an upside risk) offset the negative effects of general stock market changes for that company.

While the CAPM still holds prominence in corporate finance and is still the principal asset pricing model taught to Master of Business Administration students, for decades its validity has been challenged on numerous grounds (Fama & French, 2004; Roll, 1977; Ross, 1976). This has led to various potential replacement models. One of the earliest models to gain traction is the three-factor model suggested by Fama and French (1992).

The Fama-French three-factor model (FFM) builds on the CAPM, including a factor for changes in general market prices, and adds two additional factors, referred to as the size and value factors (Fama & French, 1992). In simplest terms, the model suggests that stocks that: (1) magnify broad market movements, (2) have low market capitalizations, and (3) trade at high book-to-market ratios require the highest returns (Fama & French, 1992). These factors appear to affect all stocks to some degree.

$$r_i = r_f + \beta_{1i}(r_m - r_f) + \beta_{2i}SMB + \beta_{3i}HML \quad (3)$$

Where *SMB* (small minus big) is the historic excess returns of small-cap companies over large-cap companies and *HML* (high minus low) is the historic excess returns of values stocks (high book-to-price ratio) over growth stocks (low book-to-price ratio). The other terms are defined in the CAPM discussion. The individual firm beta coefficients measure the degree to which each firm's return is sensitive to changes in each respective factor.

The FFM can be used to produce another estimate of the impacts of broad market-wide effects that I can net out from total stock volatility to obtain the idiosyncratic volatility due to firm-specific effects. This allows for a second estimate of idiosyncratic risk, which in turn

allows us to test the robustness of any conclusions. With the idiosyncratic risk foundation set, I can next explore the entrepreneurial orientation construct.

### **Entrepreneurial Orientation**

The concept of entrepreneurial orientation emerged in the management literature in the 1980s (Miller, 1983). It is closely related to entrepreneurship, but they nevertheless have distinct features. Lumpkin and Dess (1996) noted that entrepreneurship is about what the firm does; entrepreneurial orientation is about how they do it.

Before investigating entrepreneurial orientation in specific, it may be useful to provide a brief review of entrepreneurship, which in some ways may be surprising and which sets the stage for a closer look at the issue of risk in entrepreneurially-oriented firms. A review of the entrepreneurship literature writ large suggests that risk taking is an essential characteristic of entrepreneurial activity (Lumpkin & Dess, 1996). It has only been in recent decades that several of the other aspects have received attention (Casson, 1982). The risk-taking aspect continues to loom large as the conventional view is that entrepreneurial success can be achieved only if one takes significant risks (Clark, 2012).

The preceding description of the entrepreneur sounds like that of a protagonist in literature or the movies and perhaps for good reason. The need to create mythical heroes is an essential part of the human experience (Campbell, 1949). For the ancient Greeks it was Hercules; for us it may be Steve Jobs (Bolton & Thompson, 2013). A critical aspect of the hero's journey in any setting is the willingness to take risks that others cannot seem to bear (Vogler, 1998). Mintzberg (1973) noted that entrepreneurs move forward even when uncertainty looms large. This can be risk-taking at its highest level in a personal financial sense, which in many cases magnifies the adoration of onlookers (Salzman, 2014).

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Infatuation with entrepreneurship in general dates back many decades. Schumpeter (1934) suggested that most of the job growth in modern economies comes from entrepreneurial action. A closer look at the empirical evidence, however, calls into question the implications of Schumpeter's (1934) job-creation claim. Most jobs that small-scale entrepreneurs create lie at the low end of the pay scale (Davis, Haltiwanger, & Schuh, 1996), suggesting that merely counting jobs, which treats all as equally valuable, obscures the true economic impact. An economy dominated by entrepreneurs may not be best for rank and file workers.

Following this line of inquiry, Shane (2009) suggested that government support of entrepreneurial activities on the part of small business owners detracts from, rather than contributes to, society's economic progress as it takes resources away from established firms, which on a dollar-for-dollar basis of invested capital tends to create more economic value than do the small entrepreneurs. Findings such as these take some of the shine off the popular view of entrepreneurship.

Exploring commonly-held entrepreneurial ideas further, management theory is unequivocal that there is a positive link between entrepreneurship and risk taking. Ironically, one group that doesn't seem to agree is the entrepreneurs themselves (Lumpkin & Dess, 1996). Consistent with this notion, Drucker (1993) suggested that entrepreneurs have lower, not higher, risk tolerance than members of the general population. This suggests that entrepreneurs may be more risk aware than risk taking, identifying business risks but then managing them (Gigerenzer, 2015).

Attempts to determine whether entrepreneurs have greater risk tolerance than other business professionals or the population in general has led to mixed results. Stewart and Roth (2001) performed a meta-analysis of 12 studies of entrepreneurs' risk tolerance, finding that

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entrepreneurs were more comfortable bearing risk than were non-entrepreneurs. Yet, Miner and Raju (2004) conducted a separate analysis using 14 other studies and reached the opposite conclusion. Xu and Ruef (2004) found low risk tolerance among entrepreneurs based on analysis of more than 1,200 respondents drawn from the Panel Study of Entrepreneurial Dynamics database; they also found that non-pecuniary benefits, especially the sense of autonomy and identity fulfillment, not financial gain, motivate entrepreneurs to form their businesses. While these issues need more research, if entrepreneurship is not about risk taking, and not about financial gain, then perhaps we fail to understand its essential nature. This research explores the risk issue, more specifically whether all aspects of entrepreneurial orientation necessarily increase firm risk. With this backdrop, I can now explore entrepreneurial orientation per se.

It is not technically correct to say that one firm is entrepreneurially-oriented while another is not. All firms fall somewhere on the spectrum (Wales, 2016). The proper description would then be that some firms have a stronger entrepreneurial orientation than others. The literature also has noted that the entrepreneurial orientation characteristics of a firm are not easily changed (Miller, 2011). The word orientation is important in understanding the concept as it implies a long-term commitment not a transitory phenomenon. Merriam-Webster defines orientation as a “usually general or lasting direction of thought, inclination, or interest” (Merriam-Webster, 1999).

Miller’s (1983) work laid the modern foundation for the entrepreneurial orientation concept, suggesting that firms with an entrepreneurial bent are innovative and proactive risk takers. Covin and Slevin (1989) extended these ideas, developing a now widely-used validated survey instrument to measure the factors and stressing that these characteristics flow from a

higher-order, unobservable construct. Lumpkin and Dess (1996) added two more factors to the entrepreneurial orientation construct (autonomy and competitive aggressiveness) and suggested that the five factors are independent. This research rested on the Lumpkin and Dess (1996) five-factor model.

Autonomous firms encourage self-directed action (Rauch, Wiklund, Lumpkin, & Frese, 2009). The focus on internal directives suggests that external events do not cause the decision makers to veer off their preferred courses (Lumpkin & Dess, 1996). True to form, individuals in autonomous cultures often break rules to achieve results (Shane, 1994). Executives of autonomous firms chart their own courses, which may not sit well with shareholders, introducing the possibility of principal–agent conflicts (Jensen & Meckling, 1976; Lumpkin, Moss, Gras, Kato, & Amezcua, 2013).

The literature has suggested that two types of autonomy manifest in corporate entrepreneurship, one more extreme than the other (Lumpkin, Coglisier, & Schneider, 2009). Structural autonomy permits individuals to have flexibility in pursuing management's prescribed goals, referred to as economy of means (Lumpkin et al., 2009). In contrast, when individuals can set both the goals and the methods of achieving them, they are said to have strategic autonomy or economy of ends (Lumpkin et al., 2009).

Lumpkin et al. (2009) suggested that strategic autonomy is more effective in entrepreneurially-oriented firms than is structural autonomy. This is a bold statement, one that gave this researcher pause. It seems unlikely in most cases that upper management would cede the authority to make strategic decisions to lower-level employees. In situations where it did occur, the essence of a free-for-all might manifest, a result that seems highly risky.



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The competitive aggressiveness factor largely speaks for itself. In some markets, firms need only pay scant attention to their competitors. This would apply to firms with strong, sustainable competitive advantages (MacMillan, 1982; Porter, 1985; Wiklund, 1999). Not all firms have this luxury and many must compete aggressively to thrive (Covin & Slevin, 1991). Some take hostile market actions, such as engaging in price wars, hoping to drive competitors out of business (Porter, 1985). Day-to-day business therefore takes place on an economic battlefield (Covin & Miles, 1999).

Covin and Slevin (1989) conflated another of the entrepreneurial orientation factors, proactiveness, with competitive aggressiveness. Lumpkin and Dess (1996) suggested that these factors are fundamentally different; in their view, proactiveness is about future market opportunities, and competitive aggressiveness is about interacting with current competitors. This research treated the two as fundamentally distinct factors.

Proactive firms address problems before they get too large. They also seek opportunity before others notice it (Crant, 2000). Interestingly, the evidence has suggested that proactive firms can sometimes be second, not first, entrants in new markets (Miller & Camp, 1985). The notion of being second has important risk implications. This suggests that proactive firms might be more risk savvy than risk seeking (Gigerenzer, 2015). They may let others do the exploration, which can often reduce uncertainty levels. This allows them to enter at points where risk is lower than it would be if they were first. This suggests that these firms may use real options analysis, which allows for more sophisticated, risk-based capital budgeting (Bowman & Moskowitz, 1980).

Innovation is about newness, including not only introducing new products but also finding new ways of producing or delivering existing products (Miller & Friesen, 1982; Rauch et

al., 2009). As such, innovation can occur across several dimensions. Drucker (1993) suggested that McDonald's was innovative not because it developed a fast-food franchise, but because it standardized its operations so that customers could expect the same products and service quality at any of its locations. That had not been accomplished prior to its entry into the fast-food market.

Not surprisingly, innovative firms employ more engineers and scientists (Hage, 1980), and they have higher research and development budgets (Miller, 1987, 1988). Innovation can be, and usually is, incremental. Day (2007) suggested that 85% to 90% of firm innovations are small-scale projects. This was important in this research because a portfolio of small innovations is likely less risky than is a single large attempt.

Risk taking does not require much discussion in this context (March & Shapira, 1987). It involves committing resources in uncertain environments (Rauch et al., 2009). Whether the result is a risky firm was the subject of this research.

**Risk as an entrepreneurial orientation performance measure.** In investigating the influence of entrepreneurial action on firm performance, much of the research has focused on whether it increases average corporate returns (Rauch et al., 2009). One exception is the study conducted by Wiklund and Shepherd (2011), which discussed impacts of entrepreneurship not only in terms of changes to average returns but also in terms of changes to the variance around those returns, a measure of risk. Their ideas set the stage for a conceptual analysis of the value creation, or value destruction, aspects of entrepreneurial activity (Wiklund & Shepherd, 2011).

Wiklund and Shepherd (2011) moved the discussion of entrepreneurial orientation beyond the identifying characteristics, which includes risk taking as a cultural aspect, to address firm risk as a performance measure. They proposed two theories of the entrepreneurial

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orientation construct: (1) entrepreneurial-orientation-as-advantage and (2) entrepreneurial-orientation-as-experimentation (Wiklund & Shepherd, 2011).

Entrepreneurial-orientation-as-advantage suggests that relative to the observed distribution of returns for non-entrepreneurial firms, entrepreneurial activity does not increase the variance of expected returns (risk), it simply increases the mean result (Wiklund & Shepherd, 2011). In other words, it shifts the same probability distribution to the right. From a corporate finance perspective, under this view, increasing entrepreneurial activity then is a value-increasing proposition as firms face the same risk but earn higher average returns (Koller, Goedhardt, & Wessels, 2015).

In contrast, entrepreneurial-orientation-as-experimentation suggests that relative to the observed distribution of returns for non-entrepreneurial firms, entrepreneurial activity increases the variance of possible returns but not the mean (Wiklund & Shepherd, 2011). In other words, it widens the probability distribution, but the central tendency is the same. From a corporate finance perspective, under this view, increasing entrepreneurial activity then is a value-decreasing proposition as firms face increased risk but earn the same average returns. If this is the best firms can do, then corporate entrepreneurship is fatally flawed as an economic activity.

The entrepreneurial-orientation-as-advantage model assumes that entrepreneurs have a competitive advantage in that they either have resources that cannot be easily replicated (Barney, 1991) or they can identify opportunities that others cannot see, which in either case produces higher returns without increasing risk (Ireland, Hitt, & Simon, 2003). On the other hand, the entrepreneurial-orientation-as-experimentation model assumes that entrepreneurs have no such special resources or knowledge, but they are willing to try things to see how they turn out without expecting to earn higher returns to compensate them for the associated increase in risk

(Gupta, Smith, & Shalley, 2006). The former approach is that of an astute business person; the latter shows a lack of financial acumen.

If one assumes the risk and expected returns being analyzed are those observed for the firms' stocks, the Sharpe (1970) ratio can be used to demonstrate these points. The ratio  $S_i$  is defined as follows:

$$S_i = \frac{(r_i - r_f)}{\sigma_i} \quad (4)$$

Where  $r_i$  is the expected return for firm  $i$ ,  $r_f$  is the risk-free rate, and  $\sigma_i$  is the standard deviation of the expected return for firm  $i$ . The higher the Sharpe ratio, the higher (better) the risk-adjusted return. To demonstrate this concept in analyzing returns in an entrepreneurial setting, assume that the expected return on investment for both non-entrepreneurial and entrepreneurial firms is 10% and the risk-free rate of interest is 3%. The standard deviation of the returns for the non-entrepreneurial firm is assumed to be 15%, but due to the experimentation undertaken by the entrepreneurial firm, the standard deviation of its returns is assumed to be 20%. Under these hypothesized conditions, the entrepreneurial firm performs poorly relative to the non-entrepreneurial firm from a risk-adjusted return perspective, as manifested by its lower Sharpe ratio. The following equations relate to entrepreneurial-orientation-as-experimentation.

$$S_{\text{entrepreneurial}} = \frac{(0.10 - 0.03)}{0.20} = 0.35 \quad (5)$$

$$S_{\text{non entrepreneurial}} = \frac{(0.10 - 0.03)}{0.15} = 0.47 \quad (6)$$

To take on more risk without enough compensating increase in the expected return is a losing proposition. To provide risk-adjusted performance equal to that of the conservative firm under these circumstances, the entrepreneurial firm would have to expect to earn a return of at least 12.3% ( $S_i = [0.123 - 0.030] / 0.200 = 0.47$ ).

If, on the other hand, entrepreneurship shifts the return distribution to the right without widening it, as is suggested by the entrepreneurship-as-advantage hypothesis, then it increases economic value. Assume that the expected return for entrepreneurial firms increases from 10% to 15% due to successful ventures, but the standard deviation of the distribution is 15%, that is, the same as that for the return distribution for non-entrepreneurial firms. Under these conditions, the risk-adjusted return for the entrepreneurial firm is higher. The following equations relate to entrepreneurial-orientation-as-advantage.

$$S_{\text{entrepreneurial}} = \frac{(0.15 - 0.03)}{0.15} = 0.80 \quad (7)$$

$$S_{\text{non entrepreneurial}} = \frac{(0.10 - 0.03)}{0.15} = 0.47 \quad (8)$$

This analysis reveals an important point that is often missing from discussions of entrepreneurship in the management literature. If entrepreneurial orientation implies risk-seeking behavior among executives and that risk-seeking behavior in turn leads to higher firm-level risk, then, to simply break even in an economic sense, entrepreneurship must be return-enhancing by an amount sufficient to compensate for that increased risk. Findings that suggest that entrepreneurship improves firm performance do not tell us whether that action increases firm value because higher returns could be the result of risk differences.

This invites more rigorous valuation analyses into the entrepreneurship literature in certain cases. Such analysis is not necessary, however, if we find that entrepreneurship increases expected returns but not risk. Then from a firm valuation perspective, entrepreneurship is unequivocally desirable, at least on average. Furthermore, if certain aspects of entrepreneurship decrease risk, with no reduction in expected returns, then that type of activity is also desirable.

### Theory

If, as per Covin and Slevin (1989), the entrepreneurial orientation factors flow from a single unobserved construct, meaning that they co-vary, then if one factor is associated with the observed risk characteristics of the firm, they all should be similarly associated (in the same direction); if one of the factors is not associated with those observed risk characteristics, then neither should the other factors be associated. Under this constraint, there are only three possible sets of hypotheses. The entrepreneurial orientation factors are: (a) all positively related to observed firm risk characteristics, (b) all negatively related to observed firm risk characteristics, or (b) all not related in that regard.

Lumpkin and Dess (1996) led us in a different direction. If the entrepreneurial orientation factors are independent, as they suggested, then there are many more possible combinations of hypotheses regarding the relationship between each of the factors and observed firm risk characteristics (Lumpkin & Dess, 1996). This research assumed the factors are independent and developed specific hypotheses for each regarding its association with firm risk.

One entrepreneurial orientation factor that seems likely to lead to high levels of observed firm risk is high levels of autonomy (Kuratko & Michael, 2004). As noted previously, Lumpkin et al. (2009) drew a distinction between top-down (structural) organizational autonomy and bottom-up (strategic) autonomy. In the former case, the upper management team sets the goals and provides freedom for lower level employees to achieve them. This seems like nothing more than flexible management, which is not necessarily risk inducing (Thompson, Peteraf, Gamble, & Strickland, 2016).

But Lumpkin et al. (2009) asserted that to be entrepreneurially oriented, a firm must adopt strategic (bottom-up) autonomy. Consider the conditions under which a truly strategically

I also mentioned previously that high levels of autonomy increase the likelihood of the firm experiencing principal–agent conflicts, which increases the risk of the stock. (Lumpkin et al., 2013). I also noted that autonomous firms tend to have more rule breakers, and they also do not seem to respond to external pressure to change (Shane, 1994). All these items paint a picture of a truly autonomous firm being a higher-risk entity from an investors' perspective.

*H<sub>1</sub>: A firm's autonomy level is positively associated with its idiosyncratic stock price volatility.*

The content analysis dictionaries developed by Short et al. (2010) provide an indication as to the nature of the firm's environment when it is engaged in aggressive competition. Terms such as challenge, defend, enemy, fierce, intense, and struggle suggest a difficult business environment. I asserted that firms are more likely to be forced into this position than to choose it, because their industry itself manifests a high degree of competition, which suggests a lack of competitive advantage (Ferrier, Smith, & Grimm, 1999). That in turn implies a high-risk environment.

As Mintzberg and Waters (1985) noted, strategy is often imposed by external forces, including market conditions. Most executives would likely prefer to have competitive advantage where they could have time to focus on the longer term rather than attempting to survive short-run competitive battles. This suggests that the competitive aggressiveness strategy may be forced upon firms by outside influences, not internal choice. Most firms likely engage in competitive battles because risk is high and failure to do so would leave the firm in a precarious position.

*H<sub>2</sub>: A firm's competitive aggressiveness level is positively associated with its idiosyncratic stock price volatility.*

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Drucker (1993) made the case that an ongoing, carefully managed incremental innovation process is the key to entrepreneurial success. Such a process develops new products and services, as well as new ways of providing them. All of this leads to competitive advantage, which if sustained is a low-risk position (Ireland & Webb, 2007). With no near-term competitive threat, the firm can focus on continually improving its products, which in turn helps it maintain its competitive edge.

*H<sup>3</sup>*: A firm's innovation level is negatively associated with its idiosyncratic stock price volatility.

The Merriam-Webster (1999) definition of the term proactive has strong implications related to risk: "creating or controlling a situation by causing something to happen rather than responding to it after it has happened." To be reactive is to let the future control the firm's destiny; to be proactive is to chart its course. Proactiveness is a key aspect of risk management across multiple business activities (Smeltzer & Sifred, 1998). The strategy literature has suggested that the level of risk the firm experiences reflects its proactive choices (Palmer & Wiseman, 1999). All these items indicate that high levels of proactiveness should be associated with lower firm-level risk.

*H<sub>4</sub>*: A firm's proactiveness level is negatively associated with its idiosyncratic stock price volatility.

Firms looking to take risk tend to take on high-risk projects, take wide-ranging actions, and maintain an aggressive strategic posture (Covin & Slevin, 1989). These firms are not afraid of risk and seem to seek it. Their stock price movements should reflect that fact.

*H<sub>5</sub>*: A firm's risk-taking level is positively associated with its idiosyncratic stock price volatility.



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A schematic of all hypotheses is provided in Figure 1.

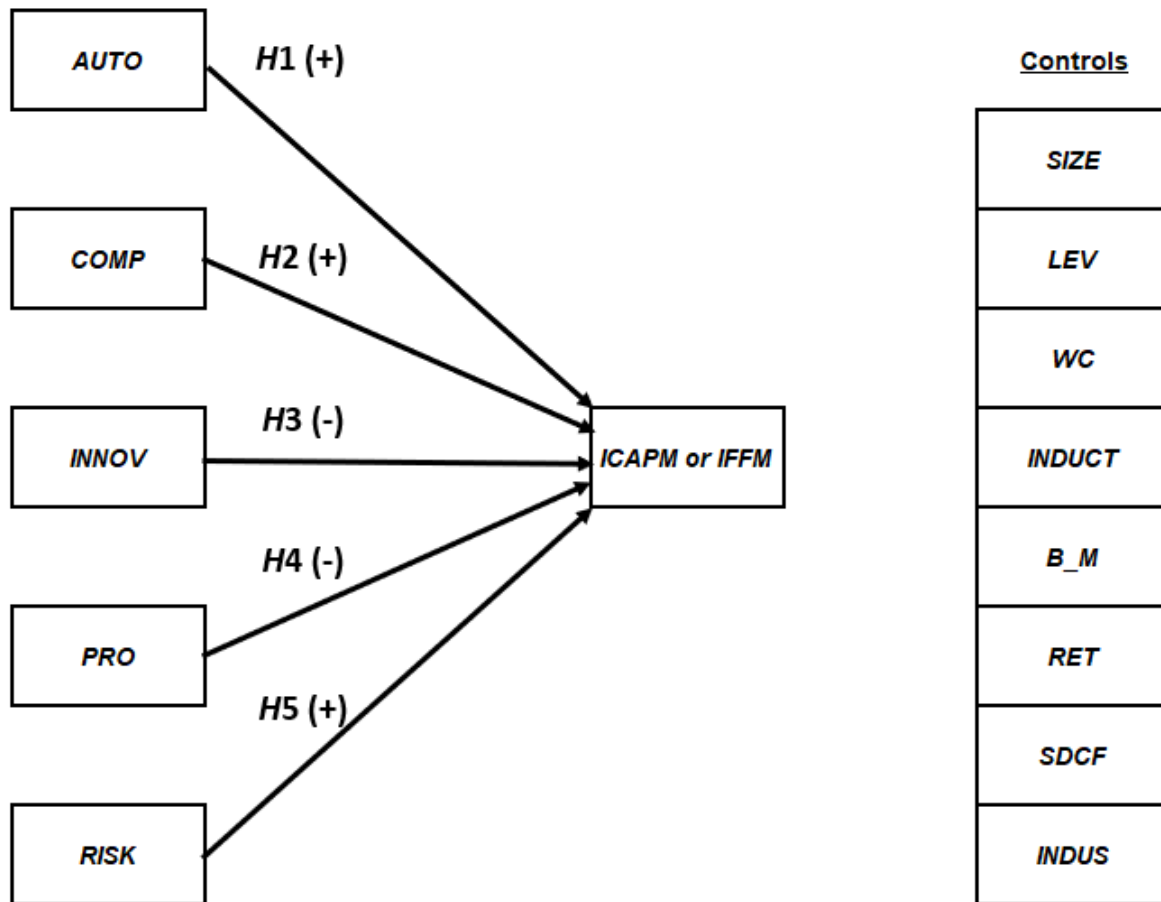


Figure 1. Visual representation of hypotheses.

Note: *ICAPM* = firm's idiosyncratic risk using the capital asset pricing model to remove market effects, *IFFM* = firm's idiosyncratic risk using the Fama-French 3-factor model to remove market effects, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 + competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no), *B\_M* = the firm's book-to-market ratio, *RET* = the natural log of the firm's stock price appreciation over the past three years, *SDCF* = the natural log of the standard deviation of cash flows over the past five years divided by total assets, *INDUS* = indicator variables for 48 of the 49 industry classifications represented in the data.

### Methods

#### Sample Frame

The initial sample frame was the S&P 1500, which combines the S&P 500 (large cap), S&P 400 (mid cap), and S&P 600 (small cap) indices. The research sample size was reduced by excluding regulated utilities and financial institutions, which is standard practice in the finance literature as they operate under unique business arrangements (Shivdasani & Yermack, 2002). I also excluded real estate investment trusts as their structures manifest significantly lower risk than do typical stocks (Fitzpatrick, Ali, & Wiegles, 2014). Some additional firms were eliminated due to missing data. The final count was a sample of 1,010 companies.

Idiosyncratic firm risk was measured using weekly excess market returns on firms' stocks for the period 2016 to 2018, inclusive. Entrepreneurial orientation factor levels were measured using the content analysis dictionaries developed by Short et al. (2010). The details of the dictionaries are shown in the Appendix. The most recent earnings call transcripts (third quarter, 2018) served as the source document.

**Dependent variable: Idiosyncratic risk.** I used two measures of idiosyncratic risk for each firm  $i$  based on different models of expected returns based on stock market changes: (a) the capital asset pricing model ( $ICAPM_i$ ) and (2) the Fama-French three-factor model ( $IFFM_i$ ). Weekly excess returns under both models were available for each company through Wharton Research Data Services Beta Suite. I used 156 weeks (three years) of excess returns to calculate the standard deviation of those excess returns, which served as estimates of idiosyncratic risk.

**Independent variables: Entrepreneurial orientation factor levels.** Entrepreneurial orientation research often has been based on executive attitudes and perceptions gathered through interviews or surveys (Covin & Wales, 2012; Miller, 2011). Such self-reporting is

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subject to biases (Nuendorf, 2016; Webb, Campbell, Schwartz, & Sechrest, 1966). The content analysis approach is less susceptible to these problems (Duriau, Reger, & Pfarrer, 2007). In addition, there is no coding error with computerized text analysis (Stevenson, 2001).

Rosenberg, Schmurr, and Oxman (1990) note that some researchers have suggested that machine-based content analysis cannot recognize the context in which words appear. Humans are supposedly better at that task. That claim is debatable. Rosenberg, et al. (1990) found that computerized content analysis outperformed human coders in complex medical diagnoses based on analysis of transcripts of the patients' interviews with staff.

Content analysis dictionaries can be applied to corporate documents such as CEO letters to shareholders, press releases, regulatory filings, or earnings call transcripts (Short, Payne, Brigham, Lumpkin, & Broberg, 2009). The method is unobtrusive because it analyzes statements that executives offered not under research conditions but in the normal course of their daily business activities (Krippendorff, 2015; Morris, 1994; Nuendorf, 2017).

Content analysis can be applied in both inductive and deductive research projects (Abrahamson & Hambrick, 1997; Huff, 1990; Roberts, 1989; Tesch, 1990). Bowman (1982) applied it to CEO letters to shareholders to demonstrate that risk taking increased when firm performance suffered, which was contrary to accepted theory at the time (Kahneman & Tversky, 1979). Cochran and David (1986) used it to establish links between specific wording in mission statements and firm performance. McConnell, Haslem, and Gibson (1986) used it to show that firm performance is associated with language used in corporate disclosures.

Through deductive reasoning, Short et al. (2010) developed and validated content analysis dictionaries for the five entrepreneurial orientation factors suggested by Lumpkin and Dess (1996), and they used inductive analysis to derive a sixth factor dictionary. Those

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dictionaries are shown in the Appendix. Wales (2016) applauded the development of these dictionaries but remarked that they have been underutilized in entrepreneurial orientation research.

The dictionaries were tested for content validity, external validity, reliability, dimensionality, and predictive validity. The dictionaries contain 36 words for autonomy, 86 for innovation, 27 for proactiveness, 58 for competitive aggressiveness, 37 for risk taking, and 41 for the inductive category (Short et al., 2010). Holsti's (1969) method was used to determine interrater reliability, and scores for all dictionaries ranged from 0.75 to 0.97.

The Linguistic Inquiry and Word Count program was used to measure the entrepreneurial orientation scores based on the dictionaries (Pennebaker, Booth, Boyd, & Francis, 2015). The score was the frequency (percentage of total words) with which the transcripts contained words in each of the dictionaries. To reduce the influence of unusual items, the natural log of one plus the frequencies was calculated for each of the five theory-based entrepreneurial orientation factors for firm  $i$  (autonomy:  $AUTO_i$ , competitive aggressiveness:  $COMP_i$ , innovation:  $INNOV_i$ , proactiveness:  $PRO_i$ , and risk taking:  $RISK_i$ ) and for the inductively-derived factor ( $INDUCT_i$ ). Given that the log of zero is undefined, adding 1 to the frequency allowed for the possibility that some frequencies could be zero. As noted previously, the factors were measured as percentage of words that fall into each category, but the transcript length (total words) may be important, as well. Therefore, the natural log of the document word count ( $WC_i$ ) was included as a control variable, which is a standard procedure in content analysis (McClelland et al., 2010).

**Control variables.** Additional control variables included were firm size, measured as natural log of total assets ( $SIZE_i$ )—negatively related to risk (Berk, 1997); financial leverage, measured as long-term debt as a percentage of total assets ( $LEV_i$ )—positively related to risk

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(Maia, 2018); an indicator variable measuring whether the firm pays dividends ( $DP_i$ )—negatively related to risk (Booth & Zhou, 2015); the firm's book-to-market ratio ( $B\_M_i$ )—positively related to risk (Fama & French, 1995); the natural log of the firm's stock price appreciation over the past three years ( $RET_i$ )—negatively related to risk (Huhn & Scholz, 2018); and the natural log of the standard deviation of cash flows over the past five years divided by total assets ( $SDCF_i$ )—positively related to risk (Froot, Scharfstein, & Stein, 1993). The data necessary to calculate those series were available from the Compustat database. The firm's industry ( $INDUS_i$ ) was also included as a control variable. Those industry classifications were also provided by Compustat. There are 49 standard industry classifications, leading to 48 distinct industry indicator variables.

### Estimation Method

The estimation procedure was ordinary least squares regression applied separately to the two models, using the different estimates of idiosyncratic risk.

**Equations.** The following equations were used in the analysis.

$$\begin{aligned} ICAPM_i = & \beta_{10} + \beta_{11}AUTO_i + \beta_{12}COMP_i + \beta_{13}INNOV_i + \beta_{14}PRO_i + \beta_{15}RISK_i + \\ & \beta_{16}INDUCT_i + \beta_{17}WC_i + \beta_{18}SIZE_i + \beta_{19}LEV_i + \beta_{1A}DP_i + \beta_{1B}B\_M_i + \beta_{1C}RET_i + \\ & \beta_{1D}SDCF_i + \sum_{i=1}^{48} \beta_{1E}INDUS_i + \varepsilon_{1i} \end{aligned} \quad (9)$$

$$\begin{aligned} IFFM_i = & \beta_{20} + \beta_{21}AUTO_i + \beta_{22}COMP_i + \beta_{23}INNOV_i + \beta_{24}PRO_i + \beta_{25}RISK_i + \\ & \beta_{26}INDUCT_i + \beta_{27}WC_i + \beta_{28}SIZE_i + \beta_{29}LEV_i + \beta_{2A}DP_i + \beta_{2B}B\_M_i + \beta_{2C}RET_i + \\ & \beta_{2D}SDCF_i + \sum_{i=1}^{48} \beta_{2E}INDUS_i + \varepsilon_{2i} \end{aligned} \quad (10)$$

### Results

Table 1 shows the descriptive statistics for the variables studied in this research; it reveals that executives spoke more frequently about concepts of innovation and proactiveness than they

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did about autonomy, competitive aggressiveness, and risk taking. Note that they also used the terms in the inductive classification with a frequency equivalent to that of the words in the innovation and proactiveness categories. Interestingly, in the context of this research, executives used words related to risk taking with the least frequency of any of the factors. This suggests that perhaps due to the negative connotation often generally attributed to risk, executives may be reluctant to speak of it, even though in its fullest context risk is as much about opportunity as threat (Damodaran, 2008).

Table 1

*Descriptive Statistics*

Variable	Minimum	Maximum	Mean	Standard Deviation
<i>ICAPM</i>	0.01	0.18	0.04	0.02
<i>IFFM</i>	0.01	0.17	0.04	0.02
<i>AUTO</i>	0.00	0.41	0.05	0.06
<i>COMP</i>	0.00	0.43	0.06	0.05
<i>INNOV</i>	0.03	0.80	0.27	0.12
<i>PRO</i>	0.04	0.69	0.24	0.09
<i>RISK</i>	0.00	0.22	0.03	0.03
Control Variables				
<i>WC</i>	6.82	9.75	8.96	0.34
<i>INDUCT</i>	0.00	0.69	0.27	0.12
<i>SIZE</i>	4.51	13.00	8.15	1.56
<i>LEV</i>	0.00	32.00	0.38	1.44
<i>DP</i>	0	1	0.60	0.49
<i>B_M</i>	-3.29	4.77	0.39	0.43
<i>RET</i>	-0.66	0.76	0.04	0.15
<i>SDCF</i>	-7.07	-0.66	-3.67	0.78

*Note:* *ICAPM* = firm's idiosyncratic risk using the capital asset pricing model to remove market effects, *IFFM* = firm's idiosyncratic risk using the Fama-French 3-factor model to remove market effects, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no), *B\_M* = the firm's book-to-market ratio, *RET* = the natural log of the firm's stock price appreciation over the past three years, *SDCF* = the natural log of the standard deviation of cash flows over the past five years divided by total assets, *INDUS* = indicator variables for 48 of the 49 industry classifications represented in the data.



Table 2 shows the pairwise correlations between the study variables. Inspection of the correlation table reveals that the idiosyncratic risk levels estimated using the CAPM (*ICAPM*) and those estimated using the Fama-French model (*IFFM*) were almost identical. The correlations between those two variables rounded to 1.00. Examining the correlations of those two idiosyncratic risk variables with the other variables in the study reveals slight differences, suggesting those measures of risk contain a small amount of differing information, but for all practical purposes one should not expect to find different relationships between the entrepreneurial orientation factors and these two nearly-identical idiosyncratic risk measures. The results from both models are presented to confirm that statement.

With respect to correlations between the entrepreneurial orientation factors, while several were statistically significant, that can be attributed in part to a sample size in excess of 1,000 companies. The entrepreneurial orientation risk factor manifested low correlations between the other four entrepreneurial orientation factors, ranging from -0.04 to +0.05, none of which were statistically significant. This suggests that the risk factor was independent of the other factors.

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Table 2

## Pairwise Correlations

Pair	Variables														
	<i>ICAPM</i>	<i>IFFM</i>	<i>AUTO</i>	<i>COMP</i>	<i>INNOV</i>	<i>PRO</i>	<i>RISK</i>	<i>INDUCT</i>	<i>WC</i>	<i>SIZE</i>	<i>LEV</i>	<i>DP</i>	<i>B_M</i>	<i>RET</i>	<i>SDCF</i>
<i>ICAPM</i>	1.00														
<i>IFFM</i>	1.00**	1.00													
<i>AUTO</i>	-0.05	-0.05	1.00												
<i>COMP</i>	-0.02	-0.01	-0.03	1.00											
<i>INNOV</i>	-0.07*	-0.06	0.05	0.09**	1.00										
<i>PRO</i>	0.08*	0.07*	0.00	-0.06*	0.01	1.00									
<i>RISK</i>	0.11*	0.11*	0.01	0.03	-0.04	0.05	1.00								
<i>INDUCT</i>	0.13*	0.14**	0.08*	0.11**	0.32**	0.11**	0.07*	1.00							
<i>WC</i>	-0.21**	-0.20**	0.03	0.09**	0.00	-0.14**	0.08*	-0.01	1.00						
<i>SIZE</i>	-0.35**	-0.35**	0.15**	0.03	-0.10**	-0.06	0.04	-0.03	0.46**	1.00					
<i>LEV</i>	0.20**	0.21**	0.09**	-0.01	-0.07*	0.03	0.03	0.00	0.01	0.12**	1.00				
<i>DP</i>	-0.44*	-0.44**	0.04	0.00	-0.04	-0.08**	-0.07*	-0.17**	0.09**	0.30**	-0.04	1.00			
<i>B_M</i>	0.32**	0.31**	-0.01	-0.07*	-0.10**	0.03	0.03	0.02	-0.15**	0.00	0.21**	-0.09*	1.00		
<i>RET</i>	-0.29**	-0.28**	-0.04	0.06	0.07*	0.02	0.02	0.01	0.04	-0.08*	-0.25**	0.01	-0.34**	1.00	
<i>SDCF</i>	0.39**	0.39**	-0.05	0.01	0.00	0.07*	0.06	0.12**	-0.20**	-0.30**	-0.07*	-0.18**	0.04	0.01	1.00

*Note:* *ICAPM* = firm's idiosyncratic risk using the capital asset pricing model to remove market effects, *IFFM* = firm's idiosyncratic risk using the Fama-French 3-factor model to remove market effects, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 + competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no), *B\_M* = the firm's book-to-market ratio, *RET* = the natural log of the firm's stock price appreciation over the past three years, *SDCF* = the natural log of the standard deviation of cash flows over the past five years divided by total assets, *INDUS* = indicator variables for 48 of the 49 industry classifications represented in the data.

\*\* significant at  $p < .01$  \* significant at  $p < .05$

Table 3 shows the ordinary least squares regression results using the CAPM and the FFM to estimate idiosyncratic risk levels. Inspection of Table 9 shows nearly identical results for both models, which was expected given the near-perfect correlation between the two measures of idiosyncratic risk. All qualitative conclusions regarding the hypotheses were the same whether the CAPM or the FFM was used to estimate idiosyncratic risk. Analysis of variance inflation factors showed no estimates above 2.0, suggesting no problems with multi-collinearity among the predictor variables.

With respect to the results for the control variables, all the coefficients had the expected sign and all were statistically significant ( $p < 0.01$ ). This suggests that the basic model rested on a firm statistical foundation, one from which the entrepreneurial orientation hypotheses could be tested.

Table 3

*Ordinary Least Squares Regression Estimates*

Variable	Dependent: <i>ICAPM</i>		Dependent: <i>IFFM</i>	
	Coefficient	Coefficient	Coefficient	Coefficient
<i>Constant</i>	0.083**	0.084**	0.077**	0.0079*
<i>WC</i>	0.001	0.001	0.001	0.001
<i>SIZE</i>	-0.004**	-0.004*	-0.003**	-0.003**
<i>LEV</i>	0.002**	0.002**	0.002**	0.002**
<i>DP</i>	-0.011**	-0.011**	-0.011**	-0.010**
<i>B_M</i>	0.005**	0.004**	0.004**	0.004**
<i>RET</i>	-0.019**	-0.019**	-0.018**	-0.018**
<i>SDCF</i>	0.005*	0.005**	0.005**	0.005**
<i>INDUCT</i>	0.008*	0.010*	0.008*	0.009*
<i>AUTO</i>		0.010		-0.008
<i>COMP</i>		-0.010		0.004
<i>INNOV</i>		0.003†		-0.006†
<i>PRO</i>		0.004		0.003
<i>RISK</i>		0.040**		0.0037**
F-value	19.618**	18.610**	18.469**	17.501**
Adjusted <i>R</i> <sup>2</sup>	0.549	0.533	0.533	0.537

*Note:* *ICAPM* = firm's idiosyncratic risk using the capital asset pricing model to remove market effects, *IFFM* = firm's idiosyncratic risk using the Fama-French 3-factor model to remove market effects, *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %, *INDUCT* = log of 1 + inductively-derived word frequency %, *WC* = number of words contained in the firm's earnings call transcript, *SIZE* = log of total enterprise capitalization, *LEV* = firm's total divided by total assets, and *DP* = dividend payer (1 = yes, 0 = no), *B\_M* = the firm's book-to-market ratio, *RET* = the natural log of the firm's stock price appreciation over the past three years, *SDCF* = the natural log of the standard deviation of cash flows over the past five years divided by total assets, *INDUS* = indicator variables for 48 of the 49 industry classifications represented in the data. \*\* significant at  $p < .01$  \* significant at  $p < .05$  † significant at  $p < .10$

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The results confirmed two of the hypotheses set forth in the theory section. Not surprisingly, the results showed a strong positive relationship between the risk-taking entrepreneurial orientation factor and firm-level idiosyncratic risk. This provided support for Hypothesis 5. The negative relationship between innovation and idiosyncratic risk supported Hypothesis 3. This provides evidence that at least one of the entrepreneurial orientation factors is associated with lower, not higher, firm-level risk.

The results did not support Hypothesis 1 (that autonomy is positively related to risk), Hypothesis 2 (that competitive aggressiveness is positively related to risk), or Hypothesis 4 (that proactiveness is negatively related to risk). This suggests that entrepreneurial activities in these areas are neither risk increasing nor risk decreasing. Table 4 summarizes the results of the hypothesis tests.

Table 4

*Summary of Hypothesis Test Results*

Hypothesis Number	Independent Variable	Hypothesized Relationship to Idiosyncratic Risk	Result
1	<i>AUTO</i>	positive	not supported
2	<i>COMP</i>	positive	not supported
3	<i>INNOV</i>	negative	supported
4	<i>PRO</i>	negative	not supported
5	<i>RISK</i>	positive	supported

*Note:* *AUTO* = log of 1 + autonomy word frequency %, *COMP* = log of 1 competitive aggressiveness word frequency %, *INNOV* = log of 1 + innovation word frequency %, *PRO* = log of 1 + proactiveness word frequency %, *RISK* = log of 1 + risk word frequency %

While the inductive category was not included in the hypothesis development, note that the coefficient for the inductive factor variable was statistically significant ( $p < 0.05$ ). This invites further exploration of this variable and the role it might play in entrepreneurial orientation. Short et al. (2010) suggested that this variable might represent commercialization, that is taking the ideas that flow from an entrepreneurial orientation and implementing them. That conjecture could be tested in future research.

### Discussion

The results showed that two of the five theory-based entrepreneurial orientation factors relate significantly to idiosyncratic risk, with innovation showing a negative relationship and risk-taking a positive one. The inductively-derived factor, which does not flow from entrepreneurial orientation theory, was related positively to risk. Autonomy, competitive aggressiveness, and proactiveness showed no significant relationship to firm-level risk.

The least-surprising result was that executives who spoke relatively often about risk characteristics led firms with higher levels of idiosyncratic risk. The interesting aspect is that the words in the risk-taking content analysis dictionary focused not only on risk as potentially dangerous, as is often the case in everyday vernacular (Damodaran, 2008), but as something to be admired (e.g., bold, daring). The latter view is more in keeping with the common view of an entrepreneurial spirit, that is, knowingly taking a risk to pursue opportunity (Wiklund & Shepherd, 2011). In this regard entrepreneurial orientation lived up to its reputation as a risk-increasing characteristic, with risk properly defined to include both upside and downside aspects.

The notion that entrepreneurial orientation as a general concept is necessarily risk increasing was called into question, however, by the lack of significant relationships between firm-level risk and the entrepreneurial orientation factors of autonomy, competitive

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aggressiveness, and proactiveness and especially due to the negative relationship observed between innovation and risk. Per Lumpkin and Dess (1996), these entrepreneurial orientation factors are independent, meaning that firms could develop cultures that emphasize some of them and not others. These results suggested that while an entrepreneurial orientation that included an explicit focus on risk taking is likely to produce higher levels of idiosyncratic risk, one that stressed innovation instead might possibly yield lower-than-average risk levels. In addition, per these results, entrepreneurial orientations that focus primarily on autonomy, competitive aggressiveness, or proactiveness would not create an a priori expectation of either higher or lower firm-level risk.

That innovation was negatively related to firm-level risk provides support for Drucker's (1993) idea that entrepreneurial innovation is designed to be, and typically is, risk reducing. Nevertheless, there is substantial research that many managers perceive innovation as risk increasing (Dobni & Klassen, 2015). It may be the case that other factors affect the relationship between innovation and risk. Research has suggested that if risk is monitored and managed as part of the innovation process, the result can be a lower-risk profile (Taran, Boer, & Lindgren, 2013). Day (2007) noted that about 85% of innovations are small-scale, low-risk projects, with large-scale, risky innovations being the exception. These prior results may help to explain the results observed here.

The content analysis did not distinguish between small-scale and large-scale innovations. But if the lion's share of innovations is represented by small-scale, low-risk projects, I should not expect to find a strong positive relationship between innovation and risk as a general proposition. Furthermore, if innovation risks are typically carefully managed, perhaps more carefully than the



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risk associated with traditional operations, the negative relationship observed between innovation and idiosyncratic risk should not be surprising.

That autonomy showed no significant relationship with idiosyncratic risk may be related to ambiguity as to the meaning of the term. The several forms of autonomy make it difficult to intuit theoretical relationships between it and other characteristics (Breaugh, 1985). As noted previously, Lumpkin et al. (2009) suggested that entrepreneurial firms provide their employees with strategic autonomy, which suggests that employees (not executives) determine not only the means to take corporate actions, but the ends as well. They contrast this with structural autonomy, under which the executives select the ends and the employees the means (Lumpkin et al., 2009). These represent two fundamentally different ways of running an organization, with the first likely increasing risk and the second seemingly more likely to manage it, if not reduce it. Nevertheless, dictionary terms such as independent and self-directed could apply to either situation, with the first case involving employees largely free from executive oversight and the second involving executives willing to act independently of shareholders in making key decisions. Therefore, the lack of a significant relationship between autonomy and firm-level risk may be due to the inability of the autonomy measurement to distinguish between different aspects of the concept. This calls for additional research designed to provide more precise measurement tools for the concept of autonomy.

I expected competitively aggressive firms to be riskier than their more timid counterparts, but the evidence did not support this assertion. As is the case for any of the factors, it may be that the content analysis dictionary does not capture the salient aspects of the concept. Or it may be that the quarterly earnings call transcripts do not really address this issue; perhaps CEO letters to shareholders would contain better information. Future research could address this issue.

However, I expect that there might be a more substantive and complex reason for the finding. It could also be that there are different varieties of competitive aggressiveness, ones that have different implications for risk. For example, while a price war with competitors could increase risk (Busse, 2002), actions designed to keep potential entrants out of markets, to form or protect de facto monopolies, could be risk reducing (Denning, 2014). If some aspects of competitive aggressiveness increase risk while other decrease it, and if those activities occur in roughly equal proportions, then I should not expect to see a significant relationship, either positive or negative, between competitive aggressiveness and idiosyncratic risk. Going forward, if valid measures of specific competitive aggressiveness types can be developed, hypotheses relating those types and idiosyncratic risk could be tested.

It is somewhat surprising that proactiveness did not relate negatively to firm-level risk. The essence of being proactive is that it is not only about identifying problems but also preventing them from occurring (Blackhurst, Scheibe, & Johnson, 2008). That should be risk reducing. Not being proactive suggests that a firm may be committed to the status quo, which is often assumed to be risky because markets are in a constant state of flux. But, as mentioned previously, some research has found that where conditions are stable (low risk), maintaining the status quo is preferred to the sort of adaptation associated with entrepreneurial orientation (McClelland et al., 2010). This suggests again that context matters in evaluating the impact of entrepreneurial orientation on firm-level risk.

The fact that the inductive factor has a positive relationship with idiosyncratic risk invites additional research. Short et al. (2010) suggested that this factor may reflect firm actions. In that respect, the inductive factor may be more about entrepreneurship (doing) than entrepreneurial orientation (thinking, planning, investigating). If this is true, while it contains important

predictive information, the inductive factor is not part of the entrepreneurial orientation theory.

On the other hand, it might suggest that the distinction between entrepreneurial orientation and entrepreneurship is subtler than many suggest.

### Limitations

The preceding discussion suggests the models discussed in this research, disaggregated to the entrepreneurial orientation factor level and controlling for industry effects, may still be too general. It may be helpful to include an explicit measure of firm-level diversification as an independent control variable. More context-driven frameworks, with moderators and mediators, may be needed to provide fuller insights. This research took entrepreneurial orientation factor levels as exogenously determined. An issue that could be addressed in future studies is the possibility of endogenous relationships among variables (Laukkanen, 2000). An endogenous model would allow for the possibility that the company's risk profile influenced its decision to adopt an entrepreneurial orientation and vice versa. This study investigated relationships for a single period. Longitudinal studies may also provide insights not available through the cross-sectional analysis conducted here (Wales, 2016).

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Appendix

The following lists are the content analysis dictionaries for each of the entrepreneurial orientation factors, including the inductive factor, all as adapted from Short, Broberg, Coglistter, and Brigham (2010).

**Autonomy:** at-liberty, authority, authorization, automatic, autonomous, autonomy, decontrol, deregulation, distinct, do-it-yourself, emancipation, free, freedom, free-thinking, independence, independent, liberty, license, on-one's-own, prerogative, self-directed, self-directing, self-direction, self-rule, self-ruling, separate, sovereign, sovereignty, unaffiliated, unattached, unconfined, unconnected, unfettered, unforced, ungoverned, unregulated

**Competitive aggressiveness:** achievement, aggressive, ambitious, antagonist, antagonistic, aspirant, battle, battler, capitalize, challenge, challenger, combat, combative, compete, competer, competing, competition, competitive, competitor, competitiveness, conflicting, contend, contender, contentious, contest, contestant, cutthroat, defend, dog-eat-dog, enemy, engage, entrant, exploit, fierce, fight, fighter, foe, intense, intensified, intensive, jockey-for-position, joust, jousting, lock-horns, opponent, oppose, opposing, opposition, play-against, ready-to-fight, rival, spar, strive, striving, struggle, tussle, vying, wrestle

**Innovation:** ad-lib, adroit, adroitness, bright-idea, change, clever, cleverness, conceive, concoct, concoction, concoctive, conjure-up, create, creation, creative, creativity, creator, discover, discoverer, discovery, dream, dream-up, envisage, envision, expert, form, formulation, frame, framer, freethinker, genesis, genius, gifted, hit-upon, imagination, imaginative, imagine, improvise, ingenious, ingenuity, initiative, initiator, innovate, innovation, inspiration, inspired, invent, invented, invention, inventive, inventiveness, inventor, make-up, mastermind, master-stroke, metamorphose, metamorphosis, neoteric, neoterism, neoterize, new, new-wrinkle, novel,

## EO, SOCIAL RESPONSIBILITY, AND RISK

novelty, original, originality, originate, origination, originative, originator, patent, radical, recasts, recasting, resourceful, resourcefulness, restyle, restyling, revolutionize, see-things, think-up, trademark, vision, visionary, visualize

**Proactiveness:** anticipate, envision, expect, exploration, exploratory, explore, forecast, fore-glimpse, foreknow, foresee, foretell, forward-looking, inquire., inquiry, investigate, investigation, look-into, opportunity-seeking, proactive, probe, prospect, research, scrutinization, scrutiny, search, study, survey

**Risk:** adventuresome, adventurous, audacious, bet, bold, bold-spirited, brash, brave, chance, chancy, courageous, danger, dangerous, dare, daredevil, daring, dauntless, dicey, enterprising, fearless, gamble, gutsy, headlong, incautious, intrepid, plunge, precarious, rash, reckless, risk, risky, stake, temerity, uncertain, venture venturesome, wager

**Inductively-derived:** advanced, advantage, commercialization, customer-centric, customized, develop, developed, developing, development, developments, emerging, enterprise, enterprises, entrepreneurial, exposure, exposures, feature, features, finding, high-value, initiated, initiative, innovations, innovative, introductions, launch, launched, leading, opportunities, opportunity, originated, out-doing, outthinking, patents, proprietary, prospects, prototyping, pursuing, risks, unique, ventures

VITA

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