PERFORMANCE FEEDBACK AND RISK RELATIONSHIP: A CROSS-CULTURAL
EXAMINATION

by

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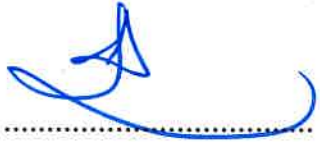

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PERFORMANCE FEEDBACK AND RISK RELATIONSHIP: A CROSS-CULTURAL EXAMINATION

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ABSTRACT

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Ph.D. Dissertation, May 2019

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Key Words: *behavioral theory of the firm, performance feedback, risk, aspiration levels, national culture.*

Investigating the boundary conditions of performance feedback and risk relationship has been the focus of attention of considerable amount of research in the behavioral theory of the firm literature. These studies have mainly studied how such firm level factors as size and resources or environmental factors as environmental turbulence, environmental dynamism or opportunities may moderate the performance feedback and risk relationship. However, research focusing on national culture as an environmental factor and as a likely boundary condition of performance feedback and risk relationship is scarce. On this ground this study investigated how national culture (i.e. uncertainty avoidance, future orientation, performance orientation, and power distance) moderates the performance feedback and risk relationship. My findings indicate that national culture moderates the performance feedback and risk relationship, in a way that culture can play a significant moderating role both when performance declines below and rises above aspiration levels. Furthermore, the moderation effect is not constant as firms' focus of attention shifts from aspirations to survival or bankruptcy.

ÖZET

PERFORMANS TEBKİSİ VE RİSKİN İLİŞKİSİ: KÜLTÜÜRLER ARASI BİR ARAŞTIRMA

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Anahtar sözcükler: *davranışsal firma teorisi, performans geribildirimi, risk, performans hedefleri, ulusal kültür.*

Performans geribildirimi ve risk ilişkisinin sınır koşullarının incelenmesi davranışsal firma teorisinin önemli bir parçasıdır. Literatürdeki çalışmalar, çoğunlukla firma düzeyindeki (firma büyüklüğü ve kaynakları gibi) ve çevresel düzeydeki (çevresel türbülans, dinamizm ve fırsatlar gibi) faktörlerin, performans geribildirimi ve risk arasındaki ilişkiyi nasıl düzenlediğini araştırmaktadır. Ancak ulusal kültürü çevresel bir etken olarak ve performans geribildirimi ve risk ilişkisinin muhtemel bir sınır koşulu olarak odaklanan araştırmalar azdır. Bu temelde, bu çalışmanın amacı, ulusal kültürün (belirsizlikten kaçınma, gelecek odaklılık, performans odaklılık ve güç aralığı) performans geribildirimi ve risk ilişkisi üstündeki düzenleyici etkisini incelemekdir. Bulgular ulusal kültürün performans geribildirimi ve risk ilişkisi üzerinde, performans hem hedeflenen seviyelerin altına düştüğünde hem de hedeflenen seviyelerin üzerine çıktığında, istatiksel olarak anlamlı bir düzenleyici rol oynadığını göstermektedir. Ayrıca, bulunan düzenleyici etki firmalar iflasa doğru sürüklendiğinde sabit kalmayıp, değişmektedir.

DEDICATION PAGE

I sincerely and gratefully dedicate this to my dear parents and my sister, Mina, whose support have always been the most important reason for my successes and accomplishments. I also dedicate this to my lovely late grandmother, my Aba, who was enthusiastically awaiting this accomplishment of mine.

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LIST OF ABBREVIATIONS

BTOF	Behavioral Theory of the Firm
UA	Uncertainty Avoidance
FO	Future Orientation
PO	Performance Orientation
MAS	Masculinity
PD	Power Distance
HA	Historical Aspirations
SA	Social Aspirations
PT	Prospect Theory

1. INTRODUCTION

For over half a century, strategy and organization researchers have been focusing on risk-taking behavior of firms, and a significant part of management, strategy, and finance literature has analyzed this construct both at the individual and the firm levels. Risk concept and risk-taking behavior in the strategy and management research have been studied mainly within the framework of five theories including 1) Behavioral agency model and socioemotional wealth, 2) Agency theory, 3) Upper echelons theory, 4) Prospect theory (PT), and 5) Behavioral theory of the firm (BTOF) (Hoskisson et al., 2017). Out of the five theories, the BTOF has paid the most attention to the risk-taking behavior of firms at the organizational level, and for this reason, it constitutes the main framework of this research which takes organizational risk-taking behavior as the main dependent variable. These theories mainly regard risk as the volatility in the distribution of possible outcomes (Bromiley, 1991). On this ground, they define the risk-taking behaviors of firms as those behaviors that cause volatility in the distribution of a firm's outcomes and at least a range of these outcomes include loss; this is also the baseline definition of the risk-taking behavior of firms in this study (A detailed discussion of the definition comes in section 2.2).

Formulated by Cyert and March (1963), the BTOF has been the theory focusing on risk-taking behavior of firms in response to performance relative to aspirations. Behavioral researchers have integrated risk and risk-taking behavior into the BTOF as one of the central dependent variables which is predicted by the firm's performance relative to its desired performance levels (i.e. aspiration levels). The underlying proposition is that when organizations run into problems, or when their performance goes below their aspiration levels, they start a problemistic search in order to solve the problem that occurred or improve their performance to the desired levels. The search will be in the vicinity of the perceived problems and the previous solutions adopted. The organization will create small changes in response to low performance and the scale of change will increase when the small changes do not work (Grinyer & McKiernan, 1990). However, when performance is above the aspiration levels, the firm will be inclined to maintain the status quo and be less motivated to

make changes and take risks. This thesis has been studied and strongly confirmed (Greve, 2003b; Lant, et al., 1992; Fiegenbaum 1990; Iyer & Miller, 2008; Ref & Shapira, 2016). The studies have either directly targeted risk-taking (e.g., Wiseman and Bromiley, 1996; Singh, 1986), or they have used a variety of strategies as proxies for risk-taking behavior since they naturally involve uncertain outcomes. Entering new markets (e.g., Ref & Shapira, 2016), organizational change (e.g., Audia, Locke, and Smith, 2000; Greve, 1998), exploration versus exploitation (Su, & McNamara; 2012), and R&D search intensity (e.g., Greve, 2003a) are some of the examples of these strategies. Cyert and March (1963) suggest two main reference points for the aspiration levels. One is historical aspiration level that is based on the comparison of the firm's performance with its own past performance, and the other is social aspiration level that stems from the comparison of the firm's performance with that of others (e.g., competitors).

Furthermore, there have been some extensions and counterarguments to the BTOF predictions regarding performance feedback and risk relationship. One of the shifts, which is rooted in the arguments of March and Shapira (1987; 1992), emphasizes the focus of attention on a variety of reference points within a continuum ranging from survival to slack. March and Shapira argued that focus of attention will be on aspirations when performance is below or above aspiration levels within its vicinity. However, as performance goes down far below the aspiration levels, the focus of attention shifts from aspiration to survival levels, which, in turn, reduces risk-taking behavior. Their arguments were mainly inspired by the arguments of 'threat rigidity thesis' scholars, specifically by Staw et al. (1981) who argued that danger of survival urges firms to tighten controls, conserve resources, and reduce risk propensity and risk behaviors. Thus, March and Shapira (1987; 1992) argued that when focus of attention shifts from aspirations to survival (bankruptcy), propensity for risk-taking decreases as a result of higher threat and anxiety perceived due to danger of bankruptcy; and a large number of empirical studies have confirmed these arguments for the firm level of analysis (e.g., Palmer & Wiseman, 1999; Miller & Chen, 2004; Chen & Miller, 2007; Lu & Fang, 2013; Ref & Shapira, 2016).

Associated with the main focus of this study, one of the strong branches of the BTOF literature focuses on the boundary conditions and contingency factors that may moderate the

influence of performance relative to aspirations on risk-taking behavior of firms. These studies have directly emphasized the role of the possible moderators of the performance feedback and risk relationship. Moderators are classified under the categories of internal and external moderators (Shinkle, 2012). Studies on internal moderators mainly emphasize the role of organizational resources and capabilities. Such factors as organizational size (Audia & Greve, 2006; Greve, 2011; and Wiserman & Bromiley, 1996), organizational resources in the form of human and financial capital (Wiklund & Shepherd, 2003), organizational slack (Miller & Leiblein, 1996), social legitimacy (Desai, 2008), and adaptation aspirations (Denrell & March, 2001) have been shown as of the main internal moderators of the relationship between performance relative to aspirations and risk outcomes. As for the external factors, changing and autonomous environments (Levinthal & March, 1981), environmental turbulence (Deephouse & Wiserman, 2000), environmental dynamism or opportunities (Wiklund & Shepherd, 2003), and reputational prominence on illegal activities (Mishina et al., 2010) have been recognized as the main external moderators.

In spite of the research attention paid to a variety of environmental and formal institutional factors (e.g., economic situation) as moderators, not much attention has been shown to the role of informal institutions, that is, cultural norms, belief systems, practices, and customs (North, 1990) or national culture as influential factors that may influence the effect of performance relative to aspirations on risk-taking behavior (Shinkle, 2012; Hoskisson et al., 2017). Cultural boundary conditions of theories in management and organization have been highly valued, in a way that cross-cultural organizational research strongly emphasizes that in spite of similarities and universality to the organizational structures required all around the world, different national cultures will make organizations working within them interpret these structures, their resulting processes of communication, and decision making in different ways (Smith, 1992). In this regard, Hofstede (1993: 81) notes that "the entire concept of management may differ, and the theories needed to understand it, may deviate considerably from what is considered normal and desirable in the U.S.A.". In a review of management literature, Boyacigiller and Adler (1991: 262) also argue that "cultural values of the United States underlie and have fundamentally framed management research, thus imbuing organizational science with implicit, and yet inappropriate, universalism." In articulating his

concept of the relativity of culture (which he refers to as the culture of the human environment in which an organization operates affects the management process), Hofstede (1994) notes that not only organizations and people working within them, but also those writing about organizations and organizing are children of culture, whose theories and outcomes are under the influence of their broader cultural environment that could count as culture in the national or other levels. He concludes that "the search for a universal, timeless, worldwide management science is futile. Even the concept of management, invented in the U.S.A. at the turn of the century, is neither timeless nor endemic to all parts of the world" (Hofstede, 1994: 12). Thus, theories of management, particularly those initiated and nurtured in the U.S.A., should be tested in and adapted to non-American contexts in order to meet the requirements of external validity. With respect to the BTOF, I posit that the BTOF that has been originated and developed mainly in the US context needs more consideration with respect to the applicability and generalizability of its associated empirical findings to other cultural contexts. My review of literature indicates that more than 70% of the BTOF literature with respect to the effect of performance relative to aspirations on the risk-taking behavior of firms belongs to the US, and about 75% of them are conducted in culturally similar environments, including the US, Canada, and UK that are classified under Anglo-American societies group (House et al., 2004). These countries are similar in terms of their national culture scores. This, in turn, makes the generalizability of these findings to other cultural contexts doubtful, strengthening the need for more contextual and cross-cultural research in this area.

Cross-cultural comparisons of behaviors at the firm level are abundant in number. A great many studies have empirically shown cross-national differences in a variety of firm level variables such as organizational structure (e.g., Tayeb, 1988), human resource management and policies (e.g., Smith et al., 1989), CEO discretion in decision making (e.g., Crossland & Hambrick, 2007; 2011), as well as strategies and decisions which involve risk and uncertainty such as innovation championing strategies (e.g. Shane et al., 1995), acquisition versus joint ventures (e.g., Makino & Neupert, 2000; Kogut & Singh, 1988, Pan & David, 2000), risk preference in financial decisions (e.g., Weber & Hsee, 1998), earnings management (e.g., Han et al., 2010), firm entrepreneurship (e.g., Morris et al., 1994; Autio, 2007; Bosma et al., 2009), strategic change (e.g., Ayoun & Moreo, 2008), and perceptions and interpretations of

risk (Barr & Glynn, 2004; Weber et al., 1998; Weber & Hsee, 1998; Frijns et al., 2013). However, a cross-cultural comparison of the difference of the effects of performance relative to aspirations on the risk-taking behavior of firms is still missing. Assuming that national culture can influence organizational processes, practices, and decision making, I posit that decision making and risk-taking in general, and the effect of performance relative to aspiration levels on risk-taking behavior of firms in particular will also be subject to such a cross-cultural variation.

Considering the strong theoretical and empirical support for the impact of national culture on the risk-taking behavior of firms, I argue that national culture as an institutional factor may hold as strong potential to influence the performance feedback and risk relationship that exists at the firm level as well. In other words, assuming that risk-taking behavior of firms varies across cultures (based on empirical findings referred to in the preceding paragraph), the degree of firm risk-taking in response to its performance relative to aspirations (i.e., the degree to which risk-taking is influenced by performance relative to aspirations) may also vary in different cultural environments. As I showed in the previous paragraph, empirical studies show that firm strategies which inherently involve risk vary significantly across cultures. However, considering risk-taking one of the most established responses to performance relative to aspiration levels in the BTOF literature, studies addressing how such responses to performance feedback may vary across cultures are scarce. There have been some country-specific (i.e., O'brien and David, 2014) or industry-specific (i.e., Lewellyn & Bao, 2015) empirical attempts to understand how the effect of performance relative to aspirations on risk-taking behavior of firms may hold differently in different cultural contexts. However, they have focused on limited aspiration levels and aspiration points in specific single cultural contexts or industries. The main aim of this cross-cultural study is to address this research gap and investigate how national culture may affect the mechanisms of the relationship between performance feedback and risk-taking behavior of firms in a multi-country multi-industry context. In doing so, I particularly aim to find 1) whether national culture moderates performance feedback and risk relationship, 2) the moderating impact of national culture both on positive and negative performance feedback and risk relationship, and 3) considering the opposing implications of aspiration levels and survival/bankruptcy

levels on risk-taking behavior (March & Shapira, 1987; 1992), whether the moderating effect varies with the shift of the focus of attention from aspiration levels to survival or bankruptcy levels.

All in all, this study provides a valuable contribution by filling the existing research gap on whether performance feedback and risk relationship may vary across cultures in response to calls to fill this gap (Hoskisson et al. 2017; Shinkle, 2012) and is a follow-up of the recent curiosity on finding the boundary conditions of performance feedback and risk relationship, that is, whether the effect of performance relative to aspirations on risk-taking behavior of firms may vary across cultures. Also, considering the arguments I referred to with respect to the relativity of culture and management theories (Hofstede, 1994), as well as the suspicious nature of the universality of management theories (Boyacigiller & Adler, 1991; Hofstede, 1993), testing the cultural relativity or universality of the BTOF will be a considerable contribution to the cross-cultural and international business research. This research will offer several valuable contributions particularly to the BTOF. First, the study aims to investigate how the performance feedback and risk relationship varies across boundaries of national cultures when performance varies below and above aspiration levels and compare how this moderation effect may be different in these two circumstances. In spite of the strong emphasis on such a comparison in the BTOF literature, no cross-cultural study on such a comparison has been made so far. Comparison of whether the effect of culture may vary when performance varies below versus above aspirations can provide a broader understanding of how performance relative to aspiration levels may influence risk-taking behavior of firms across cultures. Second, considering the critical importance of focus of attention on aspirations versus survival and bankruptcy (March and Shapira, 1887; 1992), the study also aims to investigate if the variance in the risk-taking behavior of firms when their focus of attention shifts from aspiration to survival levels (and vice versa) holds across cultures, and how such a variance may vary across national cultural boundaries. In spite of the importance of the shift in focus of attention, this phenomenon has not been addressed from a cross-cultural perspective. Third, this study is a cross-cultural study across multiple manufacturing industries. The existing literature has been either culture specific, focusing on a single culture or a single industry. A culture-specific study is more a contextual rather than cross-cultural

study, which makes it impossible to compare results across different cultures. Focus on a single industry can also reduce the external validity of findings. Thus, focusing on multiple industries and multiple cultures, this study enjoys higher external validity in the generalizability of findings.

This study draws on the dimensions of national culture developed and studied by Hofstede (1980) and House et al.'s (2004) well known GLOBE project. Hofstede (1980) and GLOBE's (House et al., 2004) cultural dimensions have been extensively studied in organizational science (Crossland & Hambrick, 2007). The study specifically aims to investigate how Hofstede's and GLOBE's uncertainty avoidance, future orientation, and power distance; and GLOBE's performance orientation as dimensions of national culture influence the degree to which performance relative to aspiration levels influence the risk-taking strategies or responses of firms.

The data for this study was drawn from COMPUSTAT (North America and Global) and datastream databases that include rich data on a variety of firm-level variables. To analyze the data, mixed modelling technique that has also been referred to as hierarchical linear modelling and multilevel random coefficient modeling was applied.

2. REVIEW OF LITERATURE

The main purpose of this section is to provide a comprehensive picture of what the BTOF is, the mainstream empirical research in support of its underlying arguments, and extensions to these empirical works. For this aim, first, I provide a summary of the BTOF as initiated by Cyert and March (1963). In the second section, I elaborate on the empirical findings that support the underlying arguments of the theory particularly with regard to performance feedback and risk relationship as it is associated with the main aim of this study. I categorize these empirics based on the type of the risk-taking behavior studied in response to performance relative to aspirations. The third section elaborates on the extensions to the theory. In the following last two sections, I focus on the impact of national culture on

performance feedback and risk relationship as an emerging extension and delineate how this cross-cultural study addresses the gaps and contributes to this particular part of the literature.

Table 1 summarizes the main findings with respect to the effects of performance relative to aspirations on the risk-taking behavior of firms. As the table indicates, there is a high consensus that performance relative to aspirations negatively influences a variety of the risk-taking behavior of firms.

Table 1: **Findings on the Effect of Performance Relative to Aspirations on the Risk-taking behavior of Firms.**

Risk Behavior	Empirical Research	Findings
Innovation & Innovative Activities including: New Product Introductions, Exploration, and Technology Advancement	• Ketchen & Palmer (1999) • Wally & Fong (2000) • Greve (2002) • Simon & Houghton (2003) • Simon et al. (2003) • Baum & Dahlin (2007) • Greve (2007) • Su & McNamara (2012) • Døjbak et al. (2015) • Parker et al. (2017) • Hoang & Ener (2015) • Yang et al. (2016) • Wang et al. (2017) • Nicholson-Crotty et al. (2017)	Performance decline below and rise above aspirations are negatively associated with the innovative activities of firms.
Entry into New Markets	• Wally & Fong (2000) • Wennberg & Holmquist (2008) • Wennberg & Holmquist (2008) • Jung & Bansal (2009) • Barreto (2012) • Lin (2014) • Situmerang et al. (2016)	The probability of entering new markets increases with more performance decline below aspiration levels.

Risk Behavior	Empirical Research	Findings
Research and Development	• Chen & Miller (2007) • Tyler & Caner (2012) • Tyler & Caner (2016)	Performance decline below and rise above aspirations are negatively associated with R&D investments and R&D intensity.
Organizational Change	• Greve (1998) • Lant et al. (1992) • Markovitch et al. (2005) • Park (2007) • Grohsjean et al. (2012) • Schimmer & Brauer (2012) • Lages et al. (2013) • Kacperczyk et al. (2015) • Chng et al. (2015) • Ceci et al. (2016)	Organizational change and reorientation of strategies increase with performance decline below aspirations respectively. Also, organizational change and reorientation of strategies decrease with performance rise above aspirations.
Illegal and Immoral Behaviors	• Baucus & Near (1991) • Bromiley & Harris (2007) • Harris (2008) • Mishina et al. (2010) • Desai (2014)	The findings with respect to the effect of Performance decline below and rise above aspirations on illegal and immoral activities are contradictory. There is no consensus whether illegality increases or decreases as performance falls below or rises above aspirations.
Diversification, Acquisitions, and Divestitures	• Park (2002; 2003) • Gaba & Bhattacharya (2012)	Higher engagement in unknown and unrelated areas (unrelated diversification) and adoption of ventures that bear higher degrees of probability of loss and risk are of the outcomes of performance decline below aspirations.
Entrepreneurship	• Li et al. (2018)	Firms increase their entrepreneurial activities and orientation when their performance declines below aspirations.

2.1. The Behavioral Theory of the Firm

The BTOF initiated by Cyert and March (1963) is one of the groundbreaking theories of organizations and strategy, roots of which could be traced back to Simon's (1947) administrative behavior and March and Simon's (1958) organizations, and embraces the concepts of bounded rationality and satisficing (as presented by March and Simon) in its heart. In addition to Simon (1947), and March and Simon (1958), the BTOF is considered the third pillar of Carniege school (Gavetti et al., 2012).

The theory provides a serious critique against the neo-classical economics and its assumptions. Neo-classical economics does not look inside the firm, assuming that it is a homogeneous entity with a unit goal, that is profit maximization. With profit maximization assumed as the main goal of the homogenous firm, chances of survival will be reduced if firms deviate from this goal (Barney & Hesterly, 1999). To achieve this unique goal, firms are assumed to have full and accurate information. These main assumptions of neo-classical economics have come under attack by Carnegie school theories, such as the BTOF. Criticisms to profit maximization and full information are summarized below, and firm homogeneity will come up within the description of the theory in later paragraphs.

One of the basic questions of the BTOF is if the only aim of organizations is profit maximization. Cyert and March argue against this, noting that such goals as survival, security maximization, sales maximization, etc. can play important roles in firms' decisions and directions. The BTOF theory does not question or deny the act of seeking profits or importance of profits to firms, but the criticism is mainly targeted at the concept of maximization. Based on the concept of satisficing as a legacy of Carnegie school, the theory posits that firms are more after a satisficing level of performance and profits rather than maximization. What determines the degree of satisfaction with the performance is the aspiration levels of firms. In other words, performance below or above the aspirations of firms will determine the degree of firms' satisfaction with their performance and motivate their next moves. For instance, one of the main contentions is that when performance is below the aspiration levels of firms (below firms' expectations), firms will indulge in an act of problemistic search to find and solve the problems and improve their performance to the levels they aspire or desire.

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Regarding full information, The BTOF considers the assumption of full information an awkward assumption. Based on Simon's (1958) bounded rationality, Cyert and March (1963: 10) argue that "information is not given to the firm but must be obtained", and information comes to organization in the form of solutions or choices as a result of sequential problemistic search and learning. Again, the BTOF mainly draws on March and Simon in its critique of this assumption mainly because it asserts that search processes and rules, the choices that come and are selected are not comprehensive, but they are restricted based on the bias and bounded capacity of organizations. According to Cyert and March (1963), firms cannot have full information based on which they will make decisions. Information comes to firms as a result of search for it, which, in turn, occurs due to sensing a problem (e.g. performance below aspirations). The solutions found are not accurate and complete based on the boundedness of firms in their own history, experience, and previous learnings. Thus, bias and defect are inevitable.

Basically, Cyert and March posit that the existing theory of firm is not sufficiently equipped to predict the behavior of firms with respect to "such economic decisions as price, output, capital investment, and internal resource allocation" Cyert and March (1963: 21). They bring up some questions regarding the behavior of organizations and their decision-making processes, of which they believe only a few have been answered. On this ground, they seek to construct a theory that aims to 1) take the firm as its basic unit, 2) predict firm behavior with respect to such decisions as price, output, capital investment, and resource allocation as its objective (not just profit maximization); and emphasizes the actual process of decision making within organization. They posit that in order to develop a theory that remedies the weaknesses of the existing theory, theories of organizational goals, organizational expectations, organizational choice, and organizational control should move to a more satisfactory level. Thus, they define the BTOF as a theory that encompasses three main sub-theories on organizational goals, expectations, and choices and control. The aim is to provide a theory of decision-making process which is dealt superficially in previous theories, particularly the classical theory of the firm.

2.1.1. Organizational Goals

Unlike neo-classical economics that assumes organizations as homogenous entities with a single goal of profit maximization, the BTOF asserts that any theory of organizations must consider the potential of goal variety and goal conflict among coalition of individuals and groups. This inconsistency arises because an organization consists of more or less independent coalition members with independent goals, different foci of attention, and limited ability to attend to all organizational problems. Cyert and March (1963) identify five main goals for firms including: production, inventory, sales, market share, and profit; and assert that inconsistency is likely for all areas except production that has got more potential for less conflict. Assuming this inconsistency and conflict of goals, the BTOF proposes three processes through which organizational goals are created or inconsistencies are resolved: 1) Bargaining among members of coalition with inconsistent goals, 2) Stabilization and elaboration of goals through internal control processes, and 3) Adaptation and adjustment to environmental phenomena through learning and experience.

2.1.2. Organizational Expectation

The BTOF attacks theories assuming full and accurate information in processing of alternatives in a way that all alternatives are available. The main contention of the theory is that firms search for solutions and consider possible alternatives when a problem is sensed. Different coalition members will bring up alternatives and solutions based on their own foci of attention that is based on their experience, learning, and expectations of the instrumentality of those alternatives. Expectations are not based on definite full accurate information, but they are drawn from *available* information in organization. Boundedness of actors will restrict their attention and keep them from achieving all possible alternatives and accurate expectations of their outcomes. Thus, these expectations will more or less deviate from reality.

2.1.3. Organizational Choice

In providing a theory of organizational choice, the main assumption of the BTOF is that organizations are learning and adaptive systems, that is, the firm learns from its experience. There is emphasis on both generation and selection of choices and alternatives. The BTOF

posits that organizations as learning and adaptive systems create alternatives that are similar to alternatives chosen in the recent past by the firm or by the other firms of which the firm is aware. Alternatives may be generated in one of two ways: First, choices can be generated sequentially. In this case, the first upcoming choice that is satisfactory will be chosen. Second, multiple choices may be generated at a single time, in which case, a more complicated choice process will be required. This indicates that selection of choices is also based on the bounded rationality of organizations and principle of satisficing.

This sub-theory of choice is based on several assumptions. First, organization still is a complex of multiple inconsistent goals. Thus, the alternative that is selected meets all the demands of the coalition. Second, search for alternatives starts when a failure occurs. When an alternative satisfies the goals, search stops until another failure. This is referred to as the 'approximate sequential consideration of alternatives'. Third, processing and selection of choices is not the result of complex calculations, but the organization uses standard operating procedures and rules of thumb to generate and implement choices. The standard operating procedures and routines are also utilized to avoid uncertainty.

2.1.4. Four relational concepts emerge out of the three sub-theories

The BTOF and its three sub-theories of goals, expectations, and choices are founded on four relational concepts. Understanding these concepts enables a clearer and more understandable picture of the BTOF. Cyert and March (1963) list these concepts as: 1) quasi resolution of conflict, 2) uncertainty avoidance, 3) problemistic search, and 4) organizational learning. I will briefly go over these concepts in this section.

Quasi resolution of conflict was evident in all three sub-theories. Inconsistency and conflict of goals in particular (except probably on the operational goals) will be inevitable. Cyert and March (1963) provide three solutions to resolve these conflicts including local rationality (i.e. factoring decision problems to sub-problems and assigning the sub-problems to subunits in the organization), acceptable level of decision rules, and sequential attention to goals.

Regarding uncertainty avoidance which was more evident in the sub-theory of choice, the main assumption of the BTOF is that organizations do not tend to make predictions about the behavior of their environment, but they are uncertainty avoidant. Two themes are presented.

First, organizations are more after short-run feedback rather than long-run anticipation of events in the distant future. This means that decision making is not the outcome of long-term planning and predictions, but it is the product of requirement of organizations to solve problems. "Each problem is solved as it arises; the organization then waits for another problem to appear" (Cyert & March, 1963: 119). Second, rather than predicting the behavior of the other parts of their environment, the organization is more after creating a 'negotiated environment'. They try to impose plans, standard operating procedures, industry tradition, and uncertainty-absorbing contracts on that environment. To the extent possible, they avoid planning that relies on uncertain future events and emphasize avoiding uncertainty through a variety of control mechanisms that create safe decision situations.

The problemistic search which was mentioned several times in the preceding sub-theories has a theme in common with uncertainty avoidance, and that is "feedback-react decision procedures" (Cyert & March, 1963: 119). The idea is that like decision making, search is also problem-directed. Cyert and March (1963) summarize this concept under three main assumptions. First, 'search is motivated'. Search for an alternative or a choice that is to be chosen is motivated by a problem and depresses when the problem is solved. Second, 'search is simple-minded'. This indicates that search will not tend to go beyond the neighborhood of the currently known alternatives and the current problem symptom. Third, 'search is biased'. Bias here refers to the experiences, background, training, goals, etc. of the organization that can influence its perceptions of environment, problems, and even alternatives. Hence, the organization will be engaged in search when it senses a problem. Otherwise, it is not motivated to engage in such search. One of such motivations is initiated when performance goes below aspiration levels. As the theory predicts, this will increase the problemistic search. The search will not be bias-free. A variety of organization-specific factors will come into play in the form of biases that can create a heterogeneity of organizations in terms of how they react to the problems they sense.

Finally, learning and adaptation of organizations in the BTOF are based on the contention that the current status of the organization cannot be independent from its past. Cyert and March (1963) focus on three different dimension or phases of adaptation process including adaptation of goals, adaptation in attention rules, and adaptation in search rules. With respect

to goals, they posit that organizational goals within the current period are not independent from organizational goals in the previous periods, organization's experience with that goal in the past, and experience of other organizations with that goal in the past. Attention rules are also dependent on past foci of attention. The organization will tend not to deviate its focus of attention from particular points in environment significantly at least in the short run. The same is true for more objective phenomena such as performance measurement, in which case the organization will tend to focus its attention on particular measures and indices depending on past experience. Finally, regarding adaptation in search rules, Cyert and March (1963: 124) argue that "when an organization discovers a solution to a problem by searching in a particular way, it will be more likely to search in that way in future problems of the same type; when an organization fails to find a solution by searching in a particular way, it will be less likely to search in that way in future problems of the same type". Hence, the BTOF considers goals, attention rules, and search rules dependent on the organization's experience and learning from those experiences.

2.2. The Concept of Risk and Its Definition

A review of the definitions of risk and risk-taking behavior indicates that risk is defined and described in terms of its association with two critical concepts including uncertainty and outcomes. In spite of this convergence in terms of their association with the two concepts, these definitions diverge at some critical points. Although definitions of risk unanimously regard risk as the degree of uncertainty with respect to outcomes of particular choices to be evaluated and adopted, the nature of uncertainty and outcomes are conceived differently. I elaborate on these below.

The nature of outcomes is the most critical point of divergence of the definitions. The first and earlier set of definitions consider all probable outcomes of particular choices regardless of whether they are positive or negative. These definitions are mainly based on the classical decision theory that regards risk as variation in the distribution and probabilities of possible outcomes, that is, the probability distribution of possible gains and losses associated with a particular choice or alternative (Pratt 1964; Arrow 1965; March & Shapira, 1987). These definitions converge on the notion that when two options have the same expected value, the

riskier is that with higher outcome variance, and this outcome variance is the axis of convergence of these definitions (Mishra, 2014). For instance, 50% chance of winning $1000 is riskier than winning $1000 for sure due to the higher degree of variance in the outcome of former (i.e., winning either $1000 or nothing). Knight (1921), Bernoulli (1738), Daly and Wilson (2001), Friedman and Savage (1948), and Real and Caraco (1986) are of the few scholars relying on this logic in their definitions of risk. For instance, distinguishing between the uncertainty that can be measured and that which cannot be measured, Knight (1921) defines risk as the uncertainty that can be measured, positing that risk is there when the possible outcomes are known and can be quantified in terms of their probability of occurrence. These definitions conceive risk as the degree of variance in the possible outcomes.

On the other hand, another more prevalent and recent set of definitions diverge from the classical definitions based on their high degree of emphasis not on the general outcomes (i.e., good or bad; gain or loss), but on the likelihood of occurrence of negative outcomes. One of the major criticisms of these conceptualizations and definitions against the variance definitions is that these variance definitions confound downside risk and upside opportunities (Kaplan & Garrik, 1981), suggesting that decision makers consider a few possible outcomes (i.e., negative outcomes) rather than the whole distribution of outcomes (Boussard and Petit 1967; Alderfer and Bierman 1970). Thus, risk is associated with uncertainty and probabilities of bad or negative outcomes. For instance, Kaplan and Garrik (1981) define risk as involving uncertainty and some kind of damage or loss that may occur. Providing '*a set of triplets idea*', they suggest that risk analysis consists of three main questions including what can happen (what can go wrong?)? What is the likelihood of this loss or damage? What are the consequences if it does happen? I provide a set of other definitions, all of which emphasize the likelihood of loss or negative outcomes:

- 'Risk is defined as uncertainty. It has reference to the uncertainty of a financial loss and little to do with the loss itself, the cause of the loss, or the chance of loss. Risk has principally to do with the uncertainty of a loss' (Mehr & Cammack, 1972).
- 'The uncertainty of the happening of an unfavorable contingency has been termed risk. Risk is present when there is a chance of loss' (Magee, 1955).

- Risk is 'objectified uncertainty regarding the occurrence of an undesirable event' (Willet, 1901).
- 'The chance that an undesirable event will occur and the consequences of its possible outcomes' (Lough et al., 2005).

Review of the literature on how risk is conceptualized in managerial contexts indicates that managerial perceptions of risk are also highly associated with likelihoods and occurrence of loss and negative outcomes rather than gain and positive ones; thus, the way managers see risk is different from what is presented in decision theory (March & Shapira, 1987). March and Shapira (1987: 1407) argued that "most managers do not treat uncertainty about positive outcomes as an important aspect of risk. Possibilities for gain are of primary significance in assessing the attractiveness of alternatives (MacCrimmon and Wehrung 1986), but "risk" is seen as associated with the negative outcomes." They specifically referred to the study by Shapira (1986) who specifically asked executives: 'Do you think of risk in terms of a distribution of all possible outcomes? Just the negative ones? Or just the positive ones?' They found that 80% of managers considered only the negative outcomes and that risk is better defined in terms of the amounts to lose rather than in terms of general outcome distribution.

Risk and risk-taking behavior in the BTOF literature also embraces the variance in the distribution of outcomes as the heart of the concepts of risk and risk-taking. The list below also shows a list of the definitions of risk and risk-taking behavior that have appeared frequently in the BTOF research.

- "We define decisions as riskier to the extent that (a) their expected outcomes are more uncertain, (b) decision goals are more difficult to achieve, or (c) the potential outcome set includes some extreme consequences" (Sitkin & Pablo, 1992: 11).
- "Risk, as used here, refers to the uncertainty of the outcomes of an organization's resource commitments (Singh, 1986: 563)."
- A decision is risky to the extent that "a decision maker perceives variation in the distribution of possible outcomes, their likelihoods, and their subjective values," (March and Shapira 1987: 11)."

- A decision is risky to the extent that its potential outcomes vary and that at least some of those outcomes represent losses (March and Shapira 1992, Shapira, 1995).
- "Following Bowman (1980, 1982, 1984), and Fiegenbaum and Thomas (1985, 1986, 1988), I defined risk as the uncertainty of a company's income stream" (Bromiley, 1991: 38).
- "Variation in the distribution of possible outcomes and uncertainty associated with gains and losses (Kacperczyk et al., 2015: 229)."

These definitions indicate that the risk and risk-taking in the BTOF literature capture both components including the variation in the distribution and probabilities of possible outcomes as well as likelihood of loss although more weight is given to the variance in the distribution of possible outcomes. In the BTOF literature, risk is mainly defined as the variation regarding the distribution of possible outcomes and uncertainty associated with gains and losses (e.g., March and Shapira, 1987; 1992; Wiseman & Bromiley, 1996; Palmer & Wiseman, 1999). For instance, Bromiley (1991) defines risk as the uncertainty of a company's income stream. On this ground, risk-taking behavior is also defined as a behavior that leads to variation in the distribution of possible outcomes (March and Shapira, 1987). Risk-taking behaviors are those behaviors that cause variation in the distribution of possible outcomes, their likelihoods, and their subjective values (March and Shapira, 1987). Following March and Shapira (1992), Shapira (1995), and Lehman and Hahn (2013), I define the riskiness of a behavior as the extent to which its potential outcomes vary and at least some of the outcomes include loss. A risk-taking behavior is that which causes variance in the distribution and probabilities of possible outcomes, and at least some range of possible outcomes includes likelihood of loss.

2.3. The BTOF and Risk-taking

In formulating the BTOF, Cyert and March (1963) do not put much emphasis (if not at all) on risk-taking in their basic development of the BTOF (Argote and Greve, 2007). They mainly emphasize how the feedback from the comparison of firm performance with its own historical or competitors' current performance drives the firm's motivation for search,

change, and improvement, positing that unfavorable performance feedback (i.e., performance below the firm's own historical performance or below the current competitor's performance) drives more search and change. Risk-taking behavior was first studied as an outcome of performance feedback by Singh (1986) and Bromiley (1991). In line with these two studies, March and Shapira (1987; 1992) also presented risk preferences as outcomes of performance feedback. Ever since, many other strategies adopted in response to performance feedback such as changes, acquisitions and alliances with non-local partners, new product introductions, process innovations, R&D investments, etc. were empirically studied as possible outcomes of performance feedback. Thus, the BTOF has come to be a theory about the firm's risk-taking behavior as well, a part of which owes to inspirations from PT. As Kacperczyk et al. (2015) note, integration of risk into the BTOF has been the result of behavioral scholars drawing on the PT.

PT mainly argues that individuals will be prone to taking risks when they are in the domain of losses rather than gains (Kahneman & Tversky, 1979; 1991). In a series of consecutive experiments, Kahneman and Tversky (1979; 1991) found that individuals are more likely to take risks when decisions were framed as losses rather than as gains, and less likely to take risks when decisions were framed as gains rather than losses. Similar studies (e.g. Chang et al., 1987; Kameda and Davis; 1990) have emphasized and confirmed the PT contentions that risk-taking behavior results from loss aversion. The BTOF implicitly holds the same assumptions in the organizational level. The key point is that "PT's notion of loss aversion in the domain of failure is a mechanism that is conceptually equivalent to behavioral theory's performance feedback below a set reference point" (Kacperczyk et al., 2015: 229). According to Miller and Chen (2004: 105), the BTOF and PT converge on two points: "(1) each organization attends to a single reference level, and (2) is risk-seeking when performance is below this level and risk-averse when performance is above this level." Bowman (1980; 1982) was of the earliest scholars who applied prospect theory in organizational level and found that risk increases as performance decreases below aspiration levels and vice versa.

In this section, I aim to provide a review of what the BTOF has argued with regard to the risk-taking behavior of firms and what the supporting empirical findings are. To do so, first, I review the underlying arguments of the BTOF with regard to risk-taking behavior of firms.

Second, I provide a review of the empirical evidence associated with and supporting these arguments.

2.4. The Underlying Arguments

The BTOF mainly assumes firms as goal-oriented learning systems that avoid uncertainty and risk to the extent possible, as a result of which they will avoid long-term planning and problem-solving due to their high levels of ambiguity and uncertainty (Cyert & March, 1963). These goal-oriented systems set their goals based on measurable performance outcomes such as sales, financial performance, and even outcomes of particular strategies they have already developed and executed (Cyert & March, 1963; Greve, 2008; Tyler & Caner, 2016). However, one of the key assumptions of the theory is that performance as an absolute measure and without regards to any reference points will not be an effective means for firms to evaluate themselves; that is, absolute performance without any reference will not be an effective or informative way for firms to judge whether their performance is good or bad (Cyert & March, 1963; Greve, 2003b; March & Shapira, 1992; Mishina et al., 2010; Ref & Shapira, 2016). Aspiration levels have been assumed as main reference points, based on which firms judge whether their performance is acceptable or not. Aspiration levels are defined as the levels of satisfaction for firms. They are psychologically neutral reference points (Kameda & Davis, 1990) that are regarded as the satisfactory levels of performance by firms (Schneider, 1992). In line with this, March and Simon (1958) consider aspiration levels as the reference point that sets the boundary between perceived success and failure. Such an emphasis on the aspiration levels as the main determinants of firms' perceptions of their performance desirability is based on the assumption of the BTOF that managers and firms as boundedly rational and try to simplify information processing and performance evaluation by transforming a continuous outcome measure into a discrete measure of success or failure (March and Simon, 1958; Cyert & March, 1963; Baum et al., 2005) or high versus low performance. Thus, the BTOF assumes that aspiration levels are the main reference points for firms to evaluate their performance.

The BTOF considers two main sources of aspirations levels that are based on two sources of comparisons. The first one is based on the performance history of the focal firm and is

referred to as historical aspiration. Historical aspiration is based on the comparison of the performance of the focal firm with its own performance history (Cyert & march, 1963; Levinthal & March, 1981). The second aspiration is called social aspiration and is mainly based on the social comparison theory (Festinger, 1954). Social aspiration is determined through the focal firm's comparison of its own performance with that of other firms that are mainly the competitors or firms within the same industry. Performance relative to aspirations, attainment discrepancy, or distance from aspirations are the main concepts used for the comparison of performance with historical or social aspiration levels (Tyler & Caner, 2016). Performance relative to (distance from) historical/social aspirations or attainment discrepancy are regarded as negative when performance is below the firm's own performance history or when it is below the performance of peer firms, and they are positive values when performance is above these aspiration levels.

The main prediction of the BTOF regarding the firm behavior as a result of the evaluation of performance in comparison to historical/social aspirations is that firms will typically increase their problemistic search and take risks when their performance is or declines below their aspiration levels; however, risk-taking and problemistic search will decrease when performance is or rises above the historical/social aspiration levels (Cyert & March, 1963). One of the underlying reasons provided for this argument is that due to bounded rationality and restrictions in focus of attention, organizations will not be able to continuously search for optimal and promising initiatives and solutions, but initiate search and exploration of novel and alternative initiatives only when performance falls below aspirations (Cyert & March, 1963; Singh, 1986; Denrell, 2008). In addition to the bounded rationality assumption, there is also the assumption of firms as uncertainty avoidant entities. The theory regards organizations as entities that seek short-run feedback rather than long-run anticipation of events in the distant future, and their decision making is not the outcome of long-term planning and predictions, but it is the product of the requirement of organizations to solve problems (Cyert & March, 1963). Thus, they will avoid uncertainty and risk to the extent possible and take risk only when there is a problem that current routines and strategies cannot solve. In elaboration of the mechanism of how performance relative to aspirations determines risk-taking behavior in a way that I mentioned above, Abrahamson & Fairchild (1999) and

Xie et al. (2016) reason that performance below aspirations may increase the tolerance of risk and risk-involving initiatives, since the pressure of poor performance urges managers to act progressively or look more progressive. In a similar vein, Greve (1998) notes that performance below aspirations will lead firms to the belief that the current ways of doing things and the current strategies are problematic; thus, they will be urged to search for alternative ways and strategies and take risk. On the other hand, when firms are doing well, their decision makers will prefer taking measures that preserve the status quo and will avoid risk-involving strategies that may negatively influence the satisfactory performance (Bromiley et al., 2001; Schimmer & Brauer, 2012). High performance creates a confidence in the status quo that reduces the necessity of change and risk, but it is the poor performance that reduces the confidence of the managers and motivates them for more aggressiveness and innovative search (Starbuck & Milliken 1988; Hambrick et al. 1993; Wally & Fong, 2000).

It should be noted that the main emphasis of Cyert and March (1963) was problemistic search in response to performance decline below aspirations. Organizations initiate search when their performance goes below aspirations; however, it decreases once performance is above aspirations. Denrell (2008) notes that the problemistic search does not necessarily lead to risk. Firms may come to routines and initiatives that are similar to what they have done in the past. In this case, performance relative to aspirations cannot have implications for risk-taking. However, if search leads to more novel and unknown routines, initiatives, and strategies that are assumed to be less reliable and more uncertainty-involving than the familiar and established ones, the problemistic search argument will have implications for risk-taking, that is, we can associate problemistic search with risk-taking behavior only when firms choose strategies and responses that involve risk and uncertainty in the process of their problemistic search; when firms choose responses that do not involve uncertainty and probability of loss, their problemistic search has not resulted in risk-taking behavior. Nevertheless, the empirical research investigating this association between problemistic search and risk-taking behavior has strongly confirmed the risk-involving nature of problemistic search, indicating that problemistic search often leads to risk-involving choices.

2.5. Empirical Research

The empirical research investigating the effect of performance relative to aspirations has studied a variety of variables as proxies for risk-taking behaviors of firms including innovation, new product introductions, entry into new markets, strategic change, R&D investments and intensity, R&D alliances, illegal and immoral firm behaviors, acquisitions, and a variety of other risk-involving strategies, as well as organizational level risk. I elaborate on these studies below.

2.5.1. Innovation and Innovative Activities

One of the main risk behaviors studied as an outcome of performance relative to aspirations is the innovation and innovative activities of firms. In an investigation of innovative search in the public sector, Greve (2002) showed that innovative search will be a matter of two processes. The first process is the problemistic search process that is initiated in response to negative performance feedback and aimed at solving particular performance problems. The second process is a slack driven one that is driven by the existence of excess resources that firms aim to use most fruitfully. In a study of the departments of Stanford University, Wally & Fong (2000) found that these departments are more engaged in innovative search for and introduction of new and innovative syllabi in adverse environments and when their performance declines. However, departments maintaining more funds were less dependent on such innovative syllabi. In a study of when firms introduce new products that are incremental versus pioneering (less innovative versus more innovative), Simon and Houghton (2003) found that achieving success is negatively associated with introduction of pioneering products. Some studies have also considered the role of the performance associated with particular strategies rather than financial or overall performance (e.g., performance associated with innovative activities of firms relative to aspirations). For instance, Hoang and Ener (2015) found that firms with greater product development performance below aspirations will seek exploration by increasing the number of new product development projects in new product markets. Similarly, Parker et al. (2017) also found that when the quality of the new products introduced is below the quality aspirations of the firm (i.e., quality performance below aspirations), they will increase the rate of

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subsequent new product introductions. Nevertheless, this rate will decrease once the quality of the new products introduced exceeds aspirations. Focusing on small firms' intentions to produce new products with risky characteristics, Simon et al. (2003) found that low performance predicts more introductions of products with risky characteristics for such firms. These empirics show that performance decline below aspirations strongly influences the degree of innovativeness of firms.

Associated with innovative search and innovative activities of firms, some studies have investigated how performance relative to aspirations influence the degree of exploration and exploitation activities of firms. Like the other areas, this segment of the literature is also inspired by the degree of the effect of performance failures on the degree of exploration versus exploitation, that mainly find a positive relationship between performance decline and exploration and negative relationship between performance decline and exploitation (Su & McNamara, 2012). Greve (2007) explored how performance below aspirations influences exploration and exploitation innovations. The study found that performance below aspirations is more predictive of exploration innovation rather than exploitation innovation. Also, the impact of performance rise above aspirations was negative and significant. In an experimental laboratory study, Døjbak et al. (2015) found that teams prefer more explorative routines rather than exploitative ones once their performance falls below their past performance. Baum and Dahlin (2007) found that in points very close to aspirations, firms will engage in local and exploitative search whereas in points farther from aspirations, firms will be more engaged in exploratory and nonlocal search. Similar to Baum and Dahlin (2007), Yang et al. (2016) found that underperforming buying firms do not rely on relational referrals in searching and finding suppliers, compared to overperforming ones who prefer the safer way of finding suppliers with relational referrals. Their underlying reasoning is that risk tolerance increases with performance decline, and firms come to know that small adjustments are not capable of bringing performance back to aspiration levels; thus, they engage in more unknown and risky ways of doing things (in this case finding partners). The main indication of the findings of these studies is that performance decline below aspirations increases the likelihood of exploration rather than exploitation activities and strategies.

Technology advancement is another related topic to innovation and exploration that has caught the attention of a few studies in the BTOF literature. Ketchen & Palmer (1999) found that underperforming firms are more likely to add new high technologies than other organizations, and at the same time, more likely to delete the existing technology from their infrastructure. In another study on firms from flat panel display industry, Wang et al. (2017) found that the extent of how far firms go in advancing their technology is largely determined by how much their performance falls below their industry average, whereas firms performing above average have little motivation to do so. As the authors indicate: "…firms exceeding the industry average in their technology reveal little motivation even to maintain their lead, much less extend it" (Wang et al., 2017: 1).

The implications of performance feedback on innovation has drawn the attention of public management scholars as well. For instance, Nicholson-Crotty et al. (2017) found that public managers will promote more innovative activities and allow more employee discretion when the public organization fails to meet or exceed performance goals.

2.5.2. Entry into New Markets

Another branch of research is associated with the entry into new markets and internationalization that have been regarded as an uncertainty and risk-involving strategies. Looking into the trends of market performance, Situmerang et al. (2016) predicted that such a trend will negatively influence the likelihood of entry into new market segments. Wally and Fong (2000) looked into the timing of entry into new markets assuming early entry as a riskier initiative. They found that early entry is well predicted by performance below aspirations, whereas firms prefer later entry when their performance is above aspirations. Barreto (2012) used performance relative to aspirations as the moderator of the positive effect of a market attractiveness on firms' expansion to the attractive market. The study showed that when performance is above aspirations, the effect of market attractiveness on firms' market expansion will not be as strong. Regarding internationalization as the number of countries in which a firm establishes subsidiaries in a given year, Lin (2014) showed that performance below aspirations predicts firms' pace, scope, and propensity for irregular rhythm of internationalization; in a way that the propensity to engage in risky

internationalization increases when performance is below historical or social aspirations, as well as when performance is above historical or social aspirations. Jung and Bansal (2009) argued that considering the effect of absolute performance without reference to aspiration levels will not yield reliable results with regard to predicting the degree of variance in internationalization (as the prior research did not) and looked into internationalization with regard to performance relative to aspiration levels. The findings of the study were significant, as opposed to studies prior to it that treated performance as a single construct without attention to aspiration levels. Wennberg & Holmquist (2008) also showed that for firms that consider international venturing, the distance of performance below aspirations will negatively influence the attempts of firms in internationalization, in a way that the more the performance falls, the higher the attempts. These empirical findings consensually indicate that the probability of entering new market increases with more performance decline below aspiration levels.

2.5.3. R&D Investments/Intensity

Regarding R&D investments, intensity, and alliances as a prevalent measure of risk-taking behavior, some studies have investigated the effects of performance relative to aspirations on R&D activities of firms. Tyler and Caner (2016) found that the decline of performance of new product introductions below aspirations will negatively influence the degree of R&D alliances of firms for three main reasons including the contribution of the alliance to solving the problems of new product developments, accessing knowledge to develop and maintain multiple technological and organizational competencies for current and future new product development, and gaining more opportunity to work on more unfamiliar new product development projects and sharing costs of doing so with others. Chen and Miller (2007) also showed that the distance of performance below aspirations (decline below aspirations) will positively predict the extent of the R&D intensity of firms. Tyler and Caner (2012) looked into both sides of aspirations; that is, they investigated how innovative outputs both below and above aspirations influence R&D alliances. The main finding of the study was that with the decrease of innovative output below aspirations, the R&D alliances will increase; and with the increase of innovative output above aspirations, firms' R&D alliances do not

significantly change. Focus on R&D activities of firms as a proxy for risk-taking behavior of firms in the BTOF literature is relatively more abundant. I will refer to more studies in the sections associated with the extensions to the BTOF.

2.5.4. Organizational Change

Organizational change as a risk-taking behavior influenced by performance relative to aspirations is one of the most studied variables in the BTOF literature. I divide this literature into two main categories. The first category is associated with strategic convergence versus divergence. Mainly based on the notion of problemistic search and risk-taking as a result of performance below aspirations, Park (2007) argued that firms are likely to diverge from the community of their competitors as a result of search for alternative routines, structures, and ways of doing things when their performance falls below aspirations. They found that with performance decline below aspirations, firms diverge their resource allocation and strategy choices from their competitors, and the degree of convergence with competitors in these areas decreases. Schimmer and Brauer (2012) investigated how performance decline below aspirations influences the degree to which firms diverge from or converge with their strategic groups. The findings of the study indicated that firms performing below their aspirations are more likely to diverge from their strategic group compared to those performing above their aspirations. In another recent study, Ceci et al. (2016) found that firms make minor or major architectural changes depending on the degree of performance gap (i.e., performance below social or historical aspirations).

The second category is more directly associated with risk-involving strategic changes. In its simplest form, these studies find that performance relative to aspirations negatively influences organizational change (Greve, 1998). Focusing on international marketing strategy as a main measure of risk-taking behavior, Lages et al. (2013) found that firms are not inertial in their international marketing strategy, but performance will predict the degree of change in this strategy, in a way that lower performance will be associated with higher degrees of change. In another study on marketing strategies, Chng et al. (2015: 629) showed that "performance decline decreases the comprehensiveness of marketing strategy process but increases reliance on short-term marketing decisions, strategic change, and strategic risk-

taking." Distinguishing change from risky change, Kacperczyk et al. (2015) found that performance decline below aspirations will increase change, risk, and risky change. Focusing on radio broadcasting industry, they showed that this change is sensitive to performance below both historical and social aspirations. Using concepts from the principal agent theory and agent theory, Markovitch et al. (2005) found that firms whose stock underperformed the industry reacted differently than drug firms with high-performing stocks. The changes of laggards were realized in the form of changes to their current product portfolio and distribution. Also, underperformance predicted implementation of acquisitions aimed at producing immediate improvement in the firm's product portfolio. However, fewer such changes were observed for firms that performed above the industry. Mainly focusing on social aspirations, Lant et al. (1992) found that although organizations have tendency to converge and stay in line with their extant strategic orientations, their past performance below the industry average will motivate them for strategic reorientation. Finally, Grohsjean et al. (2012) investigated the negative the impact of the performance feedback of flexible and specific resources on strategic change in fast changing environments. The main finding was that negative performance feedback triggers strategic change. Thus, organizational change and reorientation of strategies is another risk-involving response that may vary with performance decline below or rise above aspirations.

2.5.5. Illegal and Immoral Behaviors

The illegal and immoral behavior of firms as a risk-taking behavior that has been empirically shown as an outcome of performance relative to aspirations is another risk variable studied in the BTOF literature. Harris and Bromiley (2007) showed that the probability of financial misrepresentation will vary based on the distance of the performance relative to aspirations; in a way that the probability will increase with performance falling farther below both social and historical aspirations. Similarly, Harris (2008) found that executive inducements and poor relative performance can increase the likelihood of financial misrepresentation due to the pressures that they may incur on firms to act unethically. Focusing more directly on illegal behaviors of firms, Baucus and Near (1991) also found that poor financial performance positively predicts such behaviors. Counter to the studies already mentioned, Mishina et al.

(2010) provided an opposite argument and found that positive rather than negative performance feedback predicted the increased likelihood of committing illegal behaviors. Their underlying reasoning was that in high levels of performance, decision makers have a kind of hubris and confidence in their abilities that convinces them to get over the consequences of illegal behaviors. Also, they posited that high performers receive higher expectations from their stakeholders and audiences that may, in turn, pressure them for taking more risk since such firms will feel that their failure to meet their aspirations will be noticed even more. Desai (2014) provided a more comprehensive view positing that in addition to performance relative to aspirations, there could be other factors influencing the illegal behaviors. The study, in addition to arguing that both performance increase above and decrease below aspirations predicts illegal acts, posited that these illegal responses will in part depend on the behavior of other similar organizations. They found that illegal acts with performance below and above aspirations will increase even more when the similar others do so. The empirical findings on illegal activities do not converge. Because of the contrasting findings in this area, more studies similar to that of Desai (2014) are needed to provide more robust findings by including the role of other contingency factors.

2.5.6. Diversification, Acquisitions, and Divestitures

Research on such risk associated strategies as divestitures, acquisitions, and diversification have also been studied from the perspective of the BTOF. In a study of related versus unrelated acquisitions, Park (2003) posited that high-profit firms are more risk-averse than lower-profit firms. Firms also perceive related acquisition as less risky than unrelated acquisition. They found that unlike lower profit firms, high-profit firms prefer related acquisitions to unrelated acquisitions. In a similar vein, Park (2002) also found that firms are more likely to pursue related diversification when they are profitable within their industry, and unrelated diversification is more likely for those underperforming their industry. In a study of when firms adopt corporate venture capital (CVC) and when they end it, Gaba and Bhattacharya (2012) found that the adoption of CVC is negatively predicted by performance relative to aspirations; that is, performance decline below aspirations will increase the likelihood of adopting CVC and vice versa. They regard adoption of CVC as a risk-taking

behavior that is increased by further decline of performance below aspirations and decreased by performance rise above aspirations. According to these findings, higher engagement in unknown and unrelated areas (unrelated diversification) and adoption of ventures that bear higher degrees of probability of loss and risk are of other outcomes of performance decline below aspirations.

2.5.7. Entrepreneurship

Some recent studies have investigated whether performance relative to aspirations can predict firms' entrepreneurship. In a study of the impact of performance relative to aspirations and entrepreneurial orientation, Li et al. (2018) found that performance decline below aspirations increases the entrepreneurial orientation of firms.

2.5.8. Organizational Risk and Multiple Proxies

In addition to the studies reviewed in the previous section, there have been other studies that have studied other dependent variables as risk measures or used multiple measures. Bromiley (1991), Wiseman and Bromiley (1996), and Palmer and Wiseman (1999) are of the major studies that have operationalized risk as organizational rather than managerial risk, that is, they measured risk as the variance or variability of performance of organizations, rather than measuring it as a particular risk-taking behavior of organizations (e.g., R&D intensity, strategic change, etc. that I referred to above). The findings of these studies are in line with the underlying BTOF predictions. Palmer and Wiseman (1999) distinguished between managerial risk and organizational risk. Managerial risk was hypothesized and found to be positively predicted by attainment discrepancy (i.e., the difference between aspirations and real performance). However, organizational risk was predicted by managerial risk, and not directly by attainment discrepancy. The underlying reasoning was that attainment discrepancy will urge firms to engage in more exploration and risk-taking, and this will, in turn, lead to volatility in organization returns (i.e., organizational risk). The study of Bromiley and Harris (2014) is an evident example of the use of multiple measures. Using R&D spending, financial misconduct, and organizational risk as the main proxies of risk-taking behavior and risk, the study found negative effects of performance relative to

aspirations on all three variables. This study is valuable in that it is one of the very few studies comparing different models of risk and return with different proxies of risk. These studies altogether indicate that variability of returns (i.e., organizational risk) changes by performance relative to aspirations; in a way that it decreases when performance rises above aspirations and increases when performance declines below aspirations.

2.6. Extensions to the BTOF

The main focus of this section will be on the empirical studies and arguments that extend and, in some cases, stand against the underlying arguments of the BTOF with respect to the performance feedback and risk relationship in the firm level. Table 2 summarizes these studies.

Table 2: A Summary of the Findings of Empirical Research in Extension of the Main Arguments of the BTOF

Extension Type	Empirical Research	Findings
Performance well below or well above aspirations	• March & Shapira (1987; 1992) • Palmer & Wiseman (1999) • Miller & Chen (2004) • Chen & Miller (2007) • Shimizu (2007) • Iyer & Miller (2008) • Lin et al. (2012) • Lu & Fang (2013) • Keum (2015) • Joseph et al. (2016) • Kuusela et al. (2017) • Guedes et al. (2016) • Ref & Shapira (2016) • Eggers & Kaul (2018	When performance is well below aspirations (distance from bankruptcy) or well above aspirations, the relationship between performance decline below and rise above aspirations and risk-taking behavior will not be negative. In these points, firms will not be as sensitive to performance decline below and rise above aspirations.

Extension Type	Empirical Research	Findings
Moderation: Resources	• Wiklund & Shepherd (2003) • Audia & Greve (2006) • Delmar & Wennberg (2007) • Grohsjean et al. (2012) • Ruth et al. (2013) • Ref & Shapira (2016) • Alexy et al. (2016)	Firms with relatively lower specific and slack resources will not be as sensitive to performance decline below and rise above aspirations in their risk-taking behavior. Also, in the presence of more slack resources, firms are likely to increase their risk-taking behavior even when performance rises above aspirations.
Moderation: Structures, Affiliations, Networks	• Lu & Fang (2013) • Gaba & Joseph (2013) • Arrfelt et al. (2013) • Shijaku et al. (2018)	Business group affiliation and M-form structures increase the risk-taking probability in response to performance decline below aspiration levels.
Moderation: Multiple Performances and Multiple Goals	• Audia & Brion (2007) • Greve (2008) • Nielsen (2014) • Parker et al. (2017)	Firms do not only consider one measure of performance, but multiple performance measures may be at work in determining their tendency to take risk; that is, the firm decision to take risks may be directed by multiple goals and measures of performance rather than a single one.
Moderation: Managerial Perceptions, the Role of Ownership, and the role of Board and CEO	• Latham & Braun (2009) • Lim & McCann (2013) • Alessandri & Pattit (2014) • Chng et al., (2015) • Lim (2015) • Lim (2018) • Cho et al. (2016)	Such agency issues as managerial ownership, stock options, and CEO celebrity status will have significant impacts on the effects of performance decline below and rise above aspirations on the risk-taking behavior of firms.
Moderation: Family Ownership	• Jackson & Dutton (1988) • Chrisman & Patel (2012) • Kotlar et al. (2014)	Family firms tend be relatively more risk-seeking when their performance falls below aspirations.

Extension Type	Empirical Research	Findings
Moderation: Status and Distinctiveness	• Kim and Rhee (2014) • Parker et al. (2017)	Higher status and distinctiveness increase the sensitivity of firms to performance decline, increasing their risk-taking behavior in response.
Moderation: Experience with a Particular Strategy	• Lohrke et al. (2006) • Alexy et al. (2016)	The findings of the two studies contrast. Experience has been shown to positively and negatively influence the effect of performance decline below and rise above aspirations on the risk-taking behavior of firms.
Moderation: Institutional and Environmental Factors	• Levinthal and March (1981) • Fiegenbaum & Thomas (1986) • Gooding and Wiseman (1996) • Deephouse and Wiseman (2000) • Wiklund & Shepherd (2003) • Salge (2011) • Su & Si (2015) • Osiyevskyy et al. (2017) • Su & Su (2017)	Such environmental factors as regulatory environments, recessionary periods, environmental uncertainty, and economic conditions cause the performance feedback and risk relationship to vary.
Moderation: National Culture	• O'Brien & David (2014) • Lewellyn & Bao (2015)	Performance feedback and risk relationship varies in different cultural environments. These studies specifically show that positive performance feedback and risk relationship could be positive (rather than negative) in Japan characterized with communitarian culture (O'brien & David, 2014), or culture moderates the positive performance feedback and risk relationship (Lewellyn & Bao, 2015).

Extension Type	Empirical Research	Findings
Variance in the focus of attention	• Bateman & Zeithaml (1989) • Nordenflycht (2003) • Samila & Nordenflycht (2003) • Massini et al. (2005) • Bothner et al. (2007) • Chen (2008) • Labianca et al. (2009) • Vissa et al. (2010) • Arrfelt et al. (2013) • Moliterno et al. (2014) • Blettner et al. (2015) • Lucas et al. (2015) • Joseph & Gaba (2015) • Hu et al. (2017)	1. Firms' decision to engage in a risk-taking behavior will not be equally caused by performance decline below and rise above historical and social aspirations, but their focus of attention on each of these aspiration levels will be determined by a variety of factors that can make one outweigh or underweigh the other in different situations. 2. There could be other reference points in addition to historical and social aspirations, cautioning against entrapment in historical and social aspirations.
Duration of under/overperformance	• Yu et al. (2018)	The duration of under/overperformance can influence the performance feedback and risk relationship.
Distinct Risk-taking behaviors	• Xu et al. (2018)	Firms may take different risky behaviors depending on whether they perform below or above aspirations.

2.6.1. Inconsistency in the Performance Feedback and Risk Relationship at Different Reference Points below or above Aspirations

In spite of the fairly high empirical support for the underlying predictions of the BTOF with regard to the risk-taking behavior of firms, some inconsistencies have been observed. These inconsistencies generally emerge with regard to the role of performance relative to aspirations on the risk-taking behavior of firms, that deviates from the main predictions. More specifically one of the controversies is associated with whether firms are risk-seeking or risk-averse when performance is below aspirations (Audia & Greve, 2006; Lopes 1987; March

and Shapira 1987,1992; Ocasio 1995; Sitkin and Pablo 1992). One of the main roots of this controversy stems from the conflicting arguments of the BTOF and threat rigidity thesis (Staw et al., 1981). Unlike the BTOF or PT that are built on the assumption that performance below aspirations is perceived by firms and managers as a repairable gap, the threat rigidity thesis assumes that when performance declines, firms perceive the decline as a threat to their vital interests (Sitkin & Pablo, 1992). This can lead to psychological anxiety and stress, and hinder information processing and behavioral flexibility, that may, in turn, lead to inability to explore alternative risky initiatives and alternatives. Audia and Greve (2006: 85) summarizes some of such inconsistencies as:

> "In spite of the continued attention given to these conflicting predictions, we found just six studies that showed that performance below the aspiration level affected firms' risk behavior, and these studies offer contradictory evidence. Gooding et al. (1996) found that firms with performance in the lowest quintile took more risks in response to performance declines. Greve (1998) found that decreases in performance increased the risk-taking of firms both above and below the aspiration level, but had a weaker effect on those below the aspiration level. Ketchen and Palmer (1999) found that low performance increased organizational risk-taking. Miller and Chen (2004) found that decreases in performance increased organizational risk-taking in all (low, medium, and high) ranges of performance. Miller and Bromiley (1990) found that deterioration in performance increased risk-taking for high performers but decreased it for low performers. Wiseman and Bromiley (1996) found that lower performance caused less risk-taking in a sample of declining firms. Thus, the first four studies suggest risk seeking below the aspiration level, whereas the latter two studies provide evidence of risk aversion below the aspiration level."

In this section, I aim to elaborate on how this inconsistency has been addressed in the BTOF literature. In doing so, I start with elaborating on when and how this line of research started. Then, I describe more empirical research based on the categorization of the types of risk-taking behaviors, such as R&D investments / intensity, innovation, acquisitions, and divestments. And finally, I discuss the criticisms and extensions to this line of research.

In response to this sort of inconsistency, some have posited that considering below or above social aspirations as one single monotonous reference point, attention to which urges the same amount of risk-taking is a simplistic view (e.g., March, 1988; March & Shapira, 1987; March & Shapira, 1992). In an attempt to reconcile the opposing arguments and provide a clearer picture of the scenario, March and Shapira (1987; 1992), focusing only on the performance below aspirations, postulated two main reference points below the aspirations as the main reference points that may have different implications for the risk-taking behavior of firms. They argued that managers shift their focus of attention between aspiration levels (performance below but not far below the aspiration point) and survival levels (performance far below the aspiration point where firms are threatened by the danger of bankruptcy and extinction). The implication of the model is that the predictions and assumptions of the threat rigidity thesis make more sense for survival levels and those of the BTOF hold for the aspiration levels where performance decline is more regarded not as a threat but as a repairable gap. In the first attempt to empirically test these arguments, Miller and Chen (2004) partially confirmed March and Shapira's general claim that the influence of performance feedback on risk varies for firms in three performance categories including firms threatened by bankruptcy, firms not directly threatened by bankruptcy but performing below their aspiration levels, and firms performing above their aspiration levels. They found no evidence for risk decline with performance increase above aspirations or with proximity of bankruptcy in spite of arguing for such a causality; however, their investigation supported the argument that performance decline below aspirations (when there is no threat of bankruptcy) increases risk-taking. However, a number of other studies have empirically supported the arguments of March and Shapira. Examples of these studies distinguishing between survival and aspiration levels, and their contradictory implications for risk-taking include Palmer and Wiseman (1999), Chen and Miller (2007), Lin et al. (2012), Lu and Fang (2013), Shimizu (2007), Keum (2015), Kuusela et al. (2017), and Guedes et al. (2016), consensually finding that performance decline becomes less predictive of risk-taking behavior with distance from bankruptcy.

The arguments provided are not merely targeted at performance below aspirations. With regard to performance above aspirations, based on slack driven search (e.g., Cyert & March,

1963; Singh, 1986; Antonelli, 1989; Lant eta al., 1992; Nohria & Gulati, 1996), Baum et al. (2005) argued that since performance above aspirations leads to success that, in turn, provides firms with access to more resources and increases their confidence in their abilities to pursue strategies that were previously deemed risky before, their propensity for risk-taking increases. Their findings indicated that greater distance of performance above aspirations predicts more search for non-local ties. Unlike many other researches that focus on the variance of risk with regard to performance below aspiration levels, Ref and Shapira (2016) provided evidence that risk-taking in the form of new market entry is negatively predicted by performance both above and below aspirations. However, the strength of the relationship decreases after a certain point both below and above aspirations. In the neighborhood of the aspiration levels, the negative relationship holds; however, the risk-taking behavior decreases when performance is well below or well above aspirations. Their underlying reasoning for the performance below aspirations is that firms perceive the negative attainment discrepancy as a repairable gap or as a matter of danger of survival. They call this the shift of attention from aspiration to survival. Hence, turn of attention from aspiration to survival makes them more risk-averse. As for performance well above aspirations, they associate the decrease in new market entry as a risk-taking behavior with increase in opportunity costs. They argue that when firm performance is well above aspirations in a market, it means that the firm's abundant resources match that market well, and entering new markets will reduce their performance by violating the resources such as managerial time and attention and, hence, increasing their opportunity costs. I refer to more studies below, categorizing them based on the type of the risk-taking behavior.

2.6.1.1. R&D Investments and Intensity

Examining evidence on R&D search investments across a wide range of manufacturing industries, Chen and Miller (2007) found that R&D intensity increases as the distance of past performance below aspirations increases. However, in the vicinity of bankruptcy, this relationship does not hold, and R&D intensity decreases. Focusing on R&D investments, Lu and Fang (2013) also found that firms reduce their R&D investments with distance from bankruptcy levels, reasoning that in such occasions, they may resort to such alternative

strategies as terminating innovation projects, preventing new activities, and even laying off employees in order to protect their reputation and prevent their firm from bankruptcy. In line with these findings, Guedes et al. (2016) also found that although R&D intensity increases with performance decline below aspirations, a decrease is observed with distance from bankruptcy. Another similar finding with regard to investments is that of of Lin et al. (2012) who posited that performance below aspirations will negatively predict foreign direct investments, but the investments will decrease as the firms approach survival levels. Their additional contribution was that risk-taking decreases only when firms are directly (rather than indirectly) threatened by bankruptcy. These empirical findings strongly indicate that investments, R&D investments and intensity in particular, decrease when focus of attention shifts from aspiration to bankruptcy levels.

2.6.1.2. Innovation

Studying innovation as the main outcome of performance relative to aspirations, Keum (2015) found that in the near-miss positions (i.e., aspiration levels), innovation increases with performance decline below the industry benchmark (i.e., performance decline relative to social aspirations); however, the innovation rates will decrease at bare-beat positions (i.e., survival level). Eggers and Kaul (2018) particularly focused on radical innovations, finding that investment in these innovations increases when performance is moderately below aspirations, but it will substantially decrease when performance is well below or well above aspirations, finding the effects stronger for multi-technology firms.

2.6.1.3. Acquisitions and Divestitures

Shimizu (2007) found a negative impact of the acquired unit's performance on decisions to divest it. In line with the theoretical arguments of March and Shapira (1987; 1992), the researchers found that as performance falls below aspirations, probability of divesting the unit increases, but the effect decreases after a certain point. In a similar vein, Kuusela et al. (2017) found that as performance moves away from the vicinity of the aspiration levels to way below it, the firms will be likely to divest (rather than acquire) in order to free resources for more beneficial investments and operations. Using acquisitions as the main dependent

variable, Iyer and Miller (2008) regressed this risk-involving strategy on performance decline below aspirations, performance decline when it is above aspirations, and distance from bankruptcy. The findings of the study suggested that acquisitions increase when performance declines below aspirations. However, the effect of decline when performance is still above aspiration levels was not as strong. Finally, as firms' performance approached the bankruptcy level, acquisition behavior decreased. Not directly associated with divestiture, but similarly in the production level, Joseph et al. (2016) found that when performance is above the aspirations, product phaseout decreases. However, for below aspirations, decrease in phaseout was observed for performance decline blow aspirations, but the rate increased after a certain sales threshold.

All in all, the empirical findings strongly support the argument that such risk-involving behaviors and strategies as R&D investments, R&D intensity, investments, innovation, and acquisitions increase when performance falls below aspirations, but decrease with distance from bankruptcy levels. However, there have also been some research finding some contingency factors or criticizing these findings. In this section, I aim to refer to the studies that although acknowledge the role of attention to different reference points in a way that March and Shapira (1987; 1992) argue, they posit that some contingencies may change this scenario. Also, some research has criticized and provided counter arguments to this line of research. I describe both below.

Time is one of the factors that may influence the effect of performance relative to aspirations on the risk-taking behavior of firms. Thus, Lehman et al. (2011) argued that the relationship between performance and risk-taking behavior has been studied across time periods rather than within them. Building on the shifting-focus-of-attention model of organizational risk-taking, the study argued that proximity of deadlines will determine the focus of attention on aspiration or survival levels. The underlying finding of the study is that in the early period, the focus of attention of actors will be on aspiration levels. However, as the deadline approaches, the focus of attention will be directed more towards survival levels, reducing the likelihood of risk-taking. For performance above aspirations, they found that with proximity of deadlines the firms will increase risk-taking by more experimenting with their slack resources. They found and concluded that the relationship between performance and risk-

taking is likely to be moderated by deadline proximity within a performance period. In quite a different but related study, Boyle and Shapira (2012) argued that increase in risk-taking may be a matter of position in the hierarchy that directs the focus of attention. They argued that the attention of leaders and followers will be directed towards different points. They noted that the BTOF research has not found as robust results in the role of social aspirations as in the role of historical aspirations in risk-taking, in a way that there have been nonsignificant results (e.g., Audia & Greve 2006, Miller & Chen 2004) or different results (Greve, 1998; Baum et al., 2005; and Iyer & Miller, 2008). One of the reasons, as the authors claim, is the lack of attention to survival as a reference point. The second factor is the overemphasis on industry average as the main measure of social aspiration. They argued and found that the focus of attention on survival versus aspiration levels is determined by whether the competitors are leaders or followers. Leaders focus almost exclusively on their aspiration point, their own position (e.g., maintaining the lead), and that followers focus on their aspiration point or their survival point when making risky decisions. Considering the role of resources and age of firms as a factor that influences firms' exit or growth strategies and assuming growth as a risk-taking behavior for new ventures, Wennberg et al. (2016) considered the venture's age and size as the main moderators of the effects of proximity to survival points and performance below/above aspirations on the growth versus exit strategies. The main findings of the study were that young and smaller ventures are more likely than older and larger ventures to exit with proximity to survival levels. At the same time, older and larger ventures are more likely than younger and smaller ventures to grow with proximity to survival levels. Opposite results were found for aspiration levels. These empirical findings suggest that time factors (i.e., perceived pressure due to time limitation), size, and resources of firms are of the factors that can influence the degree to which firms reduce their risk-taking behavior with distance from bankruptcy.

The shift-in-focus-of-attention model of risk-taking has not been without criticisms. There have been some studies claiming that risk-taking may increase even more with proximity to survival levels, since the threat of survival may stimulate higher risk-taking aimed at escaping threats (e.g., Audia & Greve, 2006; Bowman, 1982; Gooding and Goel, 1996; Miller and Chen, 2004). An example is the study of Ruth et al. (2013) who focused on

internationalization as a risk response to performance relative to aspirations. The study posits that since internationalization is costly and long time is needed to get its benefits, it is likely that firms will not commit to it when their performance is in the vicinity of aspirations (whether below or above aspirations). In these cases, firms are likely to believe that small adjustments are enough. However, the tendency for internationalization will increase when performance is far below or far above aspirations, in which case small adjustments do not work.

2.6.2. Moderation, Contingency Factors, and Boundary Conditions

In addition to the contingent role of the different reference points both below and above aspirations, another branch of research has directly addressed how the performance feedback and risk relationship is moderated directly through different variables in firm, individual, and institutional levels. I review this research below.

2.6.2.1. *The Role of Resources*

The studies focusing on the role of resources are mainly based on the assumption that in lower levels of performance, firms will have relatively less resources to engage in exploration, experimentation, and risk-taking. Ref and Shapira (2016) and Audia and Greve (2006) are of the most evident examples. Like Ref and Shapira (2016) that emphasized the role of resources, and used RBV in predicting risk-taking behavior, Audia and Greve (2006) also relied on the role of resources in predicting how performance *below a*spirations predicts risk-taking behavior. One of the main differences between this study and Ref and Shapira (2016) is that resources and RBV are applied to the context in which performance is below (not above) aspirations. The size of the firm is used as the main proxy of the resources, in a way that smaller firms are assumed to have less resources. When performance is below the aspiration level, performance decline leads to less risk-taking among smaller firms. Considering the role of firm size, Ref and Shapira (2016) also found that when performance is below aspiration levels, larger firms take more risks when their performance declines compared to smaller firms. Comparing small and large firms in Sweden, Delmar and Wennberg (2007) found that smaller firms respond to performance relative to aspirations in

line with the predictions of threat rigidity hypothesis, that is, taking less risk in response to performance relative to aspirations. However, as firms grow and age, the likelihood of risk-taking behavior increases. In a different study, comparing underperforming and overperforming firms with regard to their open innovation, Alexy et al. (2016) found that firms with more human capital are less likely to commit open innovation, reasoning that since high human capital engagement in innovation activity and non-local search is more likely and expected, performance relative to aspirations will not be of much influence in non-local search and innovation when a firm owns high human capital. In another study associated with human capital, Wiklund and Shepherd (2003) found the human capital of managers (including education and related experience) as significant moderators of the relationship between managers' growth aspirations and their smack businesses' growth. They also found financial capital to play the same moderation role. In investigating the implications of performance relative to aspirations on strategic change, Grohsjean et al. (2012) found that larger stocks of flexible resources are likely to influence the negative relationship between performance feedback and strategic change. In a study of how performance relative to aspirations predicts acquisitions, Ruth et al. (2013) argued that even in the presence of motivation for acquisitions as a result of attainment discrepancies, firms will do so when they have the ability to do so. Thus, they argued and found that ability in the form of absorptive capacity and motivation in the form of negative attainment discrepancy can jointly predict acquisitions. Finally, using quite a different perspective, Grohsjean et al. argued that availability of resources in the form of slack or other specific resources will reduce the role of performance relative to aspirations in the risk-taking behavior of firms. Their findings mainly indicated that firms with relatively higher specific and slack resources are not as sensitive to performance feedback. Thus, resources and capabilities of firms are significant factors predicting the degree to which firms will engage in risk-taking behaviors in response to performance feedback.

2.6.2.2. The Role of Structures, Affiliations, and Networks

This line of research mainly investigates how structural factors such as business group affiliation and M-form structures influence performance feedback and risk relationship.

Considering the role of the business group affiliation, Lu and Fang (2013) found that both affiliated and unaffiliated firms will take risk in case of negative attainment discrepancy. However, unaffiliated firms will be less risk-taking than affiliated ones when performance is above aspirations. The underlying reason for this finding was provided as more ability and inclination of the firms affiliated with business groups to access resources that would be unavailable to unaffiliated firms, tunneling (i.e., transfer of financial and other resources among the affiliated firms of business groups), and better ability of affiliated firms to acquire capabilities due to economies of scale. In a study of Multi-divisional forms (M-forms), Gaba and Joseph (2013) hypothesized that as performance decreases below the aspiration levels, the rates of new product development in the business unit level will increase, and vice versa. However, in the M-form structures, such a relationship will be subject to interference from corporate level, in a way that there may be hurdles for more or less exploration and new product development from the corporate level. In these structures, business units that generate the significant share of the corporate income and those that have high experience will be less subject to such hurdles mainly due to the higher degrees of influence that they can exert in the corporate level. In a similar study of M-forms, Gaba et al. found that new product development as a response to negative attainment discrepancy will be less likely in the corporate level compared to the business unit level since the corporate level problems are hard to be determined due to high complexity and ambiguity of where the cause may be. Existence of financial control systems in the corporate level was provided as another factor that may hinder innovation and change, favoring the status quo. Findings of Arrfelt et al. (2013) may have implications for why underperforming units in M-forms may take more risks in response to underperformance, and overperforming units may not take as much risks. The findings of the study showed that in M-forms, the allocation of capital to the underperforming units is more than overperforming units. The main indication of these empirical findings is that business group affiliation and M-form structures increase the risk-taking probability in response to performance decline below aspiration levels.

Network position and network centrality is another factor that has drawn some recent research attention. Shijaku et al. (2018) found network centrality of firms as a significant moderator of the impact of performance relative to aspirations on international strategic

alliances. For instance, one of their findings was that the negative impact of performance below aspirations on distant international strategic alliances is higher with increase in the network centrality of the firm.

2.6.2.3. *Multiple Performances and Multiple Goals*

Some research has gone beyond assuming only one performance (i.e., return on assets) as the main factor that firms consider in setting their aspirations. These studies consider multiple performance criteria and multiple goals or expectations for firms and aim to investigate how they influence risk-taking behavior of firms separately or interactively. Greve (2008) emphasized on size as the main driver of aspirations, that is, firms may adopt growth strategies based on whether their size is below or above their aspired size. He did not, however, fully ignore the role of firm performance. His main contention was that firm performance is negatively related to growth, and it can interact with aspirations associated with size in predicting growth. For this aim, two competing hypotheses were developed. One was based on the sequential attention (Cyert & March, 1963) and contended that firms will sequentially pay attention to size aspirations and performance aspirations. Thus, when firms face low performance, the negative effect of size aspirations on growth will be weak or zero. The other competing hypothesis emphasized that firms simultaneously pay attention to different problems; thus, in lower degrees of performance, size below aspirations will more strongly predict firm growth. The predictions of the sequential attention were supported (Greve, 2008). In a similar vein, Audia and Brion (2007) posited that attention may be directed towards multiple diverging performance measures. Aiming to find how firms respond to the ambiguity as a result of diverging performance indicators, the study considered two performance measures, one as the primary performance measure that is of the utmost importance, and the other as the secondary performance that is not as important. The main argument of the study was that these performance measures and whether they are below or above reference points will interactively influence the degree to which firms may engage in change. The results indicated that subjects gave importance to the secondary performance "only when it helped them maintain a sense of positive performance, that is, when a secondary performance measure was high, and a primary performance measure was low"

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(Audia & Brion, 2007: 1). Similarly, Parker et al. (2017) empirically showed that although the quality of new products introduced relative to product quality aspirations negatively influences the degree of subsequent new product introductions, higher financial performance relative to aspirations (in this study, aspirations-relative sales) will weaken this effect. In quite a different study, Nielsen (2014), rather than providing primary and secondary roles for different goals or performance measures, aimed to show how one goal becomes primary for a firm. Taking a BTOF perspective, the main findings of the study indicated that performance decline relative to aspirations on a goal will increase the priority of that particular goal for firms. These studies show that firms do not only consider one measure of performance, but multiple performance measures may be at work in determining their tendency to take risk, that is, the firm decision to take risks may be directed by multiple goals and measures of performance rather than a single one.

2.6.3.4. Managerial Perceptions, the Role of Ownership, and the Role of Board and CEO

This line of research mainly focuses on how different factors such as rewards or ownership formulate perceptions of managers with regard to risk-taking at different levels of performance relative to aspirations. Latham and Braun (2009) investigated the effects of managerial ownership along with slack on the relationship between performance decline below aspirations and innovation. The findings indicated that managerial ownership reduces innovation when performance declines. The results also confirmed the significant negative joint effects of managerial ownership and slack resources. In explaining how chief executive officers (CEOs) compared to outside directors awarded with stock option grants perceive negative or positive deviations from prior performance, Lim and McCann (2013) found that in negative attainment discrepancy, these options will reduce the risk-taking propensity of CEOs who are already bearing excessive employment and compensation risks, but they will increase the risk-taking propensity of outside directors who already aim to increase monitoring and support for risky projects. Regarding the positive attainment discrepancy, however, high values of option grants make both CEOs and outside directors risk-averse due to their perception of risky strategies as potentially threatful for anticipated incentive values that are associated with the gain domain. In another similar study (Alessandri & Pattit, 2014),

stock option pay and managerial stock ownership were argued to moderate the effects of attainment discrepancy as well as distance from bankruptcy on R&D investments. The findings indicated that the positive relationship between attainment discrepancy and R&D investments will still exist at lower levels of option pay; however, the relationship will be weaker due to the lack of additional motivation provided by greater option pay. Higher levels of stock option pay will motivate managers to pursue R&D investments, in a way that in such conditions, managers will enhance the extent of R&D investments with increase in the distance from bankruptcy. In contrast, lower levels of option pay will provide less motivation, and a weaker positive relationship is expected to exist between distance from bankruptcy and R&D investment. Introducing a new reference point for CEOs (i.e., social reference point), Lim (2018) found that risk-taking will increase (increase) as CEO pay falls below (rises above) the social pay reference point, and environmental dynamism and turbulence moderate this relationship. Finally, in a study focusing on the relationship between performance decline and marketing strategies, Chng et al., (2015) showed that incentive pays to CEOs accentuate the increased risk-seeking during performance decline. The findings indicated that such agency issues as managerial ownership, stock options, and CEO celebrity status will have significant impacts on the effects of performance relative to aspirations on the risk-taking behavior of firms.

Factors associated with the focal CEOs and board of directors have also been empirically shown to influence performance feedback and risk relationship. Cho et al. (2016) aimed to find how the celebrity status of CEOs and financial performance relative to aspirations influence the size of acquisition premiums. They found that in general, celebrity CEOs tend to pay smaller premiums for target firms. However, they are more likely to pay premiums when their prior financial performance is below or above social aspirations. Tendency to pay such premiums is even more when CEOs have only recently been crowned a celebrity due to the inflated expectations of high performance that come with celebrity status. Lim (2015) found that CEO duality and board vigilance are two factors that increase the impact of deviation of performance from that of the previous CEO on R&D intensity of firms, in a way that the negative impact of performance decline below and positive impact of performance

rise above prior CEO performance on R&D intensity will be stronger when CEO duality and board vigilance are high.

A related literature is associated with how family ownership influences performance feedback and risk relationship. Family firms have generally been shown as risk-averse (Fernandez & Nieto, 2005) due to such reasons as satisfying family stakeholders and maintaining the cross-generational sustainability of the firm (Chua et al., 1999), fear of the downside risk associated with bankruptcy (Mishra & McConaughy 1999; Naldi et al. 2007), and the founder's personal wealth tied to the family firm (Mahto & Khanin, 2015). In line with these observations, the behavioral agency model has suggested that family firms invest less in R&D. Jackson and Dutton (1988) showed that this will be subject to variation with performance relative to aspirations. When performance is above aspirations, family firms will relatively invest more in R&D that exploits the current opportunities within the firm's current product-market domain to increase sales revenues and avoid assuming excess risk, compared to nonfamily firms. When performance is below aspirations, however, risk-taking will be more among family firms who see their own wealth in danger. In such occasions, family firms are expected to put more investment on riskier R&Ds than do nonfamily firms. Kotlar et al. (2014) also investigated the moderating effect of family ownership on the relationship between internal and external performance hazard (i.e., performance below historical and social aspirations respectively), finding that family ownership strengthens the negative impact of internal and external performance hazard on the risk-taking behavior of firms. Finally, Chrisman and Patel (2012) found that although the R&D intensity of family firms depends on their family short- versus long-term goals, and, as a result, more variability of R&D expenditures is expected among these firms, the variability decreases, and they consistently increase their R&D expenditures when their performance falls below their aspirations. Thus, although family firms have been shown as relatively more risk-averse entities, they are relatively more risk-seeking when their performance falls below their aspiration levels.

2.6.3.5. Status and Distinctiveness

Studies focusing on the status and distinctiveness of actors mainly emphasize how these two factors influence the firms' perceptions of their performance below or above aspirations and interact with them in influencing the risk-taking behavior of firms. For instance, Kim and Rhee (2014) found that both above and below aspirations, actors of higher distinctiveness were engaged in more change in their courses of action. Their main reasoning for this argument and finding was associated with the amount of opportunities that actors with high versus low distinctiveness may have. Since the availability of more alternatives and opportunities increases the likelihood of local search and reduces the need for non-local search and initiatives (Cyert & March, 1963), and firms of high distinctiveness have relatively lower number of alternatives, their likelihood of changing courses of actions will be more compared to firms of lower distinctiveness. Parker et al. (2017) focused on the role of the stability of the reputation of the focal firm and that of competitors, and how this reputation influences the impact of quality of new products introduced below/above aspirations on the rate of subsequent new products introduced. Their main finding was that firms will increase the subsequent rate of their new product introductions when their new products are below aspirations in terms of their quality, and the stability of the reputation of firms and their competitors strengthens this relationship. These findings suggest that higher status and distinctiveness increases the sensitivity of firms to performance decline below aspirations, increasing their risk-taking behavior in response.

2.6.3.6. Experience with a Particular Strategy

Research in this area has focused on how experience with a particular risk-taking strategy influences the impact of performance relative to aspirations on that particular strategy. Based on the main arguments of the BTOF positing that firms will resort to exploratory problemistic search when their performance is below aspirations, Lohrke et al. (2006) posit that when firms are not satisfied with their performance (i.e., when performance is below their aspirations), those with alliance experience will not and those without alliance experience will form new alliances. These arguments were tested and confirmed in comparison with their opposing arguments based on threat rigidity thesis. Alexy et al. (2016), however,

provided rather different arguments with regard to innovative activities of firms based on positive and negative attainment discrepancies interacting with firms' previous patents. Their underlying finding was that underperforming firms with previous patents will engage in more innovative activities when their performance is below aspirations compared to those without such patents. The reason was stated as that underperforming firms with previous patents still have assets to trade for technologies in a market and get back to ideal performance, compared to those with little or no such patents whose engagement in open innovation will incur unbearable costs on them. It appears that research based on experience is still in its infant stage. Finding only two studies with rather opposing reasoning and findings, more research is needed to find if and under what conditions experience with a particular risk-taking strategy increases or decreases the likelihood of using that strategy in response to performance relative to aspirations.

2.6.3.7. *Institutional and Environmental Factors*

Studies bringing environmental and institutional factors into play have mainly relied on formal institutional factors and economic conditions in explaining performance feedback and risk relationship. Salge (2011) found that regulatory endorsement moderates the negative effect of performance below aspirations on risk-taking behavior mainly because such an endorsement that reduces government intervention will draw the attention of public firms from survival to aspirations when their performance declines below aspirations. Wiklund and Shepherd (2003) found environmental dynamism as a moderator of the relationship between small business managers' growth aspirations and their firms' growth. Deephouse and Wiseman (2000) investigated the role of recessionary periods and environmental turbulence. Their main finding was that in a turbulent economic period, performance decline will be less predictive of the risk-taking behavior for firms because in such periods attention is diverted from success to failure, and firms will focus more on avoiding failure than achieving success. They concluded that in turbulent economic environments, firms performing both above and below aspirations will take similar risk-taking behaviors. Levinthal and March (1981) made similar arguments regarding the moderating role of environmental uncertainty, positing that environmental uncertainty with its adjoining confusions will influence aspiration levels.

Another similar study is that of Gooding and Wiseman (1996) who argued that reference points will not be stable across industries and through time; more specifically, they showed that economic conditions both across time and industry will moderate the performance feedback and risk relationship. Fiegenbaum and Thomas (1986) found that the risk-return paradox is more likely to hold in environments that are more uncertain and less predictable; they confirm this thesis by comparing the relationship within 1970s and 1960s. In a comparison of nations with high versus low economic freedom, Su and Si (2015) found that the pattern of risk-taking in response to performance fluctuations relative to aspirations varies, in a way that for the economically free nations, financial innovation increases as performance deviates from aspiration. In contrast, for the least economically free nations, financial innovation decreases as performance deviates from aspiration. Based on these findings, regulatory environments, recessionary periods, environmental uncertainty, and economic conditions cause the performance feedback and risk relationship to vary. Osiyevskyy et al. (2017) found that the change in strategic alliance portfolios of firms as a result of performance shortfalls can depend on the environmental jolts.

Industry-level environmental factors have also drawn some research attention. For instance, in a recent study, Su and Su (2017) found R&D intensity in the industry level as a significant moderator of the relationship between performance deviation from aspirations and R&D intensity of firms, in a way that R&D intensity in the industry-level negatively moderates the relationship for firms performing above aspirations. In another study, Jirásek (2016) argued and showed that firms under study behaved slightly differently from the predictions of the BTOF, and this difference is due to the industry-specific factors, positing that that these factors must be investigated and understood thoroughly in the BTOF research works.

2.6.3. Variance in the Focus of Attention

Studies investigating the variance in the focus of attention mainly aim to find when and how firms pay more attention to historical versus social aspirations. Some other studies have also aimed to find other reference points and how they may interact with historical and social aspirations. Blettner et al. (2015) aimed to answer when firms pay more attention to their

own performance (historical aspirations) and when they pay attention to competitors' performance (social aspirations). The main finding of the study was that life cycle of the firm can change the focus of attention of firms to different reference points, in a way that in the early stages of their life cycle, firms mainly focus on historical aspirations; however, when they are on the verge of bankruptcy, they change their focus of attention to those of competitors. In another study, Vissa et al. (2010) found business group affiliation as a factor that determines the focus of attention of firms on historical versus social aspirations. They specifically found that affiliated firms' focus of attention is relatively more directed towards social aspirations, rather than that of unaffiliated firms, because affiliates of business groups face closed and more comparative evaluation of their performance than do unaffiliated firms. Samila and Nordenflycht (2003) assumed firms' position in the hierarchy of other firms as a main determinant of reference levels. The study posited that firms will be risk-averse or risk-seeking based on the proximity of a higher status firm or a lower status firm in the hierarchy. The hierarchy may be defined based on a variety of variables such as size. For instance, the study found that firms will be risk-seeking as the firms below them in the hierarchy approach them. And firms will be more risk-averse the closer they are to the higher reference level. In a related study, Hu et al. (2017) argued that organizations will focus their attention on two main social reference points, namely economic and political reference points; they found that firms change their focus of attention from these social reference points to their own history and experience when forming future aspirations only when they receive a consistent positive feedback from both these reference points. However, when the firm underperforms one of the social reference points, the social reference point will absorb its focus of attention. Finally, the context has been used as a determinant of whether social or historical comparisons are more important for firms. For instance, Arrfelt et al. (2013) found that in the context of capital allocation, performance relative to social rather than historical aspirations will be more influential in underinvestment in business units. Thus, firms' decision to engage in risk-taking behaviors will not be equally caused by performance relative to historical and social aspirations, but their focus of attention on each of these aspiration levels will be determined by a variety of factors that can make one outweigh or underweigh the other in different situations.

Some researchers have found that firms' focus of attention may be caught by other reference points in addition to historical or social aspirations. Chen (2008) deviates from the past literature that mainly focus on historical or social aspirations, noting that firms are not merely bounded in the past (historical aspirations) or present (social aspirations). For this aim, the study distinguishes between backward-looking aspirations which mainly emphasize historical aspirations, and forward-looking aspirations that emphasize the expectations of firms regarding their future performance relative to aspirations (i.e., the expectation that performance will fall below the target in the future). The findings indicated that as performance below historical aspirations predicts higher levels of risk-taking behaviors (in this study R&D search intensity), expectations of future performance to fall below aspirations will also increase the degree of risk-taking behavior. The study also found interactive effects of the forward- and backward-looking aspirations on risk-taking behavior, in a way that "expectation of below-target performance intensifies the effects of an unsatisfactory performance feedback gap on R&D search intensity", and "expectation of above-target performance reduces the effects of an unsatisfactory performance feedback gap on R&D search intensity" Chen (2008: 212). Like Chen (2008), Bateman and Zeithaml (1989) also looked into how expectations react with the effects of performance feedback on risk-taking behavior. However, here the attention of the decision maker is mainly oriented towards the degree of gains or losses associated with the decision being made. For instance, one of the findings of the study was that positive expectations with respect to the outcomes of a risk-involving decision to be made strengthens the effect of performance feedback on that risk-taking behavior. More specifically, positive decision frame (positive expectations regarding the outcomes of reinvestments) will have stronger effects on reinvestments when performance has been below aspirations. These studies identify other reference points in addition to historical and social aspirations, cautioning against entrapment in historical and social aspirations.

Associated with this line of research, some research has aimed to scrutinize aspirations (social aspirations in particular) and reveal their implications for risk-taking behaviors in more detail. Labianca et al. (2009) provided a clearer picture of social aspirations, dividing it to competing and striving aspirations. Firms with competing aspirations mainly tend to

compare their performance with those of their immediate competitors, whereas firms with striving aspirations tend to compare their performance with those of firms with which they aspire to be similar to in the future. Moliterno et al. (2014) focused on the social aspiration based on the fact that findings on the effect of social aspirations on risk-taking behavior have been diverse and contradictory. Their argument regarding the historical aspirations are the same as mainstream BTOF. However, with regard to the role of social aspirations, the study conceptualized it based on top performance threshold (the reference group of organizations with the highest performance) and reference group threshold (the reference group of organizations with the lowest performance). Their main argument was that increase in distance above the reference group threshold reduces the risk-taking behavior of firms since distance above the reference group threshold yields a feeling of satisfaction with the status-quo, reducing the desire for more exploration and risk-taking; on the other hand, distance below top performance threshold increases risk-taking by motivating firms to engage in more search and exploration in order to catch up with the high performers. In a similar study on the National Association for Stock Car Auto Racing (NASCAR), Bothner et al. (2007) found how crowding from below ('the number of competitors capable of surpassing a given actor in a tournament-based contest') and crowding from above ('when an individual's position is close to many others situated above him or her in the rankings') make a focal actor change their risk-taking behavior. The main finding of the study was that crowding from below and above increase the risk-taking behavior of firms, finding stronger effects for crowding from below. In a study with firm-level data on a sample of US advertising agencies, Samila and Nordenflycht (2003) also found that the speed with which lower reference level approaches firms will positively influence their risk-seeking behaviors. Lucas et al. (2015) argued that the implications of consistent positive or negative feedback for the risk-taking behavior will be different. For instance, in the case of negative feedback, consistent negative feedback will be more stimulating of risk-taking behaviors compared with inconsistent feedback. In another study, Joseph and Gaba (2015) found that firms' risk-taking behavior in the form of new product introductions increases in response to both consistent and inconsistent feedback. However, what reduces responsiveness is the ambiguity in the feedback (but not inconsistency) because ambiguity does not lead to a definitive performance assessment. Finally, Massini et al. (2005) took an institutional perspective in explaining the social

aspirations. Their main argument was that firms will choose similar firms to compare their performance with when adopting innovation, that is, firms consider a particular risk-taking behavior or strategy once its adoption trend has been visible. These studies show that the average performance of firms in a focal industry as a measure of social aspirations is a highly biased measure. This bias may have been one of the factors responsible for contradictory findings with respect to the role of performance relative to social aspirations. More research should be conducted on who are chosen by focal firms as social reference pointsto compare their performance with.

2.6.4. Duration of Under/overperformance

This research track is a very recent one that was first presented by Yu et al. (2018). They found that the degree of risk-taking behavior in response to performance feedback will depend on the duration of under/overperformance. More specifically, they found that the magnitude and scope of risk-taking behavior will decease and then increase with the duration of underperformance. However, the depth will increase and decrease with the duration of underperformance.

2.6.5. Distinct Risk-taking Baheviors

Another recent research track asks whether the same risk-taking behaviors are adopted at different aspiration points. For instance, Xu et al. (2018) found that firms do not take the same risks when performance declines below and rises above aspirations. When performance declines below aspirations, they are more likely to resort to abnormal entertainment spending or bribery expenditures, but not R&D; however, they will spend more on R&D and less on bribery when performance rises above aspiration levels.

2.7. National Culture and the Risk-taking behavior of Firms

The effect of national culture on the behavior of firms is a highly established result in the empirical literature. As I discussed in the introduction section, cross-cultural organizational research strongly indicates that in spite of similarities and universality to the organizational

structures required all around the world, different national cultures will make organizations working within them interpret these structures, their resulting processes of communication, and decision making in different ways (Smith, 1992). In this regard, Hofstede (1993: 81) notes that "the entire concept of management may differ, and the theories needed to understand it, may deviate considerably from what is considered normal and desirable in the U.S.A." In this section, I aim to provide a review of the empirical research on how national culture may influence the risk-taking behavior of firms. Since I mainly rely on the Hofstede and GLOBE dimensions, I will particularly show how the national cultural dimensions associated with these two classifications have been empirically shown as influencing factors of firms' risk-taking behavior. For this aim, uncertainty avoidance (UA), performance orientation (PO), power distance (PD), and future orientation (FO) will be the focus of attention in this section.

2.7.1. Uncertainty Avoidance (UA)

UA refers to the degree to which a society is tolerant of uncertainty (Hofstede, 1980). The Hofstede (2008) defines UA as the extent to which the members of institutions and organizations within a society feel threatened by uncertain, unknown, ambiguous or unstructured situations. UA may be the most related national cultural dimension to the risk-taking behavior of firms. It is defined as "the extent to which the members of a culture feel threatened by ambiguous or unknown situations" (Hofstede et al., 2005: 167). The empirical studies investigating the effect of this national cultural dimension on the risk-taking behavior of firms have strongly confirmed the negative impact of this dimension on this behavior, that is, in cultures with higher degrees of UA, the willingness to take risk decreases. For instance, Crossland and Hambrick (2007) argued that stakeholders in low UA countries may have more tolerance of unexpected, unconventional, or risky executive actions, and showed that low UA in the US versus Germany leaves relatively more latitude of action for CEOs in the US than that for German and Japanese CEOs. Crossland and Hambrick (2011) and Han et al. (2010) found similar results on the role of UA in managerial discretion across countries. Senior executives in low UA societies are allowed to consider and implement broader ranges of actions and strategies that contain risk; however, in countries with higher degrees of UA,

tolerance for uncertainty is relatively lower, leaving narrower space for decision makers of firms to consider broad range of actions (Crossland & Hambrick, 2011) and responses to the problems and issues that arise. In a comparison of individuals from across 30 countries, Shane et al. (1995) found that in countries with higher UA, individuals prefer to ensure that innovation champions work within the organizational rules and standard operating procedures to develop the innovation. In line with this argument, Crossland and Hambrick (2011) also argued that in low UA nations, people will prefer a champion to violate organizational rules, norms, and procedures to overcome inertia to new ideas because they are more accepting of new approaches to problem-solving and more tolerant of non-conformity to social norms (Hofstede, 1980; Milgram, 1961); in high UA contexts, however, champions and managers are expected to act within the framework of already existing structures, norms, and rules. In these countries, managers are less likely "to take bold, deviant actions that have highly uncertain consequences" (Crossland & Hambrick, 2011: 814). In a more recent study on innovativeness, Chen et al. (2017) showed that UA negatively influences patent citations. Thus, risk-taking, uncertainty, and change in high UA societies may be relatively less tolerated. In a comparative study of Japan and U.S.A., Makino and Neupert (2000) showed high UA to influence preference for wholly owned subsidiary over joint venture which they argued as a less risk-involving strategic choice, in a way that Japanese who were high in UA preferred wholly owned subsidiary over joint venture. These studies emphasize the important role UA as a national cultural dimension can play in explaining the national differences in various levels of uncertainty and risk tolerance by managers and firms.

The likely issue of tautology associated with UA and risk-taking: I should note that investigating the moderating role of UA in performance feedback and risk relationship should not be presumed as tautological (Geddes, 2003; Priem & Butler, 2001), that is, in spite of similarities between risk-taking and UA, they are not the same constructs. Some may bring up this argument of tautology positing that risk-taking and risk aversion are two ends of the same continuum of UA and consider risk-taking and risk aversion equal to low and high UA respectively. All definitions of risk embrace uncertainty of the probability of distribution of gains or losses (Arrow, 1965) or merely losses (Shapira, 1986; March and Shapira, 1987).

Uncertainty is also the heart of managerial risk-taking definitions. For instance, Palmer and Wiseman (1999) define managerial risk-taking as management's proactive strategic choices involving the allocation of resources. Strategic choices involve *uncertainty* because they promote change in organizations. Shinkle (2012) defines the concept as top managers' strategic choices associated with uncertain outcomes. It is evident that uncertainty is the inevitable part of the concepts of risk and risk-taking. However, the concepts of risk and risk-taking are still far different from uncertainty and UA respectively. UA as a cultural dimension refers to the extent to which uncertainty is tolerated by a society (Hofstede, 1980), whereas risk is the degree of uncertainty associated with the probability of gains or losses of a decision. Higher UA in a society makes ambiguity and uncertainty less tolerable, and hence it is normally believed to restrict risk-taking behaviors and risky decisions of individual managers or organizations. However, higher degrees of UA may be associated with risk aversion or even risk-taking, in that high UA in a society makes the uncertainty less tolerable. As a result of this intolerance, it is likely that even some risky initiatives may be taken to reduce ambiguity and uncertainty. Hofstede (2001) clarifies this contention with an expressive example that people in high UA cultures may paradoxically take risks, such as starting fights, to decrease uncertainty and ambiguity. On this ground, he emphasizes that uncertainty avoidance does not equal to risk avoidance. Thus, I posit that UA and risk-taking are not the same constructs; they may or may not be related to each other, and my hypotheses on the moderating role of UA in performance feedback and risk relationship are not tautological.

2.7.2. Future Orientation (FO)

FO refers to the extent to which individuals in a society engage in future-oriented activities such as delaying gratification, planning, and investing in the future (Javidan et al., 2006). My review of the literature indicates that empirical research addressing the impact of FO on the risk-taking behavior of firms is relatively rare. Lewellyin and Bao (2015) found that FO as a national cultural dimension positively impacts R&D activities of firms in global paper products industry, positing that these firms in higher FO societies spend more on R&D activities than do those in lower FO societies. In another study, Nakata and Sivakumar (1996)

found significant positive impact of Confucian dynamic that has been highly associated with long-term and future orientation (Hofstede & Bond, 1988; House et al., 2004) on new product development. They specifically showed that the negative pole of Confucian dynamic (i.e., short-term orientation) impedes new product development due to its focus on the preservation of past and present realities. Geletkanycz (1997) also found that executives from higher FO societies will be less likely to stick to the status quo, reasoning that high FO values are more conducive to change and entrepreneurial activity. He reasons that "To the extent that long-term oriented societies anticipate a changing environment, managers may be more open to change in extant organizational profiles. In fact, consistent with long-term values, they are likely to assume that adjustments to the status quo are needed to ensure continued success" Geletkanycz (1997: 621). By contrast, executives of short-term oriented cultures are likely to promote fewer new initiatives inasmuch as they prefer adherence to past conventions. Finally, Jang et al. (2016) showed higher degrees of innovative activities in societies with higher degrees of FO.

The main reasoning behind these arguments and findings is that FO as a national cultural dimension directs the focus of attention of firms to future contingencies and future opportunities, encouraging them to make more future investments and possibly take more risks.

2.7.3. Performance Orientation (PO)

PO is defined as "the extent to which a community encourages and rewards innovation, high standards, and performance improvement" (House et al., 2004: 239). PO is another national cultural dimension that has been shown as associated with the risk-taking behavior of firms. In spite of strong theoretical arguments supporting this relationship, we face a dearth of empirical research. To my knowledge, Calza et al. (2012) and Stevens and Dykes (2013) are the only research empirically showing that PO as a national cultural dimension positively influences the risk-taking behavior of firms. The emphasis on high performance and achievement in a continuous way makes firms in high PO contexts more likely to take risks in order to achieve their desired level of performance which is relatively challenging and high, than those with lower degrees of PO. Javidan (2004) implies that such a willingness to

take risks may be due to the perception in high PO societies that risks and threats can be overcome through hard work and persistence. Based on this reasoning, Nam et al. (2014) also reason that a 'can-do spirit' as a main feature of high PO societies will make firms in these societies more aggressive than those in low PO ones. Hence, they hypothesize that firms in relatively higher PO societies will enter foreign markets than those in lower PO societies due to lower degrees of perceived risk. Calza et al. (2012) provide similar arguments on internationalization. They assume that internationalization and working with foreigners involve uncertainty and risk due to the likelihood of higher degrees of unease in cooperating with foreign investors, obligations to accept cultures that may be far from the firm's own, and subordination to foreigners. However, a high PO culture can encourage such an international cooperation by promoting the sense of firms' self-confidence that is, in turn, based on the 'can-do spirit', and by increasing the firms' interest in getting innovation from others and achieving better performance. In another study on internationalization, Stevens and Dykes (2013) found that firms in higher PO cultures prefer earlier entry to new markets, noting that these firms are more risk-seeking compared to those in lower PO contexts.

One of the reasons for the lack of research on the direct effect of PO on the risk-taking behavior of firms is that more focus of attention has been on masculinity/femininity dimension of Hofstede (1981) which includes PO as one of its main subdimensions. The empirical support and research on the positive effect of masculinity on the risk-taking behavior of firms is relatively more abundant (e.g., Kreiser et al., 2010; Ashraf et al., 2016). However, I use PO for the reasons provided below.

Masculinity/Femininity or PO? Masculinity (MAS) dimension was developed by Hofstede (1980). The main finding regarding this dimension was that in some countries a set of jobs were found more interesting by men than by women. His scale included a masculine and a feminine pole. The masculine pole attached high importance to "earnings," "recognition," "advancement," and "challenge." For the opposite feminine pole, a good working relationship with one's direct supervisor, "cooperation," "living area," and "employment security" were regarded as highly important. He regarded a society as more masculine based on the degree of its emphasis on the masculine than feminine items. This dimension of Hofstede's masculinity has been criticized mainly for its face validity. Face validity refers to

the capacity of a measure with respect to measuring what it is expected to measure or what it is intended to measure (Nunnally et al., 1967). Although the masculinity dimension of Hofstede is claimed to measure such social characteristics as assertiveness, materialism, not caring for others, emphasis on challenge, and high performance, the measure of this dimension does not include any items that focus on assertiveness, toughness, aggressiveness, or dominance (House et al., 2004). This issue of face validity has been a target of criticism (e.g., Smith, 2006; McCrae et al., 200).

Hofstede (1980; 2001) links such characteristics as toughness versus tenderness, dominance, and assertiveness to gender roles and gender equality, in spite of the fact that MAS scale includes no items to measure these characteristics. Regarding this shortcoming of Hofstede's MAS scale, Hanges and Dickson (2004) identify three underlying dimensions that comprise Hofstede's MAS dimension including performance orientation, assertiveness, and gender egalitarianism. Their main argument in support of this classification is that these subdimensions of MAS dimension may or may not be related to each other. Ggender role differences in a society may be minimal (e.g., girls and boys are equally encouraged to attain higher education) and at the same time individuals in such a society may stress the necessity to be assertive, dominant, or aggressive in relationships with others. On the other hand, gender roles may be differentiated (e.g., it is easier and more accepted for men to attain higher level positions than for women to do so) and at the same time the need to be submissive and nonassertive in business relationships *within* organizations is stressed, such as in Japanese culture (Deanne & Hartog, 2004). In spite of these differences, Hofstede confounds them under one single MAS dimension.

As a result, in line with GLOBE, I posit that separately investigating the three dimensions of assertiveness, PO, and gender egalitarianism will yield more accurate and valid findings than Hofstede's MAS scale. Out of the three extensions, I argue that only PO can potentially be associated with firms' aspiration levels and their risk-taking behaviors. Of the other two, gender egalitarianism is more associated with the equality (nonequality) of males and females regarding their characteristics and roles (Hofstede, 1980; 2001; House et al., 2004), and assertiveness refers to the degree to which individuals in collectives are assertive, dominant, tough, and aggressive in their relationships (Deanne & Hartog, 2004). We cannot associate

these dimensions with risk-taking since gender egalitarianism is more associated with the gender equality issues, and assertiveness is mainly associated with the way people communicate within firms and how they adapt to external environment; however, PO is linked to the managers' tendency to compete and get consistent results (Calza et al., 2012). In GLOBE, the measures of assertiveness mainly focus on toughness versus tenderness and assertiveness versus non-assertiveness of individuals in the society, whereas PO measures the degree to which striving for continuously improved performance is desired (Javidan, 2004). In general, assertiveness is associated with valuing dominance and control over environment, competition, success and progress, and high performance. On the other hand, societies low in assertiveness have been generally argued to value modesty and tenderness, cooperation, people and warm relationships, and harmony with environment; associate competition with defeat and punishment; and think of others as worthy of trust rather than opportunists (House et al., 2004; 2002). These characteristics have mainly been associated with the interpersonal relationships within organizations and societies, and do not hold sufficient potential to be applied to strategic and firm levels. Thus, I posit that PO holds the highest potential to be associated to the risk-taking behavior of firms and their aspiration levels.

2.7.4. Power Distance (PD)

PD is defined as "the degree of inequality in power between a less powerful Individual (I) and a more powerful Other (O), in which I and O belong to the same (loosely or tightly knit) social system" (Mulder, 1976: 90). Empirical findings on the effect of PD as a national Cultural dimension on the risk-taking behavior of firms consensually indicate that firms in societies with lower degrees of PD are more risk-seeking than those in societies with higher PD. Kreiser et al. (2010) was one of the main studies finding that PD as a national cultural dimension negatively influences organizational risk-taking. In a similar study, using R&D expenditures as the main proxy for corporate risk-taking, Mihet (2013) found the PD as a national cultural dimension that negatively influences corporate risk-taking. Also associated with R&D expenditures, Pedro et al. (2004) found that R&D expenditures are lower in countries with higher degrees of PD. In another study, Nakata and Sivakumar (1996) found

that PD can negatively impact new product development during the initiation stage since higher degrees of PD may hinder contribution of diverse efforts and ideas from individuals irrespective of their positions; however, higher degrees of PD will facilitate new product introductions in the implementation stage by means of more centralization and higher coordination of complex efforts. In a study of the impact of national culture on earnings quality of banks from across 39 countries, Kanagaretnam et al. (2011) found that higher degrees of PD encourage banks in these societies to report smoother earnings. In another study on banks, Ashraf et al. (2016) found that a higher degree of PD is associated with lower degree of bank risk-taking. Stevens and Dykes (2013) found that firms in high PD cultures prefer earlier entry into new markets than those in lower PD cultures, presenting early entry into new markets as a risk-taking behavior. The studies consensually show that PD as a national cultural dimension reduces the risk-taking behavior of firms.

The literature on the role of PD as a national cultural dimension on entrepreneurial orientation and entrepreneurship also aligns with the contentions regarding the negative impact of PD on the risk-taking behavior of firms. Kreiser et al. (2010) note that given their tendency to improve their position in the power structure, managers in low PD cultures will be more forward-looking, entrepreneurial, and enact risky and offensive strategies when implementing strategies for their firm. Firms in high PD societies, on the other hand, will be more inclined towards 'fortify-and-defend' strategies that are aimed at establishing and solidifying firm position in the industry (Kreiser et al., 2001). Also, economic environment in low PD countries is relatively more dynamic, which urges firms to develop more proactive strategies and exploit opportunities (Lumpkin & Dess, 1996). Lee and Peterson (2001) focused on entrepreneurial orientation of firms as the main mechanism of the effect of PD on entrepreneurship. According to them, entrepreneurial orientation as a composite of firm proactiveness, risk-taking, competitive aggressiveness, innovativeness, and autonomy is negatively predicted by PD as a national cultural dimension, in a way that lower PD predicts higher entrepreneurial orientation.

Table 3 represents the summary of the empirical research with respect to the effect of national culture on the risk-taking behavior of firms.

Table 3: Findings on the Effects of National Culture on the Risk-taking behavior of Firms.

Cultural Dimension	Empirical Research	Findings
Uncertainty Avoidance	• Crossland & Hambrick (2007) • Crossland & Hambrick (2011) • Han et al. (2010) • Shane et al. (1995) • Makino and Neupert (2000) • Chen et al. (2017)	Firms in lower UA societies are more risk-seeking compared to those in higher UA societies.
Performance Orientation	• Calza et al. (2012) • Stevens & Dykes (2013)	Firms in higher PO societies are more risk-seeking compared to those in lower PO societies.
Power Distance	• Kreiser et al. (2010) • Mihet (2013) • Pedro et al. (2004) • Nakata & Sivakumar (1996) • Kanagaretnam et al. (2011)	Firms in lower PD societies are more risk-seeking compared to those in higher PD societies.
Future Orientation	• Hofstede (1991) • Geletkanycz (1997) • Lewellyin & Bao (2015) • Nakata & Sivakumar (1996) • Jang et al. (2016)	Firms in higher FO societies are more risk-seeking compared to those in lower FO societies.

2.8. National Culture, Risk-taking, and the BTOF

In spite of the abundance of research investigating the impact of national culture on the risk-taking behavior of firms, empirical studies investigating this relationship within the framework of the BTOF are scarce. To my knowledge, there have been only two studies that have partially addressed this research gap. O'Brien and David (2014) contended that positive performance feedback and risk relationship will not hold as the BTOF predicts for communitarian societies. Regarding Japan as an example of a communitarian society, the study found that although patterns of risk-taking in Japanese firms is similar to the US when

performance is below aspirations, positive performance feedback and risk relationship is not the same in Japan as it is in the US. The authors regarded the communitarian culture of Japan with reciprocity considerations inherent in it as the main reason for this contradiction. In communitarian societies, the parties are obligated to help one another in adverse conditions. Thus, as other stakeholders are obliged to help the firm when performance is low, the firm is also reciprocally obliged to reciprocate by paying back its network of stakeholders when its performance is high. It is argued that R&D investments that may lead to future growth opportunities are used as a means to pay forward their stakeholders. In another study, Lewellyn and Bao (2015) aimed to provide an explanation of how national cultural dimensions (future orientation, uncertainty avoidance, power distance, and institutional collectivism) influences R&D investments directly, as well as how they moderate the effect of outcompeting peers on R&D investments. The findings of the study indicated that national culture and outperforming peers interactively influence firms' R&D investments in the global paper products industry. These studies along with the calls for research to find the cultural boundaries and contingencies of performance feedback and risk relationship (Shinkle, 2012; Hoskisson et al., 2017) suggest emerging interest in finding these boundary conditions.

The review of the literature indicates that investigating the role of contingency factors (i.e., moderators) in determining how performance relative to aspirations may influence the risk-taking behavior of firms is a chunk of the BTOF literature. However, research addressing the cultural boundaries is scarce, that is, how the impact of performance relative to aspirations on the risk-taking behavior of firms may vary across cultures. More studies are needed to identify these cultural boundary conditions. Also, research has not yet identified how the impact of national culture may hold or vary when performance varies below versus above aspiration levels. The possibility of variance in the impact of culture when the focus of attention shifts from aspiration levels to bankruptcy and survival, and vice versa, is another issue that has not been studied. The hypotheses I develop in the next section are mainly aimed at identifying whether performance feedback and risk relationship may vary across cultures, whether the impact of culture is the same or different when performance is below versus above aspiration levels, and whether it varies with shift in focus of attention from aspirations to survival and bankruptcy levels. Thus, the study will be influential in responding to the

existing questions on the cultural boundaries of performance feedback and risk relationship. My hypotheses and theory come in the following section.

3. THEORY AND HYPOTHESES

In this section, I aim to theorize on how performance feedback and risk relationship may vary across different cultural environments. In doing so, start with restating the main arguments of the behavioral theory of the firm with respect to positive/negative performance feedback and risk relationship. Moving on, I theorize how national cultural dimensions may moderate the influence of performance decline below and performance rise above aspiration levels on the risk-taking behavior of firms. I also theorize on how the moderating role of culture may vary (i.e., increase or decrease) when the foci of attention of firms shift from aspiration to bankruptcy levels.

3.1. The Baseline Hypotheses

As the BTOF predicts, organizations are short-term oriented and uncertainty avoidant entities that engage in problemistic search aiming to find solutions to problems that they face within the vicinity of those problems, and previous choices and solutions they have chosen (Cyert & March, 1963). Later studies based on the BTOF related this performance feedback effect to risk-taking (Bromiley 1991, Singh 1986). A propensity to risk-taking comes as a result of problemistc search which, in turn, makes the firm aware of risky choices, increasing the firm's tendency to take risks (Park, 2007). The problem in the BTOF is defined as the failure to reach an aspiration level. The aspiration level may be set based on a comparison of the performance of the focal firm with its own previous performance (historical aspirations) or the performance of competitors mainly within the same industry (social aspirations). In any of the two cases, the distance of the firms' performance below their aspirations will urge them for more problemistic search and more risk-taking. I hypothesize that:

Hypothesis 1A: Below aspiration levels, the firm's performance below its aspiration levels will negatively influence the firm's risk-taking behavior, in a way that the lower the performance declines, the higher the degree of risk-taking.

Once firms' performance exceeds their aspirations, their motivation for problemistic search declines, and they become more risk-averse (Greve, 1998; Iyer & Miller, 2008; Arrfelt et al., 2013; Ref & Shapira, 2016). This argument is mainly based on Cyert and March's (1963) perception of firms as uncertainty avoidant and short-term oriented entities with bounded (imperfect) information that engage in search only when a problem occurs (i.e., performance goes below aspirations). They state that: "Search is motivated" (Cyert & March, 1963: 121). Search for an alternative or a choice that is to be chosen is motivated by a problem and depresses when the problem is solved. In confirmation of this thesis, some studies have found that problemistic search and risk-taking decrease when performance is above aspirations and with increase in performance above aspirations (e.g. Greve, 1998, 2003a, 2003b; Iyer and Miller, 2008; Audia et al., 2000; Wiseman and Bromiley, 1996; Ref & Shapira, 2016; Palmer & Wiseman, 1999; Bazerman, 1984; Bowman, 1980, 1982; Bromiley, 1991; Denrell, 2008; Fiegenbaum & Thomas, 1988; Kliger & Tsur, 2011; Lehman & Hahn, 2013; Lehner, 2000; March, 1991; Singh, 1986; Situmeang et al., 2016).

Based on the BTOF, these studies have provided a variety of reasons for their findings. In the study of investment behavior as a risk-taking response to performance relative to aspirations, Jung and Bansal (2009) and Arrfelt et al. (2013) argued that performance above aspirations yields higher satisfaction with performance and a feeling of success, as a result of which firms will be less motivated to make changes and take risks. Arrfelt et al. (2013) also reason that an increase in performance may bring about protection mindedness aimed at avoiding loss (Tversky & Kahneman, 1991) and protecting the status quo, encouraging decision makers to limit the chances of performance disruptions. Due to the satisfaction with the status quo and current routines, these current safe ways are preferred to more unknown and risky ones (Lehman & Hahn, 2013). Lim and McCann (2013), and Lin (2014) noted that performance rise above aspirations creates a kind of 'positive context' that may lead to anticipation of more upcoming success and gains and engender risk reduction. Although top performers follow strategies and behaviors that are important, they tend to follow those that

are less risky and do not upset the status quo (Markovitch et al., 2005). Thus, based on the BTOF, as performance increases above the firms' aspirations, their tendency to take more risk- and uncertainty-involving behaviors decreases mainly due to their satisfaction with the status quo and current performance, their optimism regarding the future high performance and success, and their perceptions regarding risk-taking as a behavior that may disrupt and upset the satisfactory status quo and performance. I hypothesize that:

Hypothesis 1B: Above aspiration levels, the firm's performance above its aspiration levels will negatively influence the firm's risk-taking behavior, in a way that the higher the performance rises, the lower the degree of risk-taking.

3.2. The Contingency Role of Culture

3.2.1. Uncertainty Avoidance (UA)

Characteristics: UA refers to the degree to which a society is tolerant of uncertainty (Hofstede, 1980). According to Hofstede (2001), Uncertainty-avoiding cultures shun ambiguous situations, searching for structure in their organizations, institutions, and relationships in order to increase interpretability and predictability of events. The Hofstede manual on the use of his Values Survey Module (VSM 94) describes UA as the extent to which the members of institutions and organizations within a society feel threatened by uncertain, unknown, ambiguous or unstructured situations (Hofstede, 2008). Similarly, in GLOBE, UA refers to the extent to which: (Barr et al., 2004) a society stresses orderliness and consistency, even at the expense of experimentation and innovation; (Ayoun & Moreno, 2008) most people lead highly structured lives, with few unexpected events; (Frijns et al., 2013) society has rules or laws to cover most situations (Arrfelt et al., 2013); and societal requirements and instructions are spelled out in detail, so citizens know what they are expected to do (House et al., 2004).

In high UA societies, uncertainty and ambiguity are highly perceived as a threat, and there is a lot of effort to create predictability and certainty in order to avoid ambiguous and uncertain situations. According to Hofstede (1984), stability, predictability, risk avoidance, resistance to change, strict control systems, and discomfort with unknown futures are of the main

characteristics of high UA societies. In these societies, individuals are socialized to beat the future mainly because future is regarded as essentially unpredictable, and low tolerance of future uncertainty makes individuals in these societies nervous, emotional, and anxious since future remains essentially unpredictable (Hofstede, 1983). As Hofstede (1994) notes, in these countries what is different is assumed to be dangerous. These societies use a variety of mechanisms such as establishing rules, structures, orderliness, consistency, and formal procedures to avoid uncertainty (Javidan, et al., 2006). Sully et al. (2004) note that in nations with high degrees of UA, people tend to be risk-averse, resistant to change, and intolerant of rule breaking. Thus, organizations in such societies will be relatively more interested in establishing rules, formalize strategies, and standard procedures.

However, societies weak in UA demonstrate risk-taking, tolerance to innovation and new ideas, willingness to change and adjust, ease with the unknown, and optimism about the future (Hofstede, 1984). These societies will socialize their members to accept uncertainty and ambiguity and not to get threatened by them (Hofstede, 1983). For them, what is different is not dangerous, but curious (Pan & David, 2000). Organizations in low UA societies such as the US have more propensity for opportunistic and risk-taking approaches and responses to the issues and problems they face, and prefer simpler processes and broader strategies (Javidan, et al., 2006). Better tolerance of uncertainty, inconsistent ideas and behavior, and change may, in turn, make it less problematic and threatful for these societies to indulge in more exploratory, change-oriented, and risky strategies.

UA, Aspiration Levels, and Risk-taking behavior: In spite of the fairly rich literature regarding the role of UA on the risk tolerance and risk-taking behavior (this literature is referred to in the literature review section), to date, there have not been any studies with regard to the effect of UA on the risk-taking behavior of firms from the BTOF perspective. The arguments and findings I referred to with regard to the role of UA as a national cultural dimension on the risk-taking behavior of firms challenge profoundly the universality of the arguments of the BTOF regarding the effect of aspiration levels on risk-taking. The BTOF argues that the firm's problemistic search and commitment to risk-taking increases when their performance falls below their historical or social aspirations, and decreases when performance rises above (Cyert & March, 1963; Bromiley 1991, Singh 1986). However, risk-

taking, uncertainty-involving strategies, and setting new directions have been shown to be relatively less tolerable in high UA societies compared to low UA ones. This intolerance can make managers in high UA societies less willing to take risks in response to performance declines. Lopes (1987) associates risk aversion with decision makers' motivational predispositions. In elaboration of this thesis, Audia and Greve (2006: 85) note that "in this view, most decision makers have a strong need for security and are motivated to avoid bad outcomes. When performance is below the aspiration level, they experience a conflict between the desire to improve the performance by making risky decisions and the desire to preserve a position of safety by avoiding additional losses". Given that risk-taking is less tolerated and more perceived as threat and danger (Hofstede, 1981) in high UA societies, the need for security and risk aversion as a motivational predisposition appears to hold more for high than low UA contexts even when firm performance falls below aspirations. That is, in high UA contexts, performance below aspirations may not be as predictive of risk-taking as in low UA contexts due to structural (relatively rigid control systems, norms, rules, and inertia to reduce uncertainty) and cognitive (a motivational predisposition for security, hence less tolerance of ambiguity and uncertainty) factors. Instead, solutions that avoid more uncertainty and involve less risk may be preferred.

The threat rigidity thesis (Staw et al., 1981) also lends support to my arguments. Perceiving risk-taking responses as threatful and dangerous when performance declines below aspirations and becoming more conservative as a result is more in line with the arguments of the threat rigidity thesis (rather than the BTOF). This theory posits that when there is a dissatisfaction with performance, performance below the standard levels will induce stress and anxiety that will, in turn, direct the attention of firms towards strategies and responses already used and experienced, rather than risk- and uncertainty-involving strategies (Staw et al., 1981; Miliken & Lant, 1991; Lohrke et al., 2006). As elaborated above, perceptions of risk-taking as threatening and stressful has been theoretically debated (Hofstede, 1980; House et al., 2004) and empirically shown (e.g., Weber et al., 1998; Weber & Hsee, 1998; Frijns et al., 2013; Crossland & Hambrick, 2007) as of the main characteristics of high UA societies as opposed to low UA societies. Based on the threat rigidity thesis (Staw et al., 1981) that assumes higher degrees of perceived threat and anxiety to be the main factors that

hinder risk-taking behavior and promote conservativeness, as well as an abundance of theoretical arguments and empirical findings which suggest that perceptions regarding risk-taking as threatful and dangerous are relatively higher in high UA societies, I posit that risk-taking responses to performance decline below aspirations will be perceived as more threatful and stressful for firms in relatively higher UA societies, as a result of which these firms may resort to less risk- and uncertainty-involving strategies. However, firms in low UA societies may not experience as much anxiety and stress associated with risk-taking, and their risk-taking behavior in response to performance decline below aspirations may be higher due to their higher tolerance of uncertainty and more willingness to take risks. Even if performance decline below aspirations promotes risk-taking, the degree to which firms from high UA societies go beyond their established routines and strategies, and engage in risk-taking may be lower due to their relatively higher perceptions of risk-taking and uncertainty as threatful and dangerous.

The main arguments of Cyert and March (1963) who assume firms as adaptive systems may also have implications for cross-cultural differences in the risk-taking behavior of firms in response to performance feedback. Assuming firms as adaptive learning systems, they posit that firms will be adaptive and learn from their past both in the process of searching for solutions and alternatives to solve particular problems they run into (e.g., performance decline below aspirations) and in the choices they make as solutions to those problems. One of their assumptions with respect to problemistic search is that "search is simple-minded"; that is, search will not tend to go beyond the neighborhood of the currently known alternatives and the current problem symptom (Cyert & March, 1963: 121). The same arguments are provided for the choices made as a result of problemistic search. The theory posits that firms will not go far beyond the alternatives and solutions that they have experienced in the recent past: "Typically, the procedures involved place a high premium on the alternatives that are similar to the alternatives chosen in the recent past by the firm or by other firms of which it is aware" (Cyert & March, 1963: 86). In support of these arguments, some researchers have empirically shown that the responses firms give to performance relative to their aspirations are influenced by their past experience in those responses. For instance, in studying market position change in response to performance relative to

aspirations, Greve (1998) showed that this strategy will be more likely when the firm has already experienced it before. Alexy et al. (2016) also showed that underperforming firms with previous patents will engage in more innovative activities when their performance is below aspirations compared to those without such patents, emphasizing that performance below aspirations will encourage innovative activities when firms have already obtained experience in such activities. Assuming that firms in higher UA societies have relatively less experience in risk-taking (based on the abundant empirical findings referred), I posit that the dependence of the search rules and choices made in response to organizational problems (i.e., performance decline below aspirations) on the history of the firm can differently influence the responses of firms in high versus low UA societies, in a way that firms in high UA societies will be less likely to go beyond their conservative and risk-averse approaches, whereas the more relative risk-seeking experience and history of firms in low UA societies will increase their likelihood of taking risks.

Thus, I posit that although performance relative to aspirations may negatively influence risk-taking, this negative influence will be still higher in low UA societies. In these societies, manager's relative freedom to break rules, champion innovations, set new directions, and take deviant actions (as a result of more social tolerance of uncertainty, ambiguity, and risk in these societies) makes it less threatful and more convenient for them to take more risks in response to performance turndowns relative to aspirations and failures, compared to those in high UA societies. Also, the different histories that firms in high versus low UA societies experience is the other factor that accounts for the variance in their responses to performance decline below aspirations with regard to risk-taking behavior. Thus, the degree of risk-taking in response to performance decline below aspirations is expected to be lower in high UA countries compared to low UA ones. I hypothesize that:

Hypothesis 2A: Below the aspiration levels, UA as a national cultural dimension will negatively moderate the influence of performance decline on the risk-taking behavior of firms, in a way that in societies with higher degrees of UA, the relationship will be weaker compared to those with lower degrees of UA.

The implications of UA as a national cultural dimension for the case of performance above aspirations appear to be different from those for performance below aspirations. As I have already referred to, unlike the sense of urgency and problematic state that is felt when performance falls farther below aspirations, performance rise above aspirations will yield a sense of satisfaction, hope with respect to future success and gains, and emphasis on maintaining but not disrupting the status quo, ultimately leading to lower degrees of risk-taking behavior (Iyer & Miller, 2008; Arrfelt et al., 2013; Ref & Shapira, 2016). I posit that the implications of these states for firms will be different for high and low UA societies. The high emphasis on preserving the status quo, avoiding risk-taking, and preference for building structures that avoid uncertainty and risk due to high perceptions of risk as threat and danger in high UA societies (Hofstede, 1980; House et al., 2004) will increase the tendency of firms in such societies to preserve the satisfactory status quo and not to engage in risk-taking to the extent possible when their performance is above the aspirations or when performance rises above aspirations.

The effects of performance distance above aspirations on the risk-taking behavior of firms in lower UA societies appears to be weaker. For firms in high UA contexts, the satisfaction with the status quo and unwillingness to disrupt it, along with perceptions of risk and uncertainty as threat may induce higher anxiety and stress in risk-taking, compared to the firms in lower UA contexts (Frijns et al., 2013). Firms in low UA societies that demonstrate risk-taking, tolerance to innovation and new ideas, willingness to change and adjustment, ease with the unknown, and optimism about the future (Hofstede, 1984), have been empirically shown to be more risk-seeking compared to those in high UA societies (e.g., Crossland & Hambrick, 2007; 2011; Shane et al, 1995; Makino & Neupert, 2000). This willingness to take risks may well interact with the positive consequences of the rise of performance above aspirations. The positive context and the hope generated with regard to future gains and success (Lim & McCann, 2013; Lin, 2014) are of the consequences that may positively interact with these firms' risk propensity and increase their likelihood of taking risk. On the other hand, the higher satisfaction with the status quo and improved performance, and tendency not to disrupt the current performance by avoiding more uncertainty and risk may well interact with the

perceptions of risk as danger and threat in high UA societies and reduce their risk-seeking responses.

In sum, I posit that performance rise above aspirations will reduce the degree of the risk-taking behavior of firms in high UA societies more than those of firms in lower UA societies since the relatively higher threat and danger perceived as a result of taking risks along with the satisfaction with the current performance and status quo will encourage firms in high UA cultures to take initiatives that preserve the satisfactory status quo. In these societies, the effect of positive context and hope with regard to possible future gains on risk-taking behavior are very likely to be counterfeited by perceptions of risk-taking behavior and uncertainty as threatful and dangerous that may lead to loss. For firms in lower UA contexts that are relatively more willing to take risks and improve the status quo, the positive context created as a result of performance rise above aspirations may lead these firms not to reduce their risk-taking behavior and not emphasize preserving the status quo as much as firms in high UA contexts do. Thus, I hypothesize that:

Hypothesis 2B: Above aspiration levels, UA as a national cultural dimension will positively moderate the influence of performance distance above aspiration levels on the firm's risk-taking behavior, in a way that in societies with higher degrees of UA, the relationship will be stronger compared to those with lower levels of UA.

3.2.2. Future Orientation (FO)

Future orientation (FO) as a national cultural dimension traces its roots back to the concept of time orientation presented by Kluckholn and Strodtbeck (1961). Initially labeled as long-term orientation, Hofstede (1991) added this dimension to his other four cultural dimensions he had explored in his IBM studies in an effort to find dimensions that may be particularly relevant to Asia. He defined the concept as that characterized by patience, perseverance, respect for one's elders and ancestors, and a sense of obedience and duty toward the larger good. Long-term orientation was studied under the label of FO in GLOBE (Ashkanasy et al., 2004). In GLOBE terms, FO refers to the extent to which individuals in a society engage in future-oriented activities such as delaying gratification, planning, and investing in the future

(Javidan et al., 2006). It is the extent to which organizations believe their current actions will influence their future, are engaged in long-term planning, and look far into the future (Ashkanasy et al, 2004; Javidan et al., 2006). These cultures have a strong capability and willingness to imagine future contingencies, formulate future goal states, and seek to achieve goals and develop strategies for meeting their future aspirations (Ashkanasy et al, 2004).

In their FO chapter of the GLOBE study, Ashkanasy et al. (2004) discussed FO compared to present and past orientation. They argued that lower levels of FO induce societies or organizations to focus their attention on past or immediate concerns. In cultures that are more present-oriented, enjoying moment, spontaneity, freedom from past worries, and lack of willingness for planning are regarded as the main characteristics (Keough et al., 1999). Unlike present orientation, past orientation holds one feature in common with FO, in that both regulate and correct current behavior; FO directs attention to future goals and aspirations, whereas past orientation directs attention to past learning, failures, and successes (Ashkanasy et al., 2004). More past-oriented societies and cultures have stronger tendencies for showing appreciation for prior learning, memories, obligations, and traditions (Keough et al., 1999). Regulation of behavior and plans are based more on the past than the future. Status quo will be maintained if the past has been favorable, and there will be a strong tendency for change and search when past has been unfavorable, making all-around efforts to develop and realize a new vision and state of the future (Ashkanasy et al., 2004). The societies low in FO will mainly prefer short fixes rather than long-term problem-solving responses in their effort to improve the past or present performance turndowns (Liu et al., 2014). This is exactly convergent with the contentions of the BTOF theory on firm behavior in relation to its historical performance and present performance relative to current competitors, that is, firms tend to engage in problemistic search aiming to change the status quo when their performance is below their historical/social aspiration levels and are quite reluctant for search and change when their performance is above their aspiration levels. However, in high FO societies, individuals and collectives prefer long-term problem-solving and seek to evaluate plans primarily in terms of anticipated future benefits, going beyond their traditions, rather than short fixes to arising problems (Liu et al., 2014).

BTOF literature has mainly associated the high search, innovation, and risk-taking to performance below aspirations, and slack at the time of high performance above aspirations. GLOBE arguments regarding FO of societies and its implications to behaviors of individuals and collectives within them challenge the BTOF, positing that future-oriented collectives will not focus on past and present as much as they will on future. Thus, for firms in high future-oriented societies, past failures and performance below aspiration levels may not catch their focus of attention as much as do future contingencies and predictions. Thus, I posit that FO as a national cultural dimension can influence the way firms interpret their performance relative to their aspirations which are based on past or present contingencies.

Organizations interpret their aspiration–performance feedback based on different reference points (e.g. survival, slack) and reference groups (e.g. social comparison). Given the nature of FO discussed above, I argue that FO may influence the attention of the firm on its own historical/social aspirations. Labianca et al.'s (2009) categorization of social aspirations under the two main categories of competitive aspirations and striving aspirations highly support my argument. Striving comparison helps organizations determine how they should act relative to their imagined future (Labianca and Fairbank, 2005), and the firms compare their current performance against the performance of organizations to which they strive to be like in the *future* (Labiance et al., 2009). Firms engaging in striving comparisons mainly make comparisons of what they are today with what they would like to become in the future; they create an ideal persona (Lin & Tsai, 2006) and set challenging and motivating goals and plans to reach that ideal persona. On the other hand, competitive comparison mainly focuses on the present in a way that firms engaging in competitive comparison compare their current performance with those of their current competitors (rather than future imagined organizations). And historical comparison mainly emphasizes the extent to which an organization controls its behavior and plans based on its own past performance. FO as a national cultural dimension can direct the focus of attention on striving, competitive, or historical aspirations; in a way that high FO may deviate attention of firms from historical and competitive aspirations that mainly concern with the firm's past performance and performance relative to the present competitors' (Cyert & March, 1963), and divert it on striving aspirations that are future-based.

Based on the argument I made regarding the role of FO on organizational cognition and attention, I posit that FO may also influence the degree to which performance relative to aspirations influence risk-taking of the firm. Past-oriented collectives and firms tend to maintain the status quo when favorable experiences dominate in the past, prefer not to repeat their unfavorable past experiences, and thus make all-around efforts to develop and realize a new vision and state of the future, grounded in some ideals pertaining to the past. However, societies high in FO tend to have long-term horizons and systematic planning; they are relatively more risk-prone and opportunity seeking (Keough et al., 1999). They may lack appreciation of situational realities due to neglecting personal and social relationships and interactions. Problem-solving approaches in these societies are long-term oriented rather than quick fixes (Javidan et al., 2006).

The role attributed to FO here may also be attributed to findings of Hofstede and Bond (1988) who showed FO as the heart of Confucian dynamism which they referred to as a dynamic, future-oriented mentality. They mainly developed a measure of Confucian dynamism which represented East Asian and Japanese societies and argued that it predicts economic growth. Comparing these societies with Anglo, Latin American, and Latin European countries, Hofstede, Van Deusen, Mueller, Charles, and The Business Goals Network (2002) reported that MBA students from the Anglo, Latin American, and Latin European countries focused more on the same year's year's profit. However, business tycoons from China, India, and Hong Kong put greater emphasis on profits in ten years. In a more related study on managers from the US and Japan that are known as low versus high FO societies respectively, Beldona et al. (1998) also found that the time horizon of Japanese managers is longer than that of American managers. Thus, Anglo societies are presented as short-term and Confucians are presented as long-term oriented societies. One of the main themes of the BTOF theory of Cyert and March (1963) was that firms do not tend to make long-term planning, engage in short-term problemistic search, and are uncertainty avoidant. Organizations are more after short-run feedback rather than long-run anticipation of events in the distant future. This, in turn, makes them sensitive to short-term performance falls below aspiration levels and leads to search and risk-taking. One of the reasons why a great many of empirical research has confirmed this thesis may be that many of these studies (more than 80% according to my

review of the literature) have been conducted in Anglo and European societies particularly in the US. Studies in societies with higher degrees of FO may hold different results at least with regard to risk-taking in responses to historical/social aspirations. Based on short-term focus of attention, Anglo societies such as the US may be more sensitive to the short-term performance downturns and hence will engage in more problem-oriented search compared to firms in future-oriented contexts, who are more likely to work within the framework of long-term plans, prefer long-term problem-solving, and evaluate plans and issues in terms of their future values. This can, in turn, influence the degree of relationship between performance below historical/social aspirations and risk-taking behavior. Since FO directs the firm's focus of attention to future, firms in high FO societies may be less likely to take risks in response to short-term performance turndowns associated with the present (social aspirations) or past (historical aspirations).

I posit that FO as a national cultural dimension which directs the focus of attention of firms towards the future will, in turn, make firms less sensitive to performance below historical or social aspirations that are past- and present-based in nature (Labianca et al., 2009). I hypothesize that:

Hypothesis 3A: Below aspiration levels, FO as a national cultural dimension will negatively moderate the influence of performance decline on the firm's risk-taking behavior, in a way that in societies with higher degrees of FO, the relationship will be weaker compared to those with lower levels of FO.

With respect to performance rise above aspirations, I follow a similar reasoning to the one I did for the case of performance decline below aspiration levels. FO societies are recognized as those with little attention to past and present contingencies, but more concerned about future ones (House et al., 2004; Javidan et al., 2006). I also discussed these societies to be more engaged in such future-oriented activities as long-term planning, investing in future (Javidan et al., 2006), developing strategies to meet their future aspirations (Javidan et al., 2004), preferring long-term problem-solving, seeking to evaluate plans primarily in terms of anticipated future benefits, and going beyond their traditions, rather than seeking short fixes to arising problems (Liu et al., 2014).

Having argued that these characteristics may be responsible for diverting their focus of attention from past or current performance declines relative to aspirations into future and engagement in more future-oriented planning and investment, it appears valid to argue that firms in these societies will not be as attentive to recent performance rise above aspirations as those in past or present-oriented societies. As a result, they are relatively less likely to make changes in their risk-taking behavior due to recent performance rise above their aspiration levels. Furthermore, empirical research has shown that higher FO in the national level is associated with higher degrees of risk-taking behavior in the firm level (Lewellyin & Bao, 2015; Nakata & Sivakumar, 1996; Jang et al, 2016). Relatively more tendency to take risk and less attention to recent performance fluctuations may reduce the degree of risk-taking behavior in response to performance rise above aspirations. I hypothesize that:

Hypothesis 3B: Above aspiration levels, FO as a national cultural dimension will negatively moderate the influence of performance distance above aspiration levels on the firm's risk-taking behavior, in a way that in societies with higher degrees of FO, the relationship will be weaker compared to those with lower levels of FO.

3.2.3. Performance Orientation (PO)

Characteristics: PO was first studied as a national cultural dimension in the GLOBE project as one of the three extensions of Hofstede's (1980) masculinity dimension (House et al., 2004). Unlike other national cultural dimensions such as PD and UA, this dimension has not been as extensively studied at the national level. House et al. (2004: 239) defined PO as "the extent to which a community encourages and rewards innovation, high standards, and performance improvement". As a national cultural dimension, they attribute two main dimensions to PO. One is external adaptation which mainly includes such characteristics as emphasis on the locus of control (internal versus external), the relationship between human and nature or external environment (which one is in control of the other), and time and sense of urgency. The second dimension is internal integration that includes the extent to which a society values tasks, job, assignment, accomplishment, performance improvement, setting challenging goals, etc. In this section, I aim to elaborate on these and explain how PO is related to risk-taking and aspiration levels.

Societies' perception of the relationship between human and nature could be classified under three main views including subjugation, harmony, and dominance (Schein, 1992). The subjugation view is associated with the assumption that humans are dominated by nature and their external environment, and their acts and behavior will not influence their future to a significant extent. Harmony is characterized by help and cooperation. And dominance reflects the extent to which one's own actions are believed to influence the outcomes. House et al. (2004) argue that this third view is more a characteristic of high PO societies. In line with dominance, societies with high PO also value internal locus of control which is founded on the view of dominance and reflects the assumption that all happenings to one are the outcomes of one's own doing. The outcome of dominance view and internal locus of control for high PO societies is that they promote willingness for performance improvement, setting challenging goals, motivation to be better than others and defeat rivals (and at the same time self-confidence to be able to do so), and competitiveness. The last element that House et al. (2004) related to external adaptation dimension of PO is time urgency (Kluckhohn & Strodtbeck, 1961; Trompenaars & HampdenTurner, 1998). They posit that societies high in PO will have a stronger sense of time urgency, that is, high PO societies view time as limited and sequential that is a valuable and nonrenewable commodity. Thus, they are willing to have a sense of urgency in doing their tasks, and making decisions and plans, compared to societies with relatively lower degrees of PO.

The internal integration dimension is mainly associated with valuing job, responsibility, improvement, and performance. Societies with relatively high PO value education and learning, training, taking initiative, assertiveness, competitiveness, materialism, development, and advancement; set demanding goals and targets; are results-driven and reward achievement; set high performance targets; are motivated by profits; believe that all obstacles can be overcome by hard work; and prefer explicit and direct communications. On the other hand, societies low in PO value harmony, loyalty, family and social relationships, and traditions; are less profit-oriented and regard profit orientation and materialism as socially inappropriate and unacceptable; are more resistant against criticism and feedback; and do not put as much emphasis on and reward achievement and new initiatives (House et al., 2004; Javidan, 2004; Hofstede and Bond, 1988; Javidan, 2004; Trompenaars and

Hampden-Turner, 1998; House & Javidan, 2004; Van et al., 2010). These characteristics mainly associated with the internal integration suggest that this dimension and external adaptation are tightly interwoven and interdependent. Emphasis on dominance, internal locus of control, and time urgency in relatively high PO societies promotes such characteristics as taking initiatives, assertiveness, achievement orientation, hard work, competition, and valuing challenging and high-performance targets.

Emphasizing and rewarding taking initiatives, challenging targets, hard work, and achievement may, in turn, increase the willingness and motivation of firms in high PO societies for continuous efforts aimed at better and higher performance. This argument is also implied by GLOBE researchers (House et al., 2004). They regard McClelland's (1961) concept of need for achievement as one of the characteristics of high PO societies. McClelland defines need for achievement as the need to continually do better due to the tendency to gain pleasure from achievement. Some empirical research has also confirmed the argument that higher degrees of PO promotes higher performance. For instance, focusing on the goal-directed behavior in high PO cultures, Naor et al. (2010) found that organizations in these cultures show relatively higher performance since they encourage employees for hard work and better outcomes. In a more recent study, Yayla-Küllü et al. (2015) found that firms in high PO cultures are more successful in the design and execution of structural, infrastructural, and service supply chain elements than those in low PO ones.

PO, Aspiration levels, and Risk-taking: The existing literature on the role of PO on the risk-taking behavior of firms shows that firms in higher PO cultures prefer higher levels of risk-taking (Calza et al., 2012; Stevens & Dykes, 2013). However, considering the relationship between PO at the national level and the risk-taking behavior of firms form the BTOF perspective provides another scenario. Like the previously hypothesized cultural dimensions, PO is also likely to influence the relationship between performance decline below aspirations and the risk-taking behavior of firms. As mentioned above, firms in high PO societies are motivated to improve their performance, be competitive and perform better than rivals, set challenging goals, and value achievement and high performance (House et al., 2004). These characteristics may, in turn, increase the sensitivity of firms for variation in their performance. Emphasizing high profits, high performance, and material rewards can

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influence the firms' perceptions of their performance decline below historical aspirations in a way that firms in higher PO contexts may be more aroused to take initiatives in order to bring their performance back to their desired aspirations based on their performance history. Emphasis on competition and being better than rivals will also influence the perceptions of performance decline below social aspirations in a way that falling behind competitors may be less tolerable for firms in high PO countries than those in lower PO ones. Thus, such characteristics as emphasis on profitability, high performance, continuous betterment, as well as competitiveness and being better than rivals in high PO societies are sufficient to argue that performance decline below historical and social aspirations will be more disturbing and arousing for firms in high PO societies than those in low PO ones that are more characterized with not as much value and emphasis on profits, performance, and competition (House et al., 2004; Javidan, 2004). However, these characteristics do not appear sufficient to argue that risk-taking behavior as a response to negative performance feedback in these societies will be different.

With regard to the risk-taking behavior, I make two arguments. First, I posit that in response to performance decline below aspirations, firms in societies with higher PO will perceive performance decline below aspirations and riskier responses as less threatful and stressful than those in lower PO societies based on the higher levels of can-do-spirit that may make firms more aggressive and risk-embracing in these societies (Nam et al., 2014), as well as higher levels of confidence that risks and threats can be overcome with hard work and persistence (Javidan, 2004). This argument has been implied by the BTOF (Cyert and March, 1963) and shown in empirical research. Cyert and March (1963) argue that the problemistic search process and the alternatives selected as a result of problemistic search in response to organizational problems will be based on the expectations of their instrumentality and feasibility. They posit that firms will choose solutions to problems based on their hopes and positive framing with respect to their ability to do and fulfill these solutions. Supporting this argument, Bateman and Zeithaml (1989) empirically showed that expectations of the gains or losses associated with a particular strategy (in this particular study: investment in response to performance relative to aspirations) will influence adoption and implementation of that strategy, in a way that expectations of gain will strengthen the positive impact of performance

decline below aspirations on investments, and expectations of loss will weaken this relationship. These findings indicate that when performance falls below aspirations, firms in higher PO societies may be more risk-seeking in their problemistic search and the responses they choose due to their more positive expectations of the outcomes of risk-taking behaviors. That is, when their performance falls below aspirations, firms from high PO societies are more likely to adopt riskier strategies and responses due to their can-do-spirit and more self-confidence with respect to fulfilling these risk-involving responses. Based on these arguments, I posit that high emphasis on profitability, performance, competition, and outcompeting rivals along with the can-do-spirit and positive expectations in high PO societies may increase the sensitivity of firms to performance decline below aspirations and their willingness to take more risks in response to their performance decline. In these cultures, risk-taking in response to performance decline will be perceived as more necessary and at the same time less threatful.

My second argument is based on the learning perspective similar to what I argued in the UA section. Considering Cyert and March's (1963) assumption of firms as learning systems, positing that firms in high PO societies will be more risk-seeking in response to their performance decline below aspirations appears theoretically valid. Firms in high PO societies have been argued to emphasize innovation, high performance, outcompeting rivals, hard work, and prefer dominance rather than harmony or subjugation (House et al., 2004). As a result of these characteristics, the empirical evidence also shows that PO as a national cultural dimension can predict the risk-taking behavior of firms (e.g., Calza et al., 2012; Stevens and Dykes, 2013). Assuming that firms in high PO contexts are motivated for risk-taking based on their willingness to dominate in their competition, as well as their optimism in risk-taking, I argue that these firms will opt for more ambitious and risk-involving initiatives when their performance falls below aspirations for two main reasons. The first is based on Cyert and March's argument that firms will choose solutions most available to them, that is, they will choose those that they are currently experiencing or have already experienced. Firms in high PO cultures enjoy more routines and experiences that support risk-involving initiatives. Thus, such risk-involving options will be more available for them as choices to pick from to reduce their aspiration gaps, than for firms in low PO societies. Second, high social values and

emphases on innovation and new initiatives may bring more innovative and risky options to their consciousness and attention when searching for solutions. As Cyert and march (1963) indicate, in addition to goals and search rules, firms also change their focus of attention based on their experience: "We focus on adaptation with respect to three different phases of the decision process: adaptation of goals, adaptation in attention rules, and adaptation in search rules. I assume that organizations change their goals, shift their attention, and revise their procedures for search as a function of their experience" (Cyert & March, 1963: 123). Thus, based on Cyert and March's learning perspective, I posit that firms in high PO contexts are more likely to choose risk-involving initiatives in response to their negative attainment discrepancy, since existence of supporting routines, prior experience, and cultural values makes these initiatives more available to the attention and access of firms in these societies, compared to firms in lower PO societies.

In short, I argue that high motivation for dominance, high performance and profitability, and outcompeting rivals may make firms more sensitive to performance decline below aspirations in societies with higher degrees of PO. In addition to the high sensitivity, relatively higher can-do-spirit, more self-confidence and optimism regarding outcomes of risk-involving strategies, as well as existence of experience in risk-taking, social values, and firm history relatively more supportive of risk-taking initiatives can bring risk-involving initiatives more to the attention and access of firms and make them more risk-seeking in these societies when their performance falls behind their own historical performance or that of their competitors. I hypothesize that:

Hypothesis 4A: Below aspiration levels, PO as a national cultural dimension will positively moderate the influence of performance decline below aspiration levels on the risk-taking behavior of firms, in a way that in countries with higher degrees of PO the relationship will be stronger compared to those with lower degrees of PO.

With respect to performance above aspirations, I posit that risk-taking response to performance feedback may also be different across low versus high PO societies. I argue that a collection of characteristics associated with high PO societies and firms within them may make these firms more risk-seeking compared to those in lower PO societies when

performance rises above aspirations. As I mentioned above, societies with high PO value taking initiatives, setting high and challenging performance standards, achievement, high profits, and competition. These characteristics and values reduce the likelihood that firms may be satisfied with incremental improvements in performance above aspirations and reduce risk-taking, but they are likely to search for even higher performance. In addition, the association of PO with McClelland's (1961) achievement orientation (House et al., 2004) that is defined as need to continually do better further supports the argument that firms in high PO contexts may not be satisfied with performance improvement above aspirations, but continually try to improve their performance and profitability by doing additional search and taking additional risks. Performance improvement above aspirations with the positive context and hope for future gains that it yields, along with the need for achievement, can-do-spirit, and relatively higher confidence in ability to overcome the future challenges inherent in high PO societies may interactively promote rather than reduce risk-taking and more exploratory search in firms within these societies.

I posit that the prediction of the BTOF with respect to the negative impact of performance rise above aspirations on risk-taking behavior may hold for firms in lower PO societies. Unlike high PO societies, valuing harmony, loyalty, family and social relationships, traditions; less profit orientation and regarding profit orientation and materialism as socially inappropriate and unacceptable; more resistance against criticism and feedback; and not as much emphasis on and reward for achievement and new initiatives in lower PO cultures may promote being risk-averse when performance above aspirations increases. I argue that firms in these societies will not be as ambitious as those in higher PO societies to take additional risks and continually improve with their performance rising above aspirations, but they will be more willing to preserve the status quo and not take initiatives that may disrupt the current satisfactory performance. Relatively higher motivation for growth, need for achievement, and self-confidence to take risks would encourage firms in higher PO societies to take even more risks when their performance rises above their aspiration levels. As a result, their risk reduction in response to performance rise above aspirations is expected to be relatively lower compared to those in lower PO societies. Thus, I hypothesize that:

Hypothesis 4B: Above the aspiration levels, PO as a national cultural dimension will negatively moderate the influence of performance decline below aspiration levels on the risk-taking behavior of firms, in a way that in countries with higher levels of PO the relationship will be weaker compared to those with lower levels of PO.

3.2.4. Power Distance (PD)

Characteristics: Coined by Mulder (1976: 90), he defined the term PD as "the degree of inequality in power between a less powerful Individual (I) and a more powerful Other (O), in which I and O belong to the same (loosely or tightly knit) social system". Hofstede (1980) and GLOBE study (House et al., 2004) were the first to introduce the concept as a national cultural dimension. Emphasizing inequality as the fundamental theme of PD, Hofstede conceptualized PD as the degree to which a society gives in to the unequal distribution of power in institutional and organizational environments. In line with this definition, GLOBE also provides a similar definition, identifying PD as the extent to which members of a society or an organization expect and accept inequality of power.

In high PD contexts, some individuals are believed to have high and more or less unquestionable power, who are unattainable by those with lower power; however, in low PD contexts, individuals are evaluated and respected based on what they have to offer (not solely their power, wealth, or status), and all members benefit from access to upward mobility both in class and job (House et al., 2004). In contexts with high PD, subordinates are more likely to endorse the values of conformity, obedience, and dependence compared to those in relatively lower PD contexts. As a result, in high PD contexts, the less powerful are more afraid to challenge, criticize, and question the decisions and opinions of superiors and tend to give priority to them (House et al., 2004; Parnell & Hatem, 1999; Eroglu & Piçak, 2011; De Meulenaer et al., 2017; Botero & Van Dyne, 2009). These characteristics, in turn, promote different leadership styles as well as organizational structures in high versus low PD societies. Leadership styles in high PD countries have been shown to be more autocratic, hierarchical, and centralized; whereas low PD countries enjoy more participative leadership, encourage decentralization and consensus-building, and seek to minimize differences

between occupational roles (House et al., 2004; Dimitratos et al., 2011; Newman & Nollen, 1996; Hofstede, 1983; Stevens & Dykes, 2013).

PD, Aspiration Levels, and Risk-taking: Hofstede (1980) notes that high PD societies tend to maintain current status quo and social order, whereas in lower PD societies, there is relatively higher emphasis on bettering position and social mobility that are, in turn, yielded on the basis of more structural flexibility and decentralization. Due to the more flexibility and mobility experienced, Shane (1993) argues that managers in lower PD societies are more willing to take actions to improve the industry standing of their firms. One reason for this may be that more flexibility, decentralization, and participation remove such hurdles for change and mobility as rigidity and resistance against change, leaving greater latitude for managers to make changes and take risky initiatives. In support of this argument, Hofstede (1980) and Geletkanycz (1997) also noted that emphasis on preserving the current social order, in turn, promotes hierarchy and centralization in high PD societies. Hage and Aikon (1970) argued that higher centralization, hierarchy, and bureaucratic tendencies put a great barrier on the path to change and innovation. On the other hand, firms from low PD societies tend to value more flexible organizational structures and less concentration on decision making authority, authority and control occurring at lower levels in the organizational hierarchy, less centralization of knowledge, and more lateral communication (Abbey and Dickson, 1983; Keller and Holland; Lewellyn, 2015). Thus, higher levels of PD in a society promote more conservatism and emphasis on status quo, which, in turn, lead to structures that may hinder change and risk-taking. As Thompson (1967) notes, there is less freedom and autonomy to make bold decisions in high PD cultures due to high levels of conservatism and control in organizations.

In high PD societies, rigid, centralized, and autocratic structures (House et al., 2004; Dimitratos et al., 2011; Newman & Nollen, 1996; Hofstede, 1983; Stevens & Dykes, 2013); emphasis on regulation and conformance and limits to free flow of information (Jones & Herbert, 2000; Westwood & Low, 2003); and tendency of firms to preserve the current social order and status quo (Geletkanycz, 1997) may hinder the risk-taking initiatives of firms in response to performance downturns. Firms in high PD societies are not as much willing to engage in aggressive, risky, entrepreneurial, and ground-breaking strategies as those in low

PD societies (Lee & Peterson, 2001). Thus, in high PD societies, when performance falls below aspirations, organizations may have relatively more challenges in initiating and launching exploratory strategies, and responses that involve risk and uncertain outcomes for two main reasons.

First, the rigidity in organizational structures and norms will make it difficult to initiate change, exploration, and risk-involving initiatives that, in turn, require more flexible and decentralized structures and high participation across all levels of organization. Considering new product development as an example of established risk-taking behavior in the BTOF research, Nakata & Sivakumar (1996) consider the initiation of this strategy more likely in low PD societies due to more diverse individual contribution of both ideas and efforts regardless of hierarchical levels of the contributors and decentralization that favors more empowerment and more direct access to resources of the organization to aid new product development (Garret et al., 2006). Considering new product development as one of the established responses to performance decline below aspirations (e.g., Gaba & Joseph, 2013; Simon & Houton, 2003, Wally & Fong, 2003), the findings of Nakata and Sivakumar (1996) indicate that this risk-taking response to performance decline may face challenges in high PD societies. The issue of the effect of structure of firms on the choices that they make in response to performance relative to aspirations is also addressed by Cyert and March (1963), arguing that the choices made and the alternatives selected will be highly dependent on the structure of firms. They note that: "organizations consider only a limited number of decision alternatives. The set of alternatives considered depends on some features of organizational structure and on the locus of search responsibility in the organization" (Cyer & March, 1963: 83). Based on these arguments of the BTOF, and with respect to the structural characteristics of the firms in high PD societies that have been shown as relatively more rigid, centralized, and inflexible, I argue that their responses to performance shortfalls may not be as risk-involving as the responses of those in low PD societies, because the structural characteristics of firms in these high PD societies will reduce their ability to react to performance decline by going beyond current routines, exploration, and risk-taking that require flexible structures. Thus, risk-involving reactions to performance decline may be hindered by the rigid and inflexible structures of organizations in high PD societies.

Second, the arguments I made with respect to the assumptions of the BTOF of firms as adaptive learning systems in the previous sections may also apply here. The main argument was that in the BTOF, firms are regarded as learning systems that depend on their own history when doing problemistic search and selecting solutions in response to the feedback of their performance relative to their aspirations. The choices they make and the way they conduct the problemistic search will not go beyond the previously experienced or currently used ones unless the current ways are not influential anymore (Cyert & March, 1963). Based on these arguments, I posit that firms in lower PD societies are more likely to choose risk-involving responses to performance decline below aspirations, since these firms have been empirically shown as more risk-seeking than those in higher PD societies (Shane, 1993; Kreiser et al., 2010; Mihet, 2013; Ashraf et al., 2016; Lewellyn, 2015; Nakata & Sivakumar, 1996; Bachmann et al., 2016). Higher experience in a particular strategy or solution makes it more available to the attention and access of firms in their problemistic search (Cyert & March, 1963), and since firms in lower PD cultures are expected to have adopted relatively more risk-involving strategies, such strategies will be more available to their attention and access during their problemistic search when their performance declines below their aspirations.

More experience in and higher structural support for risk-involving initiatives may also increase perceptions of their feasibility and positive framing with respect to these strategies. Cyert and March (1963) argued that the solutions and strategies selected will be based on the expectations of their instrumentality and feasibility, and Bateman and Zeithaml (1989) empirically showed that expectations of the gains or losses associated with a particular strategy (in this particular study: investment in response to performance relative to aspirations) will influence adoption and implementation of that strategy. Thus, I argue that when performance falls below aspirations, firms in lower PD societies are expected to find risk-involving strategies more feasible and doable than those in higher PD societies since they have had more experience with these strategies and enjoy higher structural support for them. However, firms in higher PD societies may not have as much positive framing about risk-involving strategies since they have not had as much experience in such strategies and their rigid and centralized structures hinder such a positive framing with respect to uncertainty and risk-involving responses. Thus, their likelihood of adopting risk-involving

responses to performance decline below aspirations is relatively lower than firms in low PD societies.

Cyert and March's (1963) presentation of firms as learning systems indicates that firms will face challenges in their problemistic search and developing strategies for which they have not developed sufficient capabilities, knowledge, experience, and infrastructure throughout the history of the firm. The hierarchical, autocratic, and centralized structures that emphasize maintaining the status quo, hindering change and innovation in high PD societies potentially reduce the experience of firms in innovation, exploratory search, and risk-taking. However, flexibility, decentralization, participatory leadership structures, higher tendency for exploratory strategies and bettering the position of the firm within their industry regardless of performance below or above aspiration levels can potentially increase the experience and capabilities of firms in exploration and risk-taking. More capability, knowledge, and experience in exploration and risk-taking could reduce the challenges and hurdles of firms in developing exploratory strategies and risk-taking behaviors when their performance falls below historical/social aspirations. The experience and capability gained in risk-taking will increase the firms' self-confidence and reduce the probability of perceived and realized loss as a result of taking risks. However, distance from risk-taking and inflexibility can, in turn, reduce the ability, experience and knowledge, and positive framing of firms in taking risk even when their performance has fallen below historical/social aspirations.

Thus, assuming that firms in low PD societies have relatively better developed the necessary experience, capabilities, knowledge, structure and infrastructure for proactive and risky strategies, they are more likely to take risk-involving initiatives when their performance falls below historical/social aspirations than firms in high PD societies. As a result of the supporting structure, experience, and capabilities, risk- and uncertainty-involving responses to negative performance feedback may not be perceived as threatening to firms in low PD societies as to those in higher PD ones. Higher experience and capability in risk-taking along with the supporting structures will make risk-involving behaviors more available to the attention and access of firms in lower PD societies. I hypothesize that:

Hypothesis 5A: Below aspiration levels, PD as a national cultural dimension will negatively moderate the influence of performance decline on the risk-taking behavior of firms, in a way that in societies with higher PD, the relationship will be weaker compared to those in low PD societies.

I discussed firms in higher PD cultures as those with relatively more rigid and inflexible structures that create lots of hurdles for risk-taking and change when performance falls below aspirations. Also, I argued that firms in higher PD cultures may not find more risk-involving strategies and solutions available to their attention and access due to their lack of ability and experience in these strategies. For the case of performance above aspirations, the effect of PD as a cultural dimension appears to be similar to that of performance decline below aspirations. Performance rise above aspirations may reduce the tendency of firms to take risks more in high PD societies than in lower ones since the tendency for maintaining the status quo in these societies is higher, and the structural rigidity and high centralization may make it difficult for such firms to take risks even if they are willing to do so, whereas more flexibility and experience in risk-taking may facilitate risk-taking for firms in lower PD societies. Performance rise above aspirations, in turn, increases satisfaction with the status quo and performance, tendency to keep the status quo and not disrupt current performance and routines (Arrfelt et al., 2013; Lim & McCann, 2013; Jung & Bansal, 2009; Lin, 2014). Such an effect may be stronger for firms in high PD societies since firms in these societies have been shown to possess higher tendency for maintaining the status quo, prefer fortify-and-defend-strategies, and have less tendency to engage in risk-taking (Hofstede, 1980; Shane, 1993; Kreiser et al., 2001), than for firms in lower PD cultures that have been shown as more willing to take risk-involving strategies and entrepreneurial orientation (Kreiser et al., 2010; Shane, 1993; Lee & Peterson, 2001). Satisfaction with high performance along with the high rigidity may make it less likely for firms in high PD societies to take risks when their performance rises above their aspirations, compared to firms in lower PD societies who possess more tendency for risk and aggressiveness, and enjoy supporting structures to do so.

Thus, I build my hypotheses based on two main differences between firms in high versus low PD societies. The first difference is associated with the role of organizational structures in these societies (House et al., 2004; Dimitratos et al., 2011; Newman & Nollen, 1996;

Hofstede, 1983; Stevens & Dykes, 2013). The high centralization, control, tendency for bureaucracy, and rigidity will make it difficult for these organizations to adopt risk-involving strategies (Thompson, 1967; Hage & Aikon, 1970; Shane, 1993). This effect will be more significant when performance rises above aspiration levels, in which case firms in high PD cultures will feel even less need for taking risks due to higher degrees of satisfaction with the current performance and rigid structures. The second difference is associated with the emphasis of firms on maintaining the status quo versus tendency to better position within the industry hierarchy. Based on the findings of Shane (1993) that higher rigidity and centralization make firms in high PD societies less willing to take risks, innovate, and change, I posit that the satisfaction as a result of performance rise above aspirations will increase this tendency even more. Thus, I hypothesize that:

Hypothesis 5B: Above aspiration levels, PD as a national cultural dimension will positively moderate the influence of performance decline on the risk-taking behavior of firms, in a way that in societies with higher PD, the relationship will be stronger compared to those in lower PD societies.

3.2.5. Culture and Distance from bankruptcy

The BTOF research has conceded to the main arguments of the threat rigidity thesis (Staw et al., 1981) when bankruptcy and threat of survival steps in. The main contention of the threat rigidity thesis with respect to performance turndown and risk-taking is that performance fall below aspirations will induce stress, anxiety, and threat that will, in turn, lead to restrictions on information processing and tightening of control, hence reducing the likelihood of the risk-taking behavior of firms (Staw et al., 1981; Miller & Chen, 2004). Some of the studies investigating the risk-taking behavior of firms with regard to performance relative to aspirations posit that although firms are willing to take more risks with the increase of performance distance below aspirations, the scenario will change once performance falls far below aspirations, in which case the focus of attention will be diverted from aspirations to threats of survival and bankruptcy (e.g., March and Shapira; 1987, 1992; Ref & Shapira, 2016; Chen & Miller, 2007; Miller & Chen, 2004; Gooding et al., 1996). When focus of attention is on aspirations, the performance decline below aspirations will be perceived as a

repairable gap that may increase the tendency of firms to reduce and eliminate it through problemistic search and risk-taking; however, as attention moves towards bankruptcy and survival, the anxiety, stress, and tendency to avoid bankruptcy increases, in which case the likelihood of risk-taking is reduced (Sitkin & Pablo, 1992; 21).

More conservative strategies and behaviors have been shown as possible responses that firms may give to performance feedback when threatened by bankruptcy (Ketchen & Palmer, 1999; Chen & Miller, 2007). Higher emphasis on cost reductions (Starbuck & Hedberg, 2001; Audia & Greve, 2006), limiting new strategic initiatives (D'Aveni, 1989), reducing risk-taking (March and Shapira, 1987, 1992), terminating innovation projects (Dougherty & Bowman, 1995), preventing new activities (Staw et al., 1981), laying off employees (Love & Nohria, 2005), and conserving resources and repeating previous actions are of the examples of responses that firms may give to threats of bankruptcy and survival (Ref & Shapira, 2016; Audia & Greve, 2006; Lu & Fang, 2013). Thus, in line with the mainstream literature, I also argue that firms will reduce their risk-taking behavior with distance from bankruptcy and survival levels. I hypothesize that:

Hypothesis 6A: Firms will reduce their risk-taking behavior with distance from bankruptcy.

I argue that the mechanism through which cultural dimensions influence the effect of low performance on risk-taking behavior when there is a threat of survival may be similar to the mechanisms I argued for performance decline below aspirations. For instance, firms in lower UA societies may take relatively more risks than those in high UA ones with distance from bankruptcy since distance from bankruptcy may not be perceived as threatful for these firms as it may be for those in higher UA societies (Hofstede, 1980; House et al., 2004; Frijns et al., 2013). High PO firms may possess more self-confidence in taking risks than firms with lower degrees of PO when they are on the verge of bankruptcy due to their higher belief in having control over environment and can-do-spirit (Nam et al., 2014). Past research has also empirically shown that bankruptcy will be interpreted differently across cultures. For instance, based on Schwartz's (1994) typology of national cultural dimensions, Chui et al. (2002) compared how firms from high conservative cultures versus high mastery cultures perceive costs of bankruptcy and debt, finding that conservativism leads firms to perceive

higher bankruptcy costs and less debt benefits, whereas for firms from mastery cultures that emphasize their own success and control, a negative relationship was found between mastery and corporate financial leverage. Also based on Schwartz's (1994) cultural values, Petrakis (2010) argued that managers in societies with high embeddedness tend to choose financial policies that minimize the threat of bankruptcy since these policies may reduce security and put the public image of firm at risk. Their findings indicate that embeddedness decreases the firms' perceptions of cost of debt. Li et al. (2011) found the same effect with respect to embeddedness. Considering the previous findings on the effect of culture on how bankruptcy and threat of bankruptcy are perceived and based on the arguments of Staw et al. (1981), I also agree that culture will cause variance in the effect of the proximity of bankruptcy on the risk-taking behavior of firms mainly because the degree to which bankruptcy is perceived as threat and may induce anxiety and stress will be different for different cultures, and such a difference in perceptions may create variance in their risk-taking responses.

However, the approach of the crisis of bankruptcy and extinction may yield universally higher degrees of threat, anxiety, and stress, compared to when performance falls below aspirations (Staw et al., 1981; March & Shapira, 1987). This is due to different perceptions associated with performance decline below aspirations and distance from bankruptcy. The focus of attention on aspirations brings about a perception of performance decline below aspirations as a repairable gap (Audia & Greve, 2006). Such a perception increases the likelihood that actors also act based on their program of mind (Hofstede, 1980) when responding to performance declines below aspirations. However, distance from bankruptcy is more associated with survival and termination that may, in turn, universally increase perceptions of threat and anxiety regardless of the cultural context. The increased anxiety with respect to the threatening situation of bankruptcy and survival can reduce the willingness of firms to take risk (Staw et al. 1981). This can, in turn, reduce the role of the program of mind or culture among these low performing firms whose main focus of attention is on surviving and preventing termination. The anxiety with respect to survival and fear of elimination and termination leads these firms to take similar conservative actions aimed at preserving the operations and routines and preventing the firm from bankruptcy (Starbuck & Hedberg, 1977; Audia & Greve, 2006).

Even though cultural dimensions may play a significant role in firms' perceptions of threats of bankruptcy and influence their risk-involving reactions, this moderating impact will not be as strong as when there is no threat of bankruptcy and survival, and the focus of attention is to fill the aspiration gaps. For instance, the role of tolerance to innovation and new ideas, willingness to change and adjust, ease with the unknown, and optimism about the future that are prototypical characteristics of low UA societies may not be as strong when there is threat of termination and survival as when performance is just below desired aspiration points. Thus, fear, anxiety, and threat as a result of high likelihood of bankruptcy may make firms universally more rational and conservative, in which case the role of such cultural dimensions as FO, UA, and PO will be weaker. Instead, such troubled firms are more likely to resort to more rational ways of managing the situation aimed at increasing the chances of survival and avoiding bankruptcy.

Another relevant reason why culture may not be as much effective when the threat of survival is felt is that firms on the verge of bankruptcy are very likely to be those whose resources and abilities do not match the markets in which they are operating and competing (Amit & Shoemaker, 1993; Ref & Shapira, 2016). In such circumstances, failing firms will have difficult times in either aligning their resources and capabilities with the requirements of their markets or competitive environment, or acquiring new resources and capabilities to handle the existing problems. As Ref and Shapira (2016: 1420) noted, "the lower the value of a firm's resources in its current markets, the higher the costs of acquiring the additional resources needed to cope with the challenges in these markets." Based on this reasoning, they find that performance decline way below aspirations (i.e., distance from bankruptcy) negatively predicts the risk-taking behavior of firms in the form of entering new markets. I use these arguments and findings to argue that the resource and capability alignment, and resource shortage problems may keep firms across cultures from taking risks even if their program of the mind allows them to do so when they face threats of survival and termination. For instance, considering high versus low UA societies, even if firms in lower UA societies are less likely to perceive the overall low performance and risk-taking behaviors as more threatful than do firms in higher UA societies, they may universally be less likely to take

risks due to other limitations such as those associated with their inefficient and limited resources and capabilities.

In sum, I posit that when performance declines below aspirations, distance from bankruptcy may negatively influence the risk-taking behavior of firms due to the higher perceived threat, anxiety, and fear of survival, and the limitations associated with failing firms' abilities and resources. In such situations, firms are more likely to be rationally risk-averse, and the effect of culture will not be as much as it is when focus of attention is on aspirations. I hypothesize that:

Hypothesis 6B: With higher distance from bankruptcy, the moderating effect of culture will decrease.

3.3. The Research Theoretical Model

Based on the hypotheses developed, figure 1 presents my theoretical framework. As the figure indicates, the effect of performance relative to aspirations on the risk-taking behavior of firms is moderated by national culture. And distance from bankruptcy moderates the moderation effect of national culture.

Figure 1: Theoretical Model
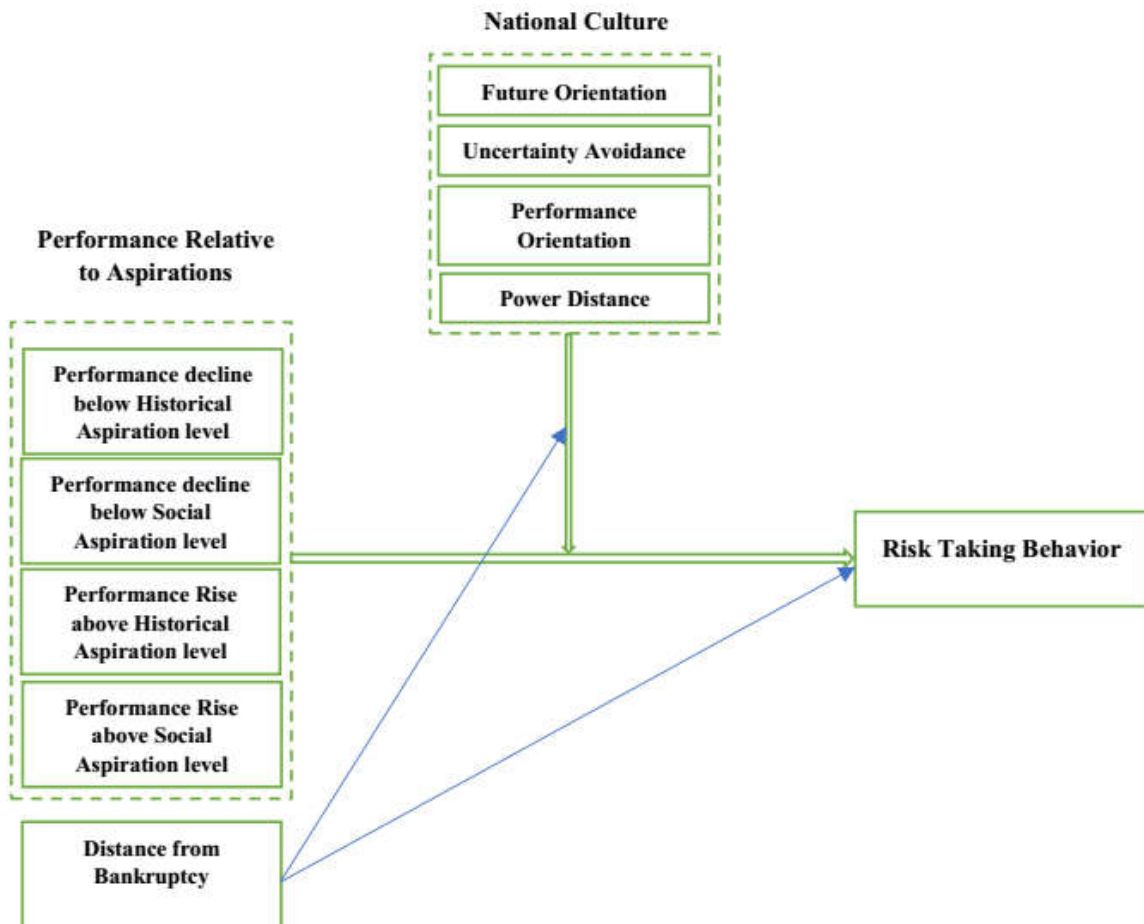
4. METHODOLOGY

4.1. Data and Sample

The sample for this study was drawn from several databases. One is COMPUSTAT GLOBAL database that contains financial and accounting data for more than 42000 active and inactive non-north American firms from 100 countries across the world. To include firms from north America (i.e., U.S.A. and Canada), I used the COMPUSTAT North America database, the annual and quarterly data history of which date back to 1950 and 1963 respectively. This database includes financial and accounting information for 24000 active

and inactive firms in the US and Canada. I also used datastream as a support database, from which I got the data that COMPUSTAT GLOBAL lacked. For instance, to build the measures of distance from bankruptcy and growth opportunities, market value of equity that is not included in COMPUSTAT GLOBAL was obtained from datastream and merged into the main data. The firms were selected based on the availability of data on the variables to be analyzed. I combined the observations from the databases and created one database.

4.2. Data Cleaning and Preparation

4.2.1. Focus on Manufacturing Industries:

Since a large number of studies on performance feedback and risk relationship have focused on manufacturing industries (SIC code from 2000 to 3999), a cross-cultural examination of this relationship may suffer from lack of external validity if the data is taken from or includes nonmanufacturing industries. Thus, in line with the mainstream research in the BTOF literature, I aimed to focus only on the manufacturing industries. For this reason, only the firms from manufacturing industries were kept for analysis.

4.2.2. The Issue of Exchange Rates:

Having downloaded the data from COMPUSTAT North America and COMPUSTAT GLOBAL databases, all the observations associated with their corresponding countries did not have the same currency (e.g., US Dollar). And while obtaining the data from COMPUSTAT GLOBAL, the database did not provide any option for downloading the data in one particular currency. For this reason, I found the currency exchange rates for all the corresponding countries. Since the data obtained for all variables was end-of-the-year data (i.e., December 29th, December 30th, or December 31st for each year), I found the exchange rates for these particular dates depending on the country and year. The reason why I did not focus on December 31st only was that for some years and countries, the end-of-the-year data was registered for December 30th, 29th, or even 28th. I obtained the exchange rates from XE.com (https://www.xe.com/currencyconverter/) that is recognized as one of the most

reliable sources in finance. Having found the exchange rates for all the observations, I converted all of their values to US Dollar.

4.2.3. The Issue Regarding Duplicates:

In setting my data as panel based on the '*Global Company Key*' as the identifier and '*data year fiscal*' as the time variable, I realized some duplicate observations. Overall, 1266 observations were identified as duplicates (1232 firms were repeated twice, 28 firms were repeated 3 times, and 6 firms were repeated 4 times). These duplicate observations were removed from the database, in a way that I kept only one of these repeated observations for analyses and removed their duplicates.

4.2.4. Missing Values of Years

I dropped the observations with missing values for *year* (adding up to 345 observations) since these observations were problematic in creating panel data.

4.2.5. Countries without National Culture Scores:

I dropped observations for countries that did not have any national culture scores of GLOBE and Hofstede studies. Fourteen countries with their corresponding observations were removed. Table 4 shows the statistics for these observations.

Table 4: Countries Removed Due to Having no National Culture Scores

Country	Freq.	Percent	Cum.
Antigua	19	0.95	0.95
Bahrain	43	2.15	3.1
Bahamas	22	1.1	4.2
Belize	9	0.45	4.65
Bermuda	154	7.69	12.34
Botswana	30	1.5	13.84
Ivory Coast	88	4.4	18.23
Cameroon, United Republic of	3	0.15	18.38

Country	Freq.	Percent	Cum.
Cayman Islands	200	9.99	28.37
Cyprus	240	11.99	40.36
Ecuador	17	0.85	41.21
Guernsey	2	0.1	41.31
Gibraltar	8	0.4	41.71
Jersey	9	0.45	42.16
Lebanon	27	1.35	43.51
Macao	23	1.15	44.66
Marshall Islands	3	0.15	44.81
Macedonia	11	0.55	45.35
Malta	18	0.9	46.25
Mauritius	109	5.44	51.7
Namibia	19	0.95	52.65
Oman	504	25.17	77.82
Panama	4	0.2	78.02
Papua New Guinea	13	0.65	78.67
Palestinian Territory	52	2.6	81.27
Tunisia	308	15.38	96.65
Uganda	42	2.1	98.75
British Virgin Islands	22	1.1	99.85
Samoa	3	0.15	100
Total	2,002	100	

4.2.6. Countries with Less than Three Observations

To avoid bias in my analyses, and in line with previous studies (e.g., Lewellyn & Bao, 2015), I removed the countries with less than three companies, keeping in the analysis only the countries that had at least three companies. The data did not include any countries with less than three firms. It should be noted that countries such as Guernsey and Cameroon did not have more than three firms but were already removed in the previous stage of removing countries without national culture scores. The accurate list of these countries is depicted in table 5.

Table 5: List of Removed Countries with Less than Three Companies

Country	Freq.	Percent	Cum.
Netherlands Antilles	19	7.92	7.92
Bahamas	22	9.17	17.08
Belize	9	3.75	20.83
Botswana	30	12.5	33.33
Cameroon	3	1.25	34.58
Ecuador	17	7.08	41.67
Guernsey	2	0.83	42.5
Gibraltar	8	3.33	45.83
Jersey	9	3.75	49.58
Lebanon	27	11.25	60.83
Macao	23	9.58	70.42
Marshall Islands	3	1.25	71.67
Macedonia	11	4.58	76.25
Malta	18	7.5	83.75
Namibia	19	7.92	91.67
Panama	4	1.67	93.33
Papua New Guinea	13	5.42	98.75
Samoa	3	1.25	100
Total	240	100	

4.2.7. The Issue of Outliers

One of the most prevalent ways to deal with outliers in the BTOF literature is to remove observations that are more than four standard deviations beyond the yearly means for each variable. Miller and Chen (2004), Chen and Miller (2007), and Chen (2008) are of the examples of studies using this method. As these studies attest, using this strategy would be effective when less than five percent of the data is eliminated. With respect to my research, since removing four standard deviations for each variable would lose more around eight percent of the data, I winsorized the main variables one percent from above and one percent from below. This strategy of dealing with outlier effects has been used in the BTOF and economics research (e.g., Bromiley & Harris, 2014; Kuusela et al., 2017).

4.2.8. Different Incorporation and Subsidiaries

One of the issues with my data is whether the firms with different headquarters and incorporations (firms headquartered in country X but incorporated into country Y) should be regarded as belonging to X or Y with respect to their culture score.

Research in this area has considered a variety of factors that influence the degree of cultural distance between subsidiaries and their origin of incorporation. Factors such as the environmental change, product change, the degree to which the subsidiary is trusted, size, and age of subsidiaries have been identified as of the crucial factors that may influence the degree to which subsidiaries are delegated responsibilities and are autonomous in decision making (Habib & Victor, 1991; Apetrei et al., 2015; Williams & Triest, 2009; De Jong et al., 2015). Such an autonomy in decision making can be an indicator of the proximity of the culture of subsidiary to its local environment, rather than the country of incorporation. However, delegation of decision making alone cannot determine whether the culture of the subsidiary will be similar to that of its incorporation. Such factors as the degree of diversity in the subsidiary, cultural diversity of decision makers (particularly the ratio of the number of decision makers from the country of incorporation to that of the local culture), and combination of expatriates and locals are of the essential factors that can make international subsidiaries culturally similar or distant to their incorporation (De Jong et al., 2015; Apetrei et al., 2015). The degree of such a cultural distance is relatively easier to measure in survey research. One possible way is to send surveys to subsidiaries to identify the degree of similarity on particular cultural dimensions; looking into the main language spoken in the subsidiary, the degree of cultural diversity, the degree of employees employed from the country of incorporation, etc. are of the other strategies (Apetrei et al., 2015).

However, our archival data does not make it possible for us to use any of these strategies to identify how the subsidiaries and their incorporated firms are culturally distant. The number of firms with different country of incorporation in the database add up to only 7863 observations out of the total of 174,580. Since the number of these firms with different incorporation are not significant, I excluded these firms from the statistical analyses. In an extra step in robustness checks, I ran two sets of analyses. I ran analyses including these observations and assuming that their culture is the same as that of their country of

incorporation, that is, I categorized these firms under the country to which they were incorporated when deciding which national culture scores they should be assigned. I also ran another robustness check including these firms and categorizing them under the national culture socre of the country where their headquarters were located, rather than the country of incorporation. No significant changes in the coefficients of the hypothesized relationships were observed.

4.2.9. The Remaining Data for Analysis

The data remaining for analysis adds up to 174,235 observations in 72 countries that are shown in table 6. The table shows the frequency of total observations for each country. It should be noted that this table includes the total frequencies regardless of the number of missing values for dependent, independent, and control variables.

Table 6: The Countries to Be Included in the Statistical Analyses.

NO.	Country	Freq.	Percent	Cum.
1	United Arab Emirates	150	0.09	0.09
2	Argentina	405	0.23	0.32
3	Australia	3,314	1.9	2.22
4	Austria	578	0.33	2.55
5	Belgium	678	0.39	2.94
6	Bangladesh	343	0.2	3.14
7	Bulgaria	126	0.07	3.21
8	Brazil	1,794	1.03	4.24
9	Canada	3,615	2.07	6.32
10	Switzerland	1,543	0.89	7.2
11	Chile	637	0.37	7.57
12	China	17,905	10.28	17.84
13	Colombia	149	0.09	17.93
14	Czech	63	0.04	17.96
15	Germany	3,669	2.11	20.07
16	Denmark	879	0.5	20.57
17	Egypt	255	0.15	20.72
18	Spain	770	0.44	21.16

NO.	Country	Freq.	Percent	Cum.
19	Estonia	83	0.05	21.21
20	Finland	856	0.49	21.7
21	France	3,308	1.9	23.6
22	United Kingdom	5,264	3.02	26.62
23	Ghana	51	0.03	26.65
24	Greece	1,013	0.58	27.23
25	Hong Kong	5,046	2.9	30.13
26	Croatia	274	0.16	30.29
27	Hungary	120	0.07	30.35
28	Indonesia	1,907	1.09	31.45
29	India	20,465	11.75	43.19
30	Ireland	423	0.24	43.44
31	Iceland	70	0.04	43.48
32	Israel	1,090	0.63	44.1
33	Italy	1,470	0.84	44.95
34	Jamaica	105	0.06	45.01
35	Jordan	388	0.22	45.23
36	Japan	18,478	10.61	55.83
37	Kenya	118	0.07	55.9
38	Korea, Republic of	4,796	2.75	58.66
39	Kuwait	202	0.12	58.77
40	Sri Lanka	725	0.42	59.19
41	Lithuania	180	0.1	59.29
42	Luxembourg	86	0.05	59.34
43	Latvia	170	0.1	59.44
44	Morocco	287	0.16	59.6
45	Mexico	449	0.26	59.86
46	Malaysia	5,508	3.16	63.02
47	Nigeria	350	0.2	63.22
48	Netherlands	627	0.36	63.58
49	Norway	748	0.43	64.01
50	New Zealand	381	0.22	64.23
51	Pakistan	1,880	1.08	65.31
52	Peru, Republic of	537	0.31	65.62
53	Philippines	501	0.29	65.9

NO.	Country	Freq.	Percent	Cum.
54	Poland	1,719	0.99	66.89
55	Portugal	210	0.12	67.01
56	Russia	661	0.38	67.39
57	Saudi Arabia	501	0.29	67.68
58	Singapore	2,923	1.68	69.36
59	Slovakia	41	0.02	69.38
60	Slovenia	140	0.08	69.46
61	Sweden	2,328	1.34	70.8
62	Thailand	2,766	1.59	72.38
63	Trinidad and Tobago	62	0.04	72.42
64	Turkey	1,516	0.87	73.29
65	Taiwan	11,418	6.55	79.84
66	Tanzania	51	0.03	79.87
67	Ukraine	51	0.03	79.9
68	USA	33,141	19.02	98.92
69	Venezuela	88	0.05	98.97
70	Vietnam	898	0.52	99.49
71	South Africa	827	0.47	99.96
72	Zambia	65	0.04	100
	Total	174,235	100	100

4.3. Measures

4.3.1. Risk-taking

The studies measuring risk as a strategic choice of managers or organizations rely on a variety of organizational strategies that are assumed to involve uncertain outcomes. Strategic change in the form of strategic convergence versus divergence (Park, 2007), entry into new markets (Ref & Shapira, 2016), collaboration preferences (Schillebeeckx, 2015), new product introductions (Gaba & Joseph, 2013), factory expansion (Audia & Greve, 2006), innovation (Latham & Braun, 2009), radical versus incremental change (Labianca et al., 2009), number of R&D alliances (Tyler & Caner, 2016), acquisitions (Iyer & Miller, 2008), change (Greve,

1998), and R&D intensity (Chen & Miller, 2007) are of the main proxies for risk-taking as feedback to performance relative to aspirations.

My review of the literature investigating the effects of performance relative to aspirations on the risk-taking behavior of firms indicates that a great majority of studies have used R&D intensity and volatility of returns as main proxies for the risk-taking behavior of firms. In line with these studies, I used these variables as the main measures of the risk-taking behavior of firms. Similar to the mainstream research (e.g., Lim & McCann, 2013; Greve, 2011; O'Brien & David, 2014; and Lucas et al., 2015), I measured R&D intensity as R&D expenditures divided by sales. R&D intensity was calculated as:

$$\textbf{R\&D Intensity = R\&D Expenditures / Sales} \qquad \textbf{(1)}$$

R&D intensity and investments have also been argued to be strongly associated with national and local culture (Nakata & Sivakumar, 1996; Couto & Vieira, 2004). There have also been several empirical studies showing strong association between R&D investments as a proxy for innovative and search activities of firms and cultural dimensions (e.g., Nakata & Sivakumar, 1996; Morris et al., 1994; and Shane 1992; 1993; Lewellyn & Bao, 2015; Li et al., 2013; Mihet, 2013). Based on these findings, Couto and Vieira (2004) consider the relationship between R&D investments and national culture critical, positing that: the relationship between the culture of a nation and R&D activities can be critical, in a way that there can be advantages from national cultures to some particular phases of this process. Assuming R&D activities as a proxy for innovative and search activities of firms (e.g., Bromiley & Washburn, 2011), the association between national culture and R&D investments appears evident since national culture has been argued and shown as a strong indicator of innovative and exploratory activities of firms (e.g., Hofstede, 1981; Nakata & Sivakumar, 1996). That is, R&D as an outstanding prototype of search and innovative activities of firms is likely to be influenced by the culture and program of the mind of the decision makers of firms.

In spite of the cultural relevance of R&D, considering this construct as the only measure of the risk-taking behavior of firms may bias results. For instance, R&D investments may not be common across some industries and countries (e.g., emerging and developing contexts).

This issue has recently caught the attention of the BTOF scholars. One of the common ways to deal with this problem is reliance on multiple measures of risk-involving behaviors. For instance, Bromiley and Harris (2014) used three proxies for the risk-taking behavior of firms in response to performance relative to aspirations including R&D activities, organizational risk, and financial misrepresentation, aiming to compare different risk-involving responses of firms based on three different models. This strategy can be particularly instrumental when it comes to cross-cultural comparison of firms' risk-involving behaviors, in that some behaviors may not have satisfactory levels of cultural relevance. In spite of the rich evidence on the cultural relevance of R&D activities of firms, I use another proxy for the risk-taking behavior of firms to increase the validity of the findings.

My second measure of risk is organizational risk that refers to the volatility of the earnings of firms. ROA was used as the proxy for the firm earnings. This construct was measured as the standard deviation of the ROA of firms, which measures the firms' operational risk-taking (Mihet, 2013). This construct was measured as the standard deviation of the ROA of firms for a 5-year period. For each firm with available earnings and total assets for a minimum of five years from 1996 to 2016, I calculated the standard deviation of their ROA in a given year from their ROAs in the following five years.

$$\textbf{Volatility of Returns } _t = \textbf{SD (ROA} _t\textbf{, ROA} _{t+1}\textbf{, ROA} _{t+2}\textbf{, ROA} _{t+3}\textbf{, ROA} _{t+4}\textbf{)} \quad \textbf{(2)}$$

Where SD is the standard deviation, ROA is return on assets, and t is the focal year.

This measure of risk removes the problem of bias associated with the cultural relevance of risk behaviors, since volatility of firm earnings reflects not only the leverage risk, but also any kind of risk (e.g., interest rate risk or liquidity risk) that is realized in the earnings of firms (Li et al., 2013). The underlying reasoning behind this method of measuring risk is that attainment discrepancy will urge firms to engage in more exploration and risk-taking, and riskier decisions and behaviors will, in turn, lead to volatility in the returns of organizations in the following years (John et al., 2008; Zhang, 2009; Li et al., 2013).

4.3.2. Performance Relative to Historical / Social Aspirations

Before going over the measurement of performance relative to aspirations, I need to elaborate on the three components of this construct including the historical aspiration level, social aspiration level, and performance. This will open the way for clearer description of how performance relative to aspiration levels is measured. On this ground, I categorize measurement of aspirations under two main categories. The first category includes studies that measure and analyze each of the historical and social aspirations separately. The second category includes studies that measure firm aspirations as a mix of both historical and social aspirations . First, I elaborate on how single historical and social aspirations are measured in the literature. The combined aspirations and switching models follow next.

Historical Aspirations: In measuring historical aspirations, studies have used various methods. Some studies rely on a simplistic measurement of this construct, regarding the performance of the previous year as the main HA level. For instance, Park (2007) defines the HA of the firm i at time t as the performance of that form at time $t – 1$. (i.e., $HA_{it} = P_{it-1}$). Ref & Shapira (2016), Iyer and Miller (2008), and Chen & Miller (2007) consider the performance in the previous year (t-1) as the base year and obtains the HA from one year before the base year (t-2).

A great many of the studies on aspiration levels measure HA based on an exponentially weighted average of the firm's previous performance and aspirations. The firm's HA at time t is measured as the exponential weighted average of its performance at time $t – 1$ and aspirations of the firm at time $t – 1$. The following function depicts this:

$$HA_{it} = aP_{it-1} + (1-a)HA_{it-1} \qquad (3)$$

Where HA is aspiration level, P is the performance, t is a time subscript, and a is the weight given to the most recent aspiration level. a is an adjustment parameter which shows the degree of importance given to the more recent than more distant performance (Schillebeeckx et al., 2016). It is chosen by searching over all possible values in increments of 0.1 and then using the value that yields maximum-log likelihood (Gaba & Joseph, 2013). HA_{it-1} is mainly derived as the average performance of the two years prior to the year in focus. For instance, HA_{it-1} in the above function is calculated as: $HA_{it-1} = (HA_{it-2} + HA_{it-3}) / 2$.

Gaba & Joseph (2013), Vissa et al. (2010), Audia and Greve (2006), and Schillebeeckx et al. (2016) are of the examples of the studies that have relied on exponential approach. In line with the mainstream literature, I used this measure of historical aspirations.

The two approaches described have not been without criticisms. In the study of aspiration levels and allocation of attention to aspiration levels in German magazines, Blettner et al. (2015) set the aspiration level as the number of magazines copies printed. They criticized setting aspirations based on exponential average on several grounds. First, studies such as those of Audia and Greve (2006) and Greve (1998) use unobserved measures such as an exponentially weighted average of past performance values. Second, they argue that setting aspirations based on performance measures are not direct and do not bring into account the role of organizational decision makers. Based on neo-Carnegie research (Gavetti, et al., 2007), they posited that the organizational decision makers should be put back into the models. They claimed their measure to be more direct as it is observable and verifiable. My stance is that although this approach directly emphasizes visible measures, it will not be feasible for large samples from across several industries because firms in different industries will have a variety of goals which may be difficult to realize and compare. This method will be useful when one industry is under investigation and decision makers have a single homogeneous goal (e.g., number of magazines copies printed).

The studies mentioned so far measure the present aspiration of the firms as the performance of the current year or the year before. This method may not work in some contexts. Tyler and Caner (2016) captured this problem in their study of US biopharmaceutical industry. Measuring performance as the number of new product introductions (NPI), they posited that firms might not have a new drug approved every year due to the long and uncertain drug development process. Thus, they measure the current aspiration (i.e., HA_{it}) as the average of the performance (NPI) in the time t and one year before ($t – 1$) as: $(AvNPI)_t = (New Products Introduced_{t-1} + New Products Introduced_t) / 2$.

Social Aspirations: Based on the mainstream literature, the social aspiration level was measured as the average performance of the firms active within the industry of the focal firm. The following formula depicts this in mathematical terms:

$$SA_{it} = (\Sigma_j\ P_{jt})/N \qquad\qquad (4)$$

Where i is the focal firm, t is the time, and j refers to another firm, and N is the number of the firms used for comparison. Greve (1998), Gaba and Joseph (2013), Audia and Greve (2006), and Schillebeeckx et al. (2016) are of the examples of studies taking this approach.

There are some studies, however, that distinguish between the comparison groups. These deviations are either imposed by the empirical context, or they are theoretical arguments claiming that organizational focus of attention will be on multiple points or will vary contingently. Vissa et al. (2010) is a good example of the empirical requirements. They studied firms affiliated with business groups; thus, they considered two sources of aspiration including 1) the median of all other firms in the industry, and 2) the median of all other firms in the business group. Yet, other studies distinguish different reference groups for organizations regardless of the empirical context, and mainly for the purpose of theory development. For instance, Labianca et al. (2009) distinguished between competitive comparison groups and striving comparison groups. Based on the previous measurements of SA, in the study of the competitive and striving aspirations of AACSB accredited business schools, they measured the competitive aspirations as the average of its competitor schools on revenue per faculty member and striving aspirations as the average of the focal school's aspiration schools (i.e., the schools with which they want to be like) on revenue per faculty member.

Measuring competitive and striving aspirations may not be as easy as general social aspirations. The reason lies in the difficulty of finding the main competitors and organizations with which the firms aspire to be like. This information is not reflected in such databases as COMPUSTAT that are the main sources of data for studies on aspiration levels of firms. Labianca et al. (2009) conducted a survey on the business schools, asking them to list the other business schools which they consider as their main competitors, as well as those they aim to be like in the future. Developing such novel ways of measuring striving aspirations will provide a significant contribution to the literature (Bromiley & Harris, 2014).

On this ground, I aimed to provide another measure of social aspiration and performance relative to social aspiration that is based on the main assumption that firms may not compare their performance with that of the overall industry and may choose particular firms to compare their performance with. In doing so, I relied on the measure of performance relative

to social aspirations applied by Baum et al. (2005). Thus, my second measure of social aspirations is a more fine-grained measure that assumes that firms may not consider all competitors in their industry as their reference groups. Or they are likely to pay attention to some, more than others. Reference groups may be considered based on their degree of comparability, salience, and ease of observation (Baum et al., 2005). Organizational size and role specialization are of the factors that can increase comparability and make firms pay more attention to firms with similar size and role specializations to their own, considering them as their main reference group (Greve, 2003; Baum et al., 2005). Thus, bringing organizational size into account, I operationalized social aspirations of the firms as:

$$\text{Social aspiration} = \Sigma j \ (P_j / \ (S_{it} - S_{jt} + 1)/N \qquad (5)$$

where P is the firm's performance, S is the firm's size or role specialization, i is the focal firm, j is another firm, and N is the number of other firms in a particular industry of particular country. This way of measuring social aspirations brings into account the role of factors that influence the way firms choose their reference group to compare their performance with, and this particular formula highlights the role of size.

Studies combining the HA and SA of organizations and presenting a single measure may fall under two categories. The first category bases measurement on two assumptions of the BTOF, building what is referred to as switching models, and the second one treats aspiration as the weighted average of the HA and SA.

The two assumptions of the BTOF that some studies rely on in measurement of aspirations are shifting attention among different aspiration levels depending on the performance (March and Shapira 1992) and upward-striving rules (Bromiley 1991). In other words, firms performing below their industry's average aspire to increase their performance to the level of that industry average, and firms performing above the average aspire to improve their current performance instead of reducing their performance to that average (Park, 2007). Based on these assumptions, these studies (e.g., Bromiley ,1991; Wiseman and Bromiley, 1996; Palmer & Wiseman, 1999; Park, 2007; Alessandri & Pattit, 2014; Bromiley & Harris, 2014) define aspirations as shifting between HA and SA. In the study of comparing the models of single aspirations and models of shifting attention which they referred to as

switching models, Bromiley and Harris (2014: 344) noted that the main argument of studies using switching models is that

> "firms with performance below the industry average would not be satisfied with simply improving performance over the prior year while remaining below the industry, and firms with performance above the industry would not be satisfied with lower performance than last year even if they remained above the industry average. Any aspiration model where aspirations equal a weighted sum of social and self-referent values has these problems. Instead, this approach suggests a theoretically-derived aspiration measure that equals industry performance for firms below industry performance, and slightly better than prior performance for firms performing above industry performance."

Following Bromiley (1991), these studies posit that when a firm's performance is greater than SA, it has an aspiration level of 1.05 times *HA*, and if a firm performs below *SA, it has SA* as its aspiration level. The following formula depicts this argument well:

$$\textbf{Aspiration}_{it} = \textbf{I} (P_{i,t} < SA_{i,t}) * SA_{i,t} + \textbf{I} (P_{i,t} >= SA_{i,t}) * (1.05) * HA_{i,t} \qquad (6)$$

Where Aspiration$_{it}$ refers to aspiration of firm *i* at time *t*, $P_{i,t}$ refers to the performance of firm *i* at time *t*, $SA_{i,t}$ is the social aspiration level of the firm *i* at time *t*, and $HA_{i,t}$ is the historical aspiration of firm *i* at time *t*. I. is treated as an index function whose value is 1 if the statement is true and 0 if the statement is false. For instance, if a firm performs below its SA, the statement I ($P_{i,t} < SA_{i,t}$) is 1, and the statement I ($P_{i,t} >= SA_{i,t}$) is 0, hence aspiration$_{it}$ equals SA (they aspire to improve their performance to SA level).

The 1.05 has been the single adjustment factor used in switching models. This adjustment factor is based on the assumption of the BTOF that if performance is above social aspirations, firms will improve their historical performance rather than reducing their performance to the level of social aspirations. It represents the degree to which historical aspiration or the firm's own performance is incrementally improved in the case of performance above social aspirations. This adjustment factor has been shown as a reasonable one in the previous research (e.g., Lant & Montgomery, 1987; Bromiley, 1991). Bromiley (1991) constructed variables using adjustment factors of 1.25 and 1.50 as well in order to test the sensitivity of results to this parameter. Not only were the correlations between the aspiration variable with

1.05 adjustment factor and those with adjustment factors of 1.25 and 1.50 very high (i.e., 0.97 and 0.95 respectively), but regression results based on any of these three measures did not significantly vary. In line with the mainstream literature, I also used the adjustment factor of 1.05.

Following Greve (2003), some studies (e.g. Gaba & Joseph, 2013; Greve, 2011; O'brien & David, 2014; Kim & Rhee, 2014; Chen, 2014; Yang et al., 2015; Rudy & Johnson, 2016; Wennberg & Homquist, 2008; Alexy et al., 2016; Xie et al., 2016; Eggers & Kaul, 2018) treat aspirations as the weighted average of the SA and HA. The following formula depicts this approach:

$$\text{Aspiration}_{it} = B\text{SA}_{it-1} + (1-B)\text{HA}_{it-1} \qquad (7)$$

Where B is the weight given to each of the aspirations.

Decision regarding the use of performance aspiration variables: In order to pick the best model, I created the measures of single aspirations (HA and SA), as well as combined aspirations both based on weighted average and switching models. I selected the best model out of these based on comparing their statistical fit using likelihood ratio and Akaike information criterion (AIC) and Bayesian information criterion (BIC) tests. Comparing the models with single aspirations with the combined aspirations and switching models, I found a better fit for the latter two.

I created the measure of combined aspirations as

$$\text{Aspiration}_{it} = b\text{SA}_{it-1} + (1-b)\text{HA}_{it-1} \qquad (8)$$

Where Aspiration_{it} is the aspiration level of firm i and time t, $B\text{SA}_{it-1}$ is the social aspiration of the firm i in time $t-1$ that is calculated as the average industry performance ($\text{SA}_{it-1} = (\Sigma j\ P_{jt-1})/N$), HA_{it-1} is the historical aspiration of firm i in time $t-1$ that was calculated as the weighted average of the performance of the previous years as:

$$\text{HA}_{it-1} = a\text{P}_{it-2} + (1-a)\text{HA}_{it-2} \qquad (9)$$

Where HA_{it-1} is the historical aspiration of the firm i in time $t-1$, P_{it-2} is the performance of firm i in time $t-2$, and HA_{it-2} is the historical aspiration of the firm i in time $t-2$. I gave three

weights of 0.25, 0.50, and 0.75, and compared the overall fit of the models with these three weights, finding the weight of 0.50 to have the best overall fit since the models with the weights of $a = 0.5$ had the highest 'log-likelihood' value (Greve, 2003). Hence, I used historical aspiration based on the equal weights of 0.5 both for the performance and historical aspiration of the year t-2.

Similarly, I gave three weights of 0.25, 0.50, and 0.75 to b with increments of 0.25 and took the model with $b = 0.75$ for volatility of returns and $b = 0.25$ for R&D intensity since they yielded the highest value of log-likelihood' (Greve, 2003). Table 7 shows the log-likelihood values for both of the dependent variables including volatility of returns and R&D intensity. According to table 7, the highest value of log-likelihood is $b = 0.75$ and for volatility of returns and $b = 0.25$ for R&D intensity, indicating that models with these values have the highest fit.

Table 7: Log-likelihood Values for Models of Combined Aspirations for Both Dependent Variables

b	Volatility of Returns	R&D Intensity
$b = 0.25$	-15017.363	**-120071.01**
$b = 0.50$	-12462.679	-120438.68
$b = 0.75$	**-10923.807**	-120951.58

I created the measure of switching models as

$$\text{Aspiration}_{it} = I\ (P_{i,t} < SA_{i,t}) * SA_{i,t} + I\ (P_{i,t} >= SA_{i,t}) * (1.05) * HA_{i,t} \qquad (10)$$

Where Aspiration$_{it}$ is the performance of firm i in time t, $SA_{i,t}$ is the social aspiration of firm i int time t that is calculated as the average industry performance ($SA_{it-1} = (\Sigma j\ P_{jt-1})/N$), and $HA_{i,t}$ is the historical aspiration of firm i at time t that is the performance of firm i at time t-1.

Following Bromiley and Harris (2014), I compared these two models using Akaike information criterion (AIC) and Bayesian information criterion (BIC) values. The results of both AIC and BIC indicate better fit of the switching model both for volatility of returns and

R&D intensity, on the basis of which I decided to do my statistical analyses using the measure based on the switching model and use it as my main measure of aspirations. Table 8 shows the AIC and BIC values of models based on combined aspirations and switching models for both dependent variables of volatility of returns and R&D intensity. As the table indicates, the AIC and BIC values for the switching models are lower, indicating relatively better fit. On these grounds, I chose combined aspiration model based on switching account for my statistical analyses.

Table 8: AIC and BIC Values for Models of Combined Aspirations and Switching Models for Both Dependent Variables

Model	Volatility of Returns		R&D Intensity	
	AIC	BIC	AIC	BIC
Switching Model	**34325.33**	**34388.47**	**234019.1**	**234098.8**
Combined Aspiration Model	39080.18	39144.03	267560.8	267624.1

Performance: Research in the BTOF has used a variety of variables as a proxy for performance. I divide the research into three main streams with regard to performance measurement. The first stream which is not a prevalent one, of course, measures performance with surveys (e.g., Lant, 1992; Schillebeeckx et al., 2016). The second stream is distinct in that the studies in this stream focus on empirical contexts different from organizational and financial contexts. These studies use data on sports tournaments and use the scores and ranks of the teams under study as main proxies for performance relative to aspirations (e.g., Lehman et al., 2011; Lehman & Hahn, 2013; Tyler & Caner, 2016). Although these studies cover the limitations of survey research, still they may be subject to ecological validity problems.

The third stream which is the most prevalent one uses a variety of firm-level variables such as market share (Baum et al., 2005; Schillebeeckx et al., 2016), after-tax return on net worth and after-tax return on total assets (Singh, 1986), revenues (Labianca et al., 2009), and new product introductions (Tyler & Caner, 2016). Studies using firm level variables as proxies

for performance use return on assets (ROA), return on sales (ROS), and return on equity (ROE). However, a great many studies using these proxies rely on return on assets (ROA). ROA is preferred for a variety of reasons. Arrfelt et al. (2013: 1089) noted that "firms likely focus on performance indicators that they have access to—that is, those that they and other firms report for their business units. Given that business units are not traded in financial markets, the set of (publicly) available performance indicators is limited to accounting-based measures such as revenue and income. This leaves business unit income (i.e., ROA) as the most likely performance indicator for making peer comparisons". Park (2007), Iyer & Miller (2008), and Vissa et al. (2010) prefer ROA to ROE and other measures, in that they believe that ROA captures firm-level effectiveness in a broader way than such other measures as profit margin rate. Also, it is not as sensitive as ROE to the heterogeneity in financial structure, e.g., equity-to-debt ratio. Ref and Shapira (2016) use ROA because most studies on the effects of performance on change and risk use this proxy, hence making comparison of results possible. Therefore, ROA was my main proxy for performance.

Performance below and above Aspirations: Performance relative to aspiration levels was derived as the difference between the performance and the target aspiration level for the given time. After finding the aspiration levels, performance relative to these aspiration levels was obtained through a spline function. This way, performance less than or more than each aspiration was treated as a separate variable. Considering both combined aspiration levels, $Performance_t < Aspiration_t$, $Performance_t >= Aspiration_t$, constituted the main variables of the study. In each case, the variable equals the amount of the 'performance minus the target aspiration' if and only if the statement is true and will be equal to zero otherwise. Spline function is particularly useful for aspiration research in that it allows for the comparison of the slopes above and below the aspiration-level point (Greene, 1993; Baum et al., 2005).

4.3.3. National Culture

Comparing organizations based on quantitative scores of some common cultural characteristics known as cultural dimensions has been the most prevalent approach in cross-national comparisons of organizations. The most prominent cultural dimensions or value systems are those of Hofstede (1980, 2001), the Chinese Culture Connection (1987),

Schwartz (1994), Trompenaars and Hampden-Turner (1998), and the GLOBE project (House et al, 2004). Hofstede's 5-dimensional typology and the 9 dimensions found in GLOBE project have been the most influential cultural dimensions studied in organization and management studies (Crossland & Hambrick, 2007). Each country investigated in these studies has received a score on any of the cultural dimensions, which accounts for the level or degree of that dimension in that country. Considering the wide use and prevalence of Hofstede and GLOBE dimensions in international management and business research, this study relied on these two measures of national culture.

I use both these measures for several reasons. The foremost is the nature of my study that relies on the conceptualizations of both Hofstede and GLOBE. For instance, I prefer using GLOBE's PO over masculinity/femininity, both of which have been used to measure similar phenomena (for more on this issue, refer to the PO section in my hypothesis developments). Hofstede and GLOBE have been considered consistent both conceptually and empirically (Leung et al., 2005). Five of the nine dimensions identified by GLOBE have been considered to be the same concepts. GLOBE researchers admit that they have replicated Hofstede's landmark study and extended that study, discovering more cultural dimensions (House et al., 2004). They also claim that they have improved the face validity issue, for which Hofstede has been under harsh criticism. These partial advantages of the one over the other make it valuable to use both and compare findings. Finally, although the dimensions of the two measures appear to be consistent, they have been shown to diverge at some points. For instance, Venaik and Brewer (2010) found weak correlation between Hofstede and GLOBE findings on UA. Scrutinizing the items measuring UA in both studies, they did not attribute this weak correlation to conceptual difference in the two studies, but they contended that UA in each study represents a different component of the UA construct. Thus, using both Hofstede and GLOBE will enrich the study by providing a deeper understanding of the implications of each for the dependent variables.

4.3.4. Distance from Bankruptcy

In line with the literature, I used Altman's Z score as a measure of distance from bankruptcy, that is defined as: (1.2 x working capital divided by total assets) + (1.4 x retained earnings

divided by total assets) + (3.3 x income before interest expense and taxes divided by total assets) + (0.6 x market value of equity divided by total liability) + (1.0 x sales divided by total assets). The lower the Altman's Z score, the higher the likelihood of bankruptcy.

4.3.5. Control Variables

The study considered some variables that are likely to influence the risk-taking behavior of firms in three levels of country, industry, and firm.

4.3.5.1. Country level Variables

GDP per Capita: Hofstede (1980) warns that the prevailing economic conditions in a country may influence behaviors in workplaces and preferences for particular behaviors; in a way that "the construct of national culture may simply be picking up the underlying economic differences between countries rather than any real cultural differences" (Shane et al., 1995: 942). GNP/Capita has been used as a measure reflective of such country level economic conditions as the stage of industrialization, method of capital formation, natural resource endowment and business-government relations (Shane et al., 1995). GDP per capita has also been used as a proxy for national wealth that has, in turn, been shown to influence the risk-taking behavior of firms, R&D in particular (Schneper & Guillen, 2004). I used GDP per capita as a control for the economic conditions and national wealth that are likely to influence the risk-taking behavior of firms. Another country level factor that may hinder risk-taking activities of firms is economic development (Acemoglu & Zilibotti, 997; Mihet, 2013). In line with the past research, I measure this economic development as GDP per capita. Source: World Bank World Development Indicators (http://databank.worldbank.org/data/source/world-development-indicators).

Rule of Law: This variable is one of the most frequently used control variables in studies investigating the impact of culture on the risk-taking behavior of firms (e.g., Li et al., 2013; Mihet, 2013; Ashraf et al., 2016). The construct refers to "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and

violence" (Mihet, 2013: 46). Regarding the likely association of this variable with the risk-taking behavior of firms, I used it as one of the macro level controls. Source: World Bank World Governance Indicators (http://databank.worldbank.org/data/databases/page/1/orderby/popularity/direction/desc?qterm=rule%20of%20law).

Investor Protection and Financial System Development: Since my measure of risk-taking behavior is R&D behavior, I also include two measures of investor protection and financial system development in home country which have been shown to influence the degree of R&D intensity (Hillier et al., 2011; Lewellyn & Bao, 2015); in a way that lack of these phenomena may discourage investment in R&D. Source: World Competitiveness Report (WCR) (https://www.weforum.org/reports/the-global-competitiveness-report-2016-2017-1).

(Absence of) Political Stability: Political stability is of the other factors that can influence the risk-taking behavior of firms, particularly research and development (Shao et al., 2012). **Source:** World Bank World Development Indicators **(**http://databank.worldbank.org/data/source/world-development-indicators).

Country Private Credit or Credit to Private Sector: This variable refers to the average of the ratio of the value of credits by financial intermediaries to the private sector to GDP. This variable has been regarded as of the macro-level factors that hold potential to influence the risk-taking behavior of firms (Shao et al., 2013; Li et al., 2013; Griffin et al., 2009). Source: World Bank World Development Indicators **(**http://databank.worldbank.org/data/source/world-development-indicators).

Country Market Capitalization of listed domestic companies: This indicator is expressed as the percent of the GDP of the countries. In the world bank database, this variable is described as: share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded. Source: World Bank World Development Indicators (http://databank.worldbank.org/data/source/world-development-indicators).

Information Sharing: Information sharing is a dummy variable equal to one if either a public registry or a private bureau operates in a country to assist creditors in getting creditworthiness information of a borrower, and zero otherwise (Djankov et al., 2007; Ashraf et al., 2016). The data was taken from Djankov et al. (2007).

Creditor Rights: This variable is calculated as the sum of four provisions: "the absence of an automatic stay in reorganization, the requirement for creditors' consent or the minimum dividend required for a debtor to file for reorganization, the ranking of secured creditors first in reorganization, and the removal of incumbent management upon filing for reorganization" (Li et al., 2013: 5). The data on creditor rights are taken from La Porta et al. (1998) and Djankov et al. (2007).

4.3.5.2. Industry Level Controls

Following the mainstream BTOF research, I consider two industry level variables which may influence the risk-taking behavior of firms. The variables include industry risk and industry growth opportunities.

Industry Risk: Industry level risk-taking can be one of the promoting factors of adoption of risk-taking behavior in firms. As Greve and Tylor (2000) note with respect to innovation, the focal firms' observation of innovation in the environment may facilitate their discovery of market and technological opportunities, which may, in turn, promote the innovation rate of the firm. Bergh (1997) also found that overall acquisition level at the industry level can affect the acquirer's subsequent acquisition behavior. To control for this possible effect, I controlled for the role of overall industry R&D intensity that I measured as the average of the R&D intensity of other firms in the industry excluding the focal firm.

Industry Growth Opportunities: Measuring the firm-level growth opportunities as the tobin's q of firms, the industry growth opportunities was measured as the average of the tobin's q of firms in industry i and country j. Examples of studies using this variable as a predictor of the risk-taking behavior of firms are Chen (2008) and Lu and Fang (2013).

4.3.5.3. Firm Level Controls

Firm Size: Due to the strong empirical support on the effect of firm size on the risk-taking behavior of firms (e.g., Wennberg et al., 2016; Audia & Greve, 2006; Baysinger & Hoskisson, 1989), I used it as a firm level control. In line with the mainstream literature in the BTOF (e.g., Audia & Greve, 2006; Wiseman & Bromiley, 1996), I measured the firm size as the log of the total assets.

Slack: Slack has not been measured in a single way (Lu & Fang, 2013). The most prevalent typology of slack resources is that of Bourgeois (1981) who identified three main types of slack resources including unabsorbed slack, absorbed slack, and potential slack. This distinction has been well recognized and applied in the BTOF literature (e.g., Singh, 1986; Bromiley, 1991; Greve, 2003a; Greve 2003b; Iyer & Miller, 2008; O'Brien & David, 2014; Lin et al., 2012; Lu & fang, 2013). Unabsorbed slack was measured as the current ratio (i.e., current assets divided by the current liabilities) (Greve, 2003a; Kim et al., 2008; Iyer & Miller, 2008; O'Brien & David, 2014). Absorbed slack was measured as the ratio of general and administrative expenses to sales. Following Chen and Miller (2007), I combined these three slack measures into one single measure (composite slack) for the sake of parsimony. I calculated composite slack as the sum of the standardized unabsorbed, absorbed, and potential slack resources.

Firm Growth Opportunities: Growth opportunities of firms was calculated as the firms' tobin's q or their market-to-book ratio. I calculated tobin's q as the sum of the book value of debt and market value of equity divided by the book value of total assets.

Net sales: The sales of firms can potentially influence the degree to which they engage in risk-taking behaviors. They are likely to adjust their such risk-involving behaviors as R&D intensity to the sales outcomes they realized during the operating year or based on the degree of change compared to the previous year (Bromiley & Washburn, 2011). I included this variable as a potential factor that can influence the risk-taking behavior of firms.

Net Working Capital (NWC): NWC was measured as current liabilities subtracted from current assets (current assets – current liabilities). The difference between current assets and

current liabilities can potentially increase the risk-taking behavior of firms by increasing their currently available resources, and has been included as a potential predictor of the risk-taking behavior of firms in previous studies (e.g., Shao et al., 2013; Chen et al., 2013)

Table 9 summarizes the measurement and sources of control variables across all three levels of analysis.

Table 9: Measurement and Sources of the Control Variables

Level	Variables	Measurement / Source
Firm Level	Absorbed Slack	Ratio of selling, general, and administrative expenses (SGA) / sales
	Unabsorbed Slack	Current Ratio (Current Assets / Current Liabilities)
	Potential Slack	Equity / Debt
	Size	Log of Total Assets
	Net Working Capital (NWC)	Current Assets – Current Liabilities
	Growth Opportunities	Tobin's Q = (market value of equity + the book value of debt) / the book value of total assets
Industry Level	Industry Risk	(Sum of R&D intensity for firms in country i, industry j, and year k) – R&D intensity of the focal firm / (Number of firms in country i, industry j, and year k) - 1
	Industry Growth Opportunities	(Sum of Tobin's Q for firms in country i, industry j, and year k) – Tobin's Q of the focal firm / (Number of firms in country i, industry j, and year k) - 1
Country Level	Investor Protection	World Competitiveness Report (WCR)
	GDP Per Capita	World Bank World Development Indicators
	Rule of Law	World Bank World Governance Indicators
	Political Stability	World Bank World Governance Indicators
	Creditor Rights	La Porta et al. (1998) and Djankov et al. (2007)
	Domestic Credit to Private Sector	World Bank World Governance Indicators
	Market Capitalization (% of GDP)	World Bank World Governance Indicators
	Information Sharing	Djankov et al. (2007); Dummy variable equaling to one if either a public registry or a private bureau operates in a country to assist creditors in getting

		creditworthiness information of a borrower, and zero otherwise
	National Cultural Dimension Scores	Hofstede (1984); House et al. (2004)

4.4. Statistical Modeling Approach

The statistical modelling approaches applied in many studies investigating the effect of performance relative to aspiration levels on the risk-taking behavior of firms are mainly longitudinal models. The most frequently used ones are the generalized least squares (GLS) panel data regression analyses with either random or fixed effects, and the choice between the random and fixed effects model is mainly determined by Hausman test. The review of the literature suggests the predominance of fixed effects models in the estimation of the impact of performance feedback on risk. Examples of the studies using GLS fixed effects models are Bromiley and Washburn (2011), Lin (2014), Alessandri and Pattit (2014), Wennberg et al. (2016), Lin et al. (2012), Salge (2011), and O'brien and David (2015).

The GLS fixed or random effects models are particularly valuable when there is unobserved heterogeneity in the cases under study that affects the dependent variable and may (fixed effects model) or may not (random effects model) be correlated with the independent variables (Hsiao, 2014). However, when data is nested within hierarchies of higher levels of analysis, that is, when the cases under study are nested within different groups that constitute a higher level, simple attention to the unobserved heterogeneity in the cross-variation between cases and within-variation within cases across time points appears insufficient. In such cases, in addition to the fixed or random effects associated with the heterogeneity of the cases under study, there may also exist group effects that influence or bias the estimates. In other words, when cases are nested within different groups or hierarchies, there is a possibility that the error terms for the cases within each group will be dependent (group effect) and that can highly bias the results (Rabe-Hesketh & Skrondal, 2008). In such circumstances, the disadvantage of GLS fixed or random effects models is that they cannot take into account hierarchies as contextual factors and explain how the relationships may vary within and across hierarchies. Although one may argue that including dummies for

groups may be a remedy for this problem, inclusion of dummy variables representing group membership merely represent the difference of means across groups and cannot estimate how a particular causal relationship may vary across groups within which the cases under study are nested, and whether the relationship within group is the same or different from its counterpart relationships across other groups. This problem makes GLS random or fixed effects model quite insufficient and inefficient for this study since the firm level data in this study are nested within various countries and industries. And there is a likelihood that firm behaviors within particular countries may be dependent and influenced by unobserved country or industry level factors.

In order to test my hypotheses, I used mixed modelling technique that has also been referred to as hierarchical linear modeling and multilevel random coefficient modeling. This method is useful in dealing with the possible problems associated with my data. Since the firms are nested within countries, the error terms for these firms within these countries are very likely to be dependent (Rabe-Hesketh & Skrondal, 2008). The number of firms across countries are not homogeneous and equal. Rabe and Skrondal (2008) note that this inequality may lead to emergence of significant coefficients not due to the real effect of culture, but due to disproportionately larger sample size (more firms) across cultures. The variance in the number of firms for each country is a problem that makes my data particularly vulnerable to this problem. Mixed modeling technique appears to be the best available one to deal with these problems. Doing clustering based on country, year, and industry, this technique is highly useful in accounting for the effects of time, within-group relationships, and between-group relationships. Taking into account time effects, within and between-group relationships eliminates a significant part of bias for estimates (Rabe-Hesketh & Skrondal, 2008; Lewellyn & Bao, 2015).

Choosing the best Fitting Hierarchical Model: To get the best model fit for my hierarchical regression analysis, I tested the fit of the model in multiple steps. First, I set the data as panel treating year as the time variable and firms' id (*govkey*) as the factor variable. Second, I ran HLM using stata *mixed* command only on the dependent variable. Third, I incrementally added three levels as random effects; the three levels included country, industry, and time levels. Based on the results of likelihood ratio test, and Akaike information criterion (AIC)

and Bayesian information criterion (BIC) values, I found the best fit by cross-classifying industry and country, allowing the independent variables vary across time and industry, and nesting time within industry and country. In the fourth step, I added the controls, main effects, and interactions, observing improvement in the fit of the models with the addition of variables based on likelihood ratio test, and Akaike information criterion (AIC) and Bayesian information criterion (BIC) values. Finally, I tested the random effects structure after the inclusion of the controls, main independent variables, and interactions. In all models, results of the likelihood ratio tests and values of AIC and BIC indicated the best fit when cross-classifying industry and country, allowing the independent variables vary across time and industry, and nesting time within industry and country.

With respect to the structure of the covariance matrix for the random effects, I found the best fit when I allowed all variances and covariances to be distinct. Testing the fit for all four options including *independent* covariance structure that 'allows a distinct variance for each random effect within a random-effects equation and assumes that all covariances are zero', *exchangeable* covariances that 'have common variances and one common pairwise covariance', *identity* assuming that 'all variances are equal and all covariances are zero', and *unstructured* 'allowing for all variances and covariances to be distinct', I found the best fit for unstructured covariance structures. Thus, I added the *var cov(unstructured)* option to my HLM regression models. The greatest advantage of unstructured variance covariance structure is that by allowing independence to variance and covariance, it creates no limit or constraints on the variance and covariance values and these values are very close to what data reflects.

Stepwise Regression: I conducted four sets of regression analyses that are reported in tables 11 to 14. Each table represents the results of analyses using either Hofstede or GLOBE's national culture dimensions on either volatility of returns or R&D intensity. Each of the tables includes a total of 14 models. In each table, Model 1 (M 1) includes the control variables, model 2 (M 2) provides coefficients for the main independent variables hypothesized (hypothesis 1A, 1B, and 6A), models 3 to 6 include the results for the moderating impact of national culture dimensions on the negative performance feedback and risk relationship (hypotheses: 2A, 3A, 4A, 5A), models 7 to 10 show the results for the moderating impact of

national culture dimensions on the positive performance feedback and risk relationship (hypotheses: 2B, 3B, 4B, 5B), and models 11 to 14 include the coefficients for three-way interactions (Hypothesis 6B). All models are highly significant based on the significant Wald values ($p < 0.001$)

4.5. Results

4.5.1. Descriptive Statistics

The results of descriptive statistics analyses for the final dataset are reported in table 10. The final data consisted of 174,235 firms distributed across 71 countries and within a 20-year time period ranging from 01.01.1996 to 12.31.2015. Table 6 shows how more detailed descriptive statistics regarding the frequency of firms in each country. Table 10 shows the means, standard deviations, and correlation coefficients across the variables included in the statistical models. To avoid type I error, I calculated correlations with Bonferroni adjustment (Armstrong, 2014). I computed variance inflation factors (VIF) to assure that multicollinearity is not an issue between any of the variables. The VIFs average 3.1 ranging from 1.48 to 6.53. Since none of the values are above the standard value of 10, no multicollinearity is observed (Myers, 1990).

Table 10: Descriptive Statistics and Correlations

	20	21	22	23	24	25
1	-0.0257***	-0.171***	0.0532***	-0.0935***	-0.595***	0.165***
2	-0.0547***	-0.131***	-0.0426***	-0.0447***	-0.260***	0.0488***
3	0.296***	-0.846***	0.175***	-0.112***	-0.105***	0.128***
4	0.171***	-0.853***	0.254***	-0.145***	-0.110***	0.130***
5	0.155***	-0.426***	0.201***	-0.0579***	-0.0478***	0.0065
6	-0.482***	0.250***	0.0524***	-0.0286***	0.0198**	-0.0224**
7	-0.0594***	0.443***	-0.0930***	0.0127	0.0293***	-0.0350***
8	0.211***	-0.201***	0.00287	-0.0158*	-0.0596***	0.0267***
9	-0.00637	0.110***	0.191***	-0.00761	-0.0128	-0.00447
10	0.310***	-0.587***	0.00847	-0.0372***	-0.0819***	0.0951***
11	0.218***	0.193***	-0.266***	0.0579***	-0.00282	-0.0309***
12	-0.0039	0.0179**	-0.0735***	-0.0214**	-0.161***	0.0276***
13	0.0147*	0.00847	0.0185**	0.0358***	0.0628***	0.0214**
14	-0.00408	-0.128***	0.0755***	0.0564***	0.304***	0.0806***
15	0.00517	-0.184***	0.0884***	-0.0117	0.0536***	0.0514***
16	0.0632***	-0.211***	0.123***	-0.0410***	-0.0308***	0.0943***
17	-0.0376***	0.0131	-0.0861***	-0.0199**	-0.0165*	0.0131
18	0.359***	0.0597***	-0.264***	0.112***	0.0904***	-0.102***
19	0.0394***	0.488***	-0.0553***	0.133***	0.111***	-0.161***
20	1	-0.130***	-0.100***	0.0282***	0.0426***	-0.00152
21		1	-0.128***	0.128***	0.119***	-0.146***
22			1	-0.0290***	-0.0179***	0.0407***
23				1	0.0871***	-0.0333***
24					1	0.113***
25						1
	60.7	50.6	4.4	0.02	-0.08	0.04
	14.60	15.21	0.24	0.19	0.22	0.12

13	14	15	16	17	18	19
-0.0587***	-0.324***	-0.0356***	0.112***	0.0256***	-0.131***	-0.187***
-0.235***	0.0260***	0.155***	0.0533***	0.0517***	-0.0611***	-0.0689***
-0.0175*	0.128***	0.185***	0.224***	0.00681	-0.0320***	-0.475***
-0.0223**	0.135***	0.184***	0.186***	0.00772	-0.0381***	-0.410***
-0.0591***	0.0680***	0.0689***	0.0261***	-0.0222**	0.396***	0.277***
0.0221**	-0.0252***	-0.0455***	-0.115***	0.0185**	-0.307***	0.00802
-0.00498	-0.0496***	-0.0637***	-0.0984***	0.00646	-0.215***	0.0568***
-0.0113	0.00607	0.0517***	0.0755***	0.00208	-0.0973***	-0.209***
-0.0299***	0.0143*	0.0135*	-0.0411***	0.00242	-0.241***	-0.0486***
-0.0375***	0.0975***	0.146***	0.148***	-0.00606	0.0601***	-0.310***
-0.0412***	-0.0464***	-0.0558***	-0.182***	0.0674***	-0.0567***	0.178***
-0.0191**	-0.102***	-0.0170*	-0.0363***	0.0381***	0.0182**	0.0101
1	-0.0865***	-0.350***	-0.0863***	-0.0362***	-0.00701	-0.0349***
	1	0.431***	0.0291***	-0.000309	-0.0573***	-0.0934***
		1	0.210***	0.0107	-0.111***	-0.179***
			1	-0.0349***	-0.0674***	-0.219***
				1	-0.0305***	-0.0231***
					1	0.635***
						1
0.95	0.03	0.01	0.04	3.09	54.1	51.1
0.05	0.03	0.04	0.08	9.90	18.35	27.81

	6	7	8	9	10	11	12
	-0.0218**	-0.0505***	0.0295***	0.00354	0.116***	-0.0186**	0.156***
	-0.0207**	-0.0404***	0.0405***	-0.00379	0.0775***	0.0535***	0.104***
	-0.325***	-0.382***	0.369***	0.0771***	0.681***	-0.199***	-0.0117
	-0.0953***	-0.440***	0.263***	0.104***	0.612***	-0.165***	0.00647
	-0.151***	-0.334***	0.192***	0.121***	0.441***	-0.0872***	0.0153*
	1	0.0525***	-0.119***	0.239***	-0.416***	0.179***	0.00579
		1	-0.0294***	0.172***	-0.221***	0.165***	0.0043
			1	0.480***	0.245***	0.0582***	-0.00667
				1	-0.0546***	0.0944***	-0.00588
					1	0.214***	-0.00794
						1	0.102***
							1
	6.67	0.12	0.68	0.56	0.81	1.47	0.06
	0.64	0.09	0.80	0.30	0.39	0.92	0.26

	1	2	3	4	5
1	1				
2	0.257***	1			
3	0.160***	0.121***	1		
4	0.164***	0.118***	0.915***	1	
5	0.0396***	0.0665***	0.565***	0.666***	1
	0.13	0.28	3.34	0.12	0.32
	0.30	1.60	1.65	0.06	0.68

1	Volatility of Returns
2	R&D Intensity
3	GDP per Capita
4	Rule of law
5	Political Stability
6	Investor Protection
7	Political Rights
8	Domestic Credit to Private sector
9	Market Capitalization
10	Information Sharing
11	Creditor Rights
12	Growth Opportunities
13	Net Sales
14	NWC
15	Composite Slack
16	Total Assets
17	Industry Growth Opportunities
18	UA
19	FO
20	MAS
21	PD
22	PO
23	Bankruptcy
24	Performance < Asp
25	Performance > Asp
	Mean
	Standard Deviation

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

4.5.2. Analyses Based on Hofstede's Scores on Cultural Dimensions

4.5.2.1. Volatility of Returns across Cultures When Performance Declines below / Rises above Aspirations

Using volatility of returns as my first measure of risk, the results for the effect of performance relative to aspirations on volatility of returns across cultures is shown in table 11. Table 11 includes 14 models. Having included the control variables in model 1, I included the main independent variables (along with their squared that were also significant indicating non-linearity of the relationship between performance relative to aspiration levels and the risk-taking behavior of firms) in model 2. The coefficient of the impact of performance decline below aspirations on the volatility of returns is negative and significant that confirms hypothesis 1A ($\beta = -0.61$, $p < 0.001$). The significant negative coefficient of the performance decline below aspirations squared ($\beta = -0.07$, $p < 0.001$) indicates that as performance falls far below aspiration levels, the degree of volatility of returns does not increase with as much speed and decreases after a point (This is depicted in figure 2A). Regarding the effect of performance rise above aspirations, the positive significant coefficient of performance rise above aspirations ($\beta = 0.48$, $p < 0.001$) and the negative significant coefficient of performance rise above aspirations squared ($\beta = -0.05$, $p < 0.05$) show that as performance rises above aspirations, the volatility of returns of firms increases, and as performance rises high above aspirations, it starts to decrease, so hypothesis 1B cannot be confirmed (This is depicted in figure 2B). The coefficient for the effect of distance from bankruptcy is positive and significant ($\beta = 0.07$, $p < 0.01$) confirming hypothesis 6A (Figure 2C shows this direct relationship).

Models 3 to 10 include the two-way interactions. In this section, I also included interaction of masculinity dimension in order to get a clearer comparative picture of whether masculinity or performance orientation are significant moderators based on the argument that I made in the hypothesis development section for PO. In the first four models that show the interaction effects of each of the cultural dimensions with performance decline below aspirations, I find support for the moderating impact of all four cultural dimensions. The significant and positive coefficient of the UA and performance decline below aspiration levels interaction ($\beta = 0.11$, $p < 0.05$) in model 3 indicates that UA reduces the negative impact of performance

decline below aspirations on the volatility return of firms, confirming hypothesis 2A (Figure 2D depicts this interaction effect). Similarly, the positive and significant interaction effect of FO and performance decline below aspirations in model 4 ($\beta = 0.57$, $p < 0.001$) also indicates that FO reduces the negative impact of performance decline below aspirations on the volatility of returns of firms, confirming hypothesis 3A (Figure 2E depicts this interaction effect). The significant positive coefficient of the interaction between PD and performance decline below aspirations in model 6 ($\beta = 0.46$, $p < 0.001$) also confirms hypothesis 5A, indicating that in societies with higher PD, firms are relatively less risk-seeking when their performance falls below their aspirations (Figure 2G depicts this interaction effect). Masculinity also works; the significant negative coefficient of MAS and performance decline below aspirations interaction in model 5 ($\beta = -0.75$, $p < 0.001$) shows that the negative impact is even higher in higher MAS societies. (Figure 2F depicts this interaction effect).

With respect to performance rise above aspirations, only the coefficient for the interaction between PD and performance rise above aspirations in model 10 is positive and significant ($\beta = 0.48$, $p < 0.001$), indicating that the increase in risk-taking behavior in response to performance rise above aspirations is relatively higher in societies with higher degrees of PD (Figure 2H), and hypothesis 5B cannot be confirmed. Thus, none of the hypotheses regarding interaction effects with performance rise above aspirations is confirmed based on Hofstede dimensions and volatility of returns.

The three-way interaction effects in models 11 to 14 indicate how distance from bankruptcy may influence the moderating impact of national cultural dimensions on the volatility of returns. The significant coefficients for FO ($\beta = -0.41$, $p < 0.001$), MAS ($\beta = 0.52$, $p < 0.001$), and PD ($\beta = -0.66$, $p < 0.001$) in models 12 to 14 respectively show that distance from bankruptcy reduces the moderating impact of these three national cultural dimensions on negative performance feedback and risk relationship. Figures 2I, 2J, and 2K show these three-way interactions. As the figures show, with higher distance from bankruptcy, the moderating impact of cultural dimensions decreases. Thus, all four models confirm hypothesis 6B. except for model 1 (UA) that is not significant.

Table 11: The HLM Results for Volatility of Returns (Hofstede Cultural Dimensions)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
GDP per Capita	0.11	0.23	0.92***	0.87***	0.92***	0.91***	0.92***
	(0.21)	(0.22)	(0.22)	(0.21)	(0.21)	(0.22)	(0.22)
Rule of law	0.29**	0.16*	0.17*	0.16*	0.15*	0.17*	0.17*
	(0.09)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)
Political Stability (Absence)	-0.02***	-0.01*	-0.01*	-0.01*	-0.00*	-0.01*	-0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Investor Protection	-0.70	-0.47	-0.34	-0.33	-0.29	-0.32	-0.33
	(0.74)	(0.52)	(0.52)	(0.50)	(0.51)	(0.52)	(0.52)
Political Rights	-0.02	-0.07	-0.06	-0.07	-0.06	-0.07	-0.06
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Domestic Credit to Private sector	-0.10***	-0.12***	-0.10***	-0.11***	-0.11***	-0.10***	-0.10***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	0.16	0.63**	0.77***	0.76**	0.77***	0.75**	0.77***
	(0.22)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Information Sharing	-0.66	-0.64	-0.45	-0.32	-0.22	-0.38	-0.46
	(0.95)	(0.95)	(0.95)	(0.92)	(0.93)	(0.95)	(0.95)
Creditor Rights	0.04	0.24	0.19	0.13	0.09	0.15	0.19
	(0.50)	(0.39)	(0.39)	(0.37)	(0.38)	(0.38)	(0.39)
Growth Opportunities	0.08***	0.02***	0.00**	0.01***	0.00*	0.00**	0.00**
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Net Sales	-0.01**	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NWC	-0.32***	-0.14***	-0.17***	-0.17***	-0.17***	-0.17***	-0.17***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Composite Slack	0.37***	0.10***	0.13***	0.14***	0.13***	0.14***	0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Total Assets	0.21***	0.17***	0.20***	0.17***	0.18***	0.20***	0.20***
	(0.02)	(0.01)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Industry Growth Opportunities	0.01	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
UA	-0.07*	-0.02	0.01	0.00	0.00	0.01	0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
FO	-0.07*	-0.05*	-0.04*	0.00	-0.04*	-0.04*	-0.04*
	(0.03)	(0.02)	(0.02)	(0.00)	(0.02)	(0.02)	(0.02)
MAS	0.02	0.04	0.06*	0.06*	0.00	0.06*	0.06*
	(0.04)	(0.02)	(0.02)	(0.02)	0.00	(0.02)	(0.02)
PD	-0.04	-0.02	0.00	-0.00	-0.01	0.00	0.00
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Bankruptcy		0.07**	0.08***	0.07**	0.07**	0.08**	0.08***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Performance < Asp		-0.61***	-0.54***	-0.35***	-0.32***	-0.21***	-0.48***
		(0.03)	(0.04)	(0.05)	(0.01)	(0.01)	(0.03)
$(\text{Performance} < \text{Asp})^2$		-0.07***	-0.03**	-0.07***	0.03	0.05	-0.03**
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Performance > Asp		0.48***	0.36***	0.38***	0.36***	0.37***	0.38***
		(0.03)	(0.03)	(0.03)	(0.03	(0.03)	(0.05)
$(\text{Performance} > \text{Asp})^2$		-0.05*	-0.01	-0.02	-0.01	-0.01	-0.01
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
(Performance < Asp) x UA			0.11*				
			(0.05)				
(Performance < Asp) x FO				0.57***			
				(0.03)			
(Performance < Asp) x MAS					-0.75***		
					(0.04)		
(Performance < Asp) x PD						0.46***	
						(0.05)	
(Performance > Asp) x UA							-0.04
							(0.10)
(Performance > Asp) x FO							
(Performance > Asp) x MAS							
(Performance > Asp) x PD							

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
Bankruptcy x UA							
Bankruptcy x FO							
Bankruptcy x MAS							
Bankruptcy x PD							
(Performance < Asp) x Bankruptcy							
(Performance < Asp) x UA x Bankruptcy							
(Performance < Asp) x FO x Bankruptcy							
(Performance < Asp) x MAS x Bankruptcy							
(Performance < Asp) x PD x Bankruptcy							
N (Firms)	62387	42069	42069	42069	42069	42069	42069
N (Countries)	62	61	61	61	61	61	61
Wald Statistic	10810***	2591***	4178***	4545***	4485***	4281***	4172***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.0.001$

Table 11 Continued

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
GDP Per Capita	0.91***	0.92***	0.95***	0.94***	0.86***	0.94***	0.91***
	(0.22)	(0.22)	(0.22)	(0.22)	(0.21)	(0.21)	(0.22)
Rule of Law	0.17*	0.17*	0.16*	0.16*	0.13	0.16*	0.13
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Political Stability (Absence)	-0.01*	-0.01*	-0.01*	-0.01*	-0.00*	-0.00*	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Investor Protection	-0.33	-0.33	-0.31	-0.39	-0.62	-0.36	-0.46
	(0.52)	(0.52)	(0.52)	(0.52)	(0.51)	(0.52)	(0.53)
Political Rights	-0.07	-0.06	-0.07	-0.06	-0.08	-6.6748	-0.07

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Domestic Credit to Private Sector	-0.10***	-0.10***	-0.10***	-0.10***	-0.11***	-0.11***	-0.11***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	0.77***	0.77**	0.77**	0.78***	0.76***	0.75**	0.76**
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Information Sharing	-0.46	-0.45	-0.45	-0.53	-0.04	-0.36	-0.78
	(0.95)	(0.95)	(0.95)	(0.95)	(0.93)	(0.94)	(0.95)
Creditor Rights	0.19	0.19	0.19	0.21	0.41	0.15	0.29
	(0.39)	(0.39)	(0.39)	(0.39)	(0.38)	(0.38)	(0.39)
Growth Opportunities	0.09**	0.09**	0.06**	0.03**	0.07**	0.08	0.00*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Net Sales	-0.00***	-0.00***	-0.0***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NWC	-0.17***	-0.17***	-0.17***	-0.16***	-0.15***	-0.16***	-0.15***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Composite Slack	0.13***	0.13***	0.13***	0.13***	0.11***	0.11***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Total Assets	0.21***	-0.22***	0.21***	0.18***	0.10***	0.14***	0.08***
	(0.02)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Ind. Growth Opportunities	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	0.01	0.01	0.01	0.01	0.00	0.00	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
FO	0.00	-0.04*	-0.04*	-0.04*	0.00	-0.04*	-0.05*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
MAS	0.06*	0.00	0.06*	0.06*	0.05*	0.00	0.06*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
PD	0.00	0.00	0.00	0.00	-0.01	-0.00	0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
Distance from bankruptcy	0.08*** (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.09 (0.07)	0.22 (0.13)	-0.10*** (0.02)	0.93** (0.32)
Performance < Asp	-0.48*** (0.03)	-0.48*** (0.03)	-0.48*** (0.03)	-0.56*** (0.04)	-0.57*** (0.04)	-0.51*** (0.02)	-0.58*** (0.04)
(Performance < Asp)^2	-0.03** (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.05*** (0.01)	-0.10*** (0.01)	-0.06*** (0.01)	-0.12*** (0.01)
Performance > Asp	0.37*** (0.03)	0.27*** (0.01)	0.33*** (0.01)	0.36*** (0.03)	0.38*** (0.03)	0.36*** (0.03)	0.36*** (0.03)
(Performance > Asp)^2	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)	-0.00 (0.02)
(Performance < Asp) x UA					0.12* (0.05)		
(Performance < Asp) x FO					0.31*** (0.03)		
(Performance < Asp) x MAS						-0.31*** (0.05)	
(Performance < Asp) x PD							0.25*** (0.05)
(Performance > Asp) x UA							
(Performance > Asp) x FO	-0.06 (0.06)						
(Performance > Asp) x MAS		0.10 (0.09)					
(Performance > Asp) x PD			0.48*** (0.09)				
Bankruptcy x UA					0.25 (0.15)		
Bankruptcy x FO					-0.07 (0.22)		
Bankruptcy x MAS						0.75 (0.34)	
Bankruptcy x PD							-0.01*

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
							(0.00)
(Performance < Asp) x Bankruptcy				0.35^{***} (0.12)	0.28^{***} (0.01)	-0.20^{***} (0.01)	0.51^{***} (0.01)
(Performance < Asp) x UA x Bankruptcy				0.72 (0.58)			
(Performance < Asp) x FO x Bankruptcy					-0.41^{***} (0.02)		
(Performance < Asp) x MAS x Bankruptcy						0.52^{***} (0.03)	
(Performance < Asp) x PD x Bankruptcy							-0.66^{***} (0.04)
N (Firms)	42069	42069	42069	42069	42069	42069	42069
N (Countries)	61	61	61	61	61	61	61
Wald Statistic	4172^{***}	4174^{***}	4194^{***}	4350^{***}	5224^{***}	4885^{***}	5202^{***}
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
$^{*}\,p < 0.05$, $^{**}\,p < 0.01$, $^{***}\,p < 0.001$

Figure 2 A: Performance below Aspirations and Volatility of Returns
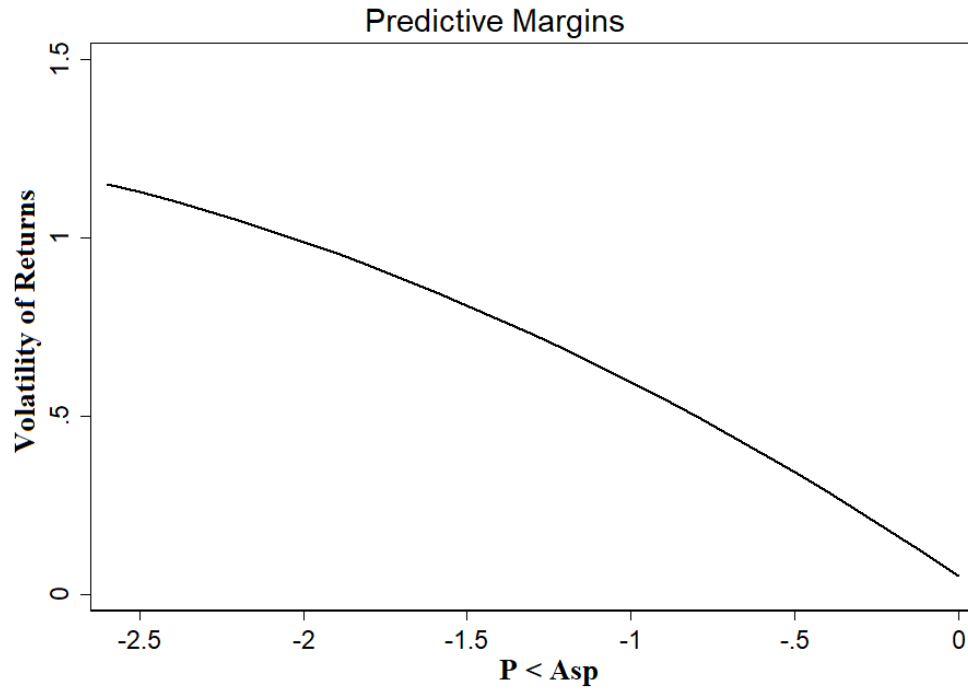
Figure 2 B: Performance above Aspirations and Volatility of Returns
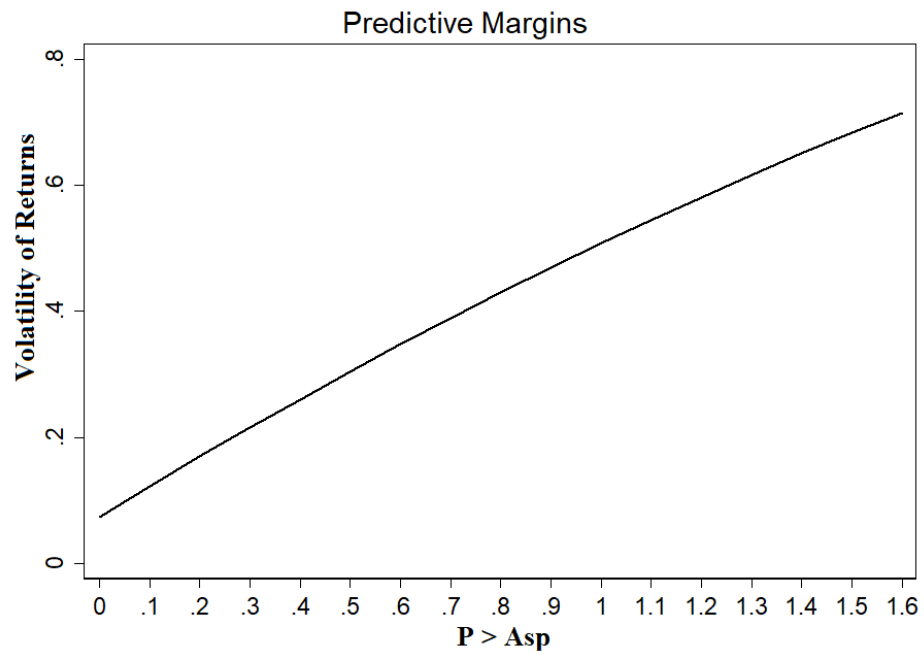
Figure 2 C: Distance from bankruptcy and Volatility of Returns

Predictive Margins

Volatility of Returns

Proximity to Bankruptcy
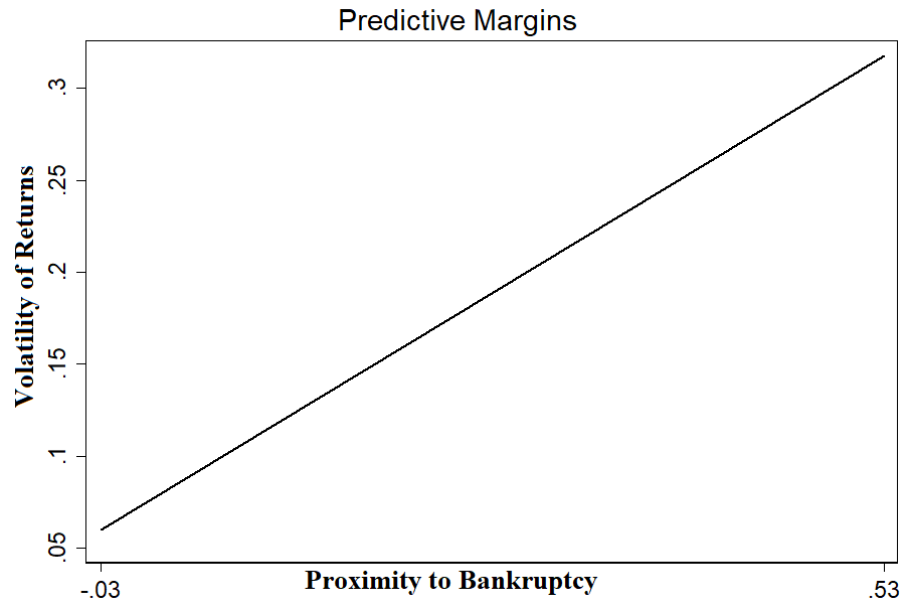
Figure 2 D: (Performance < Asp) x UA

Predictive Margins

High UA – – – – –
Low UA ————

Volatility of Returns

P < Asp
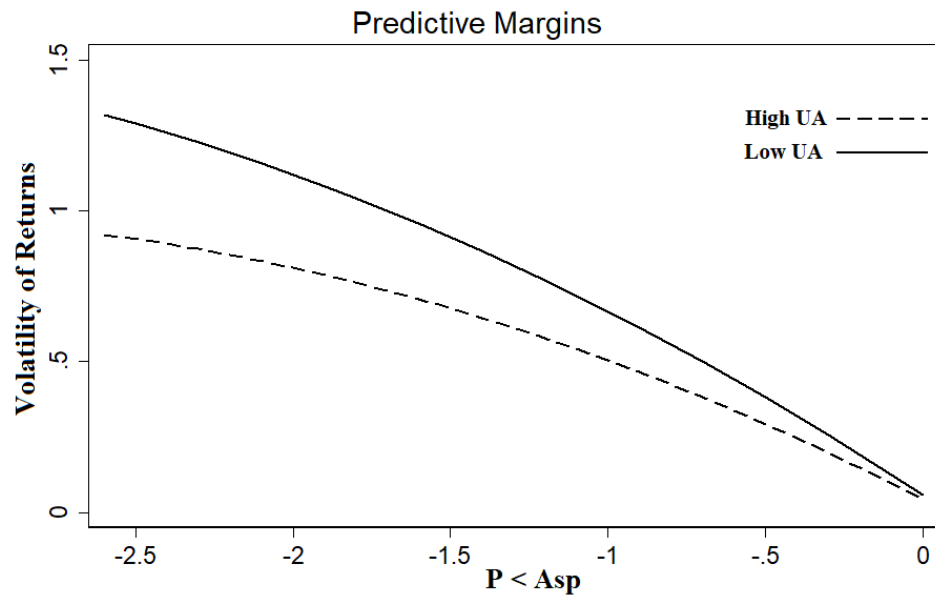
Figure 2 E: (Performance < Asp) x FO

Predictive Margins
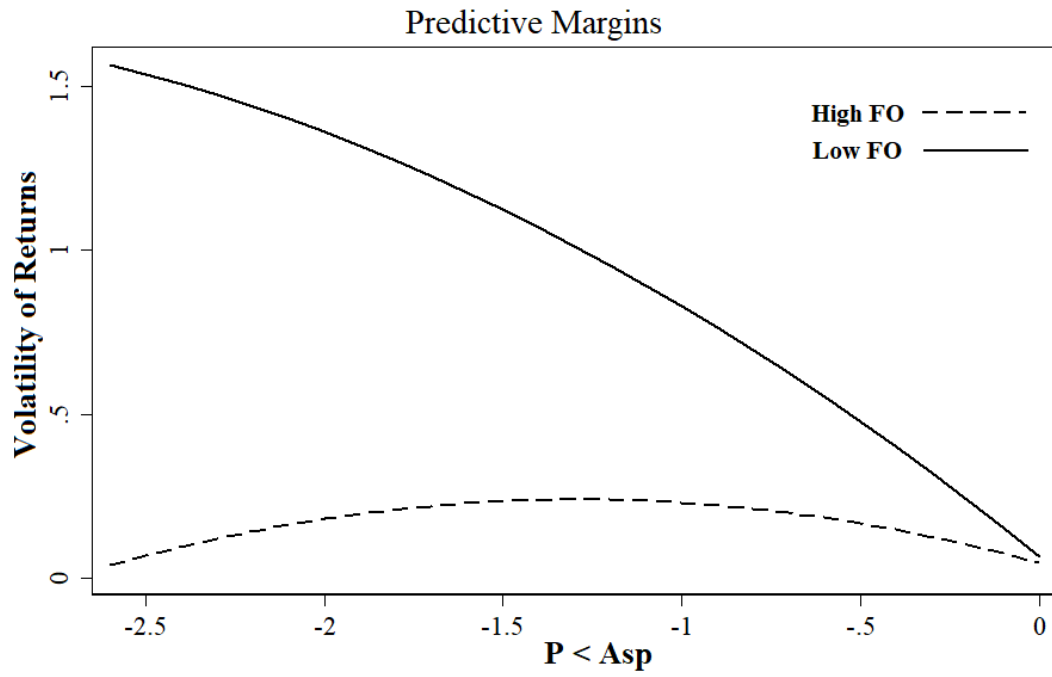
Figure 2 F: (Performance < Asp) x MAS

Predictive Margins
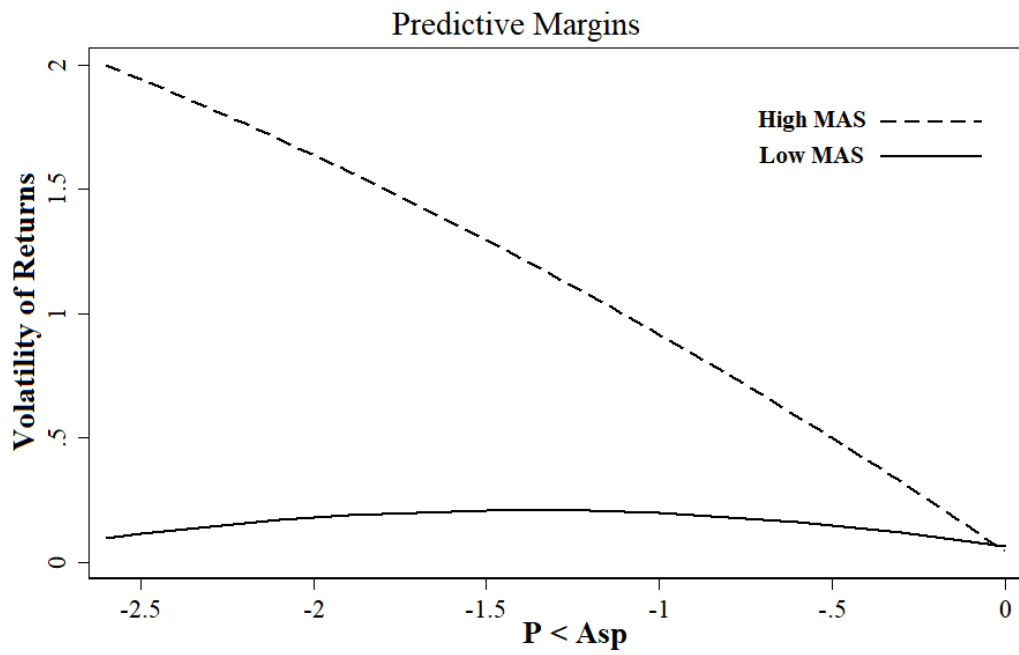
Figure 2 G: (Performance < Asp) x PD

Predictive Margins
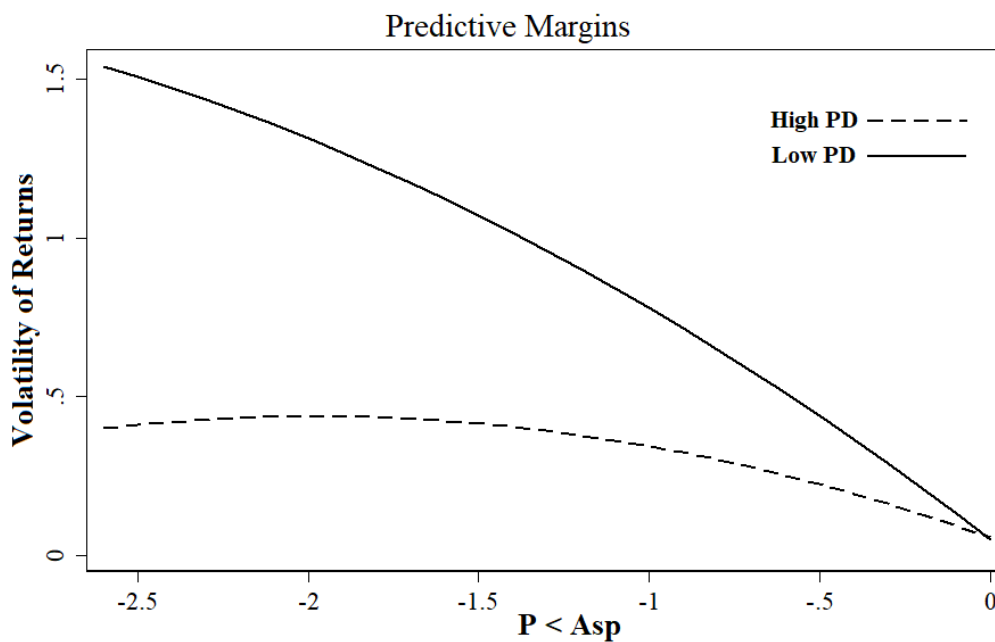
Figure 2 H: (Performance > Asp) x PD

Predictive Margins
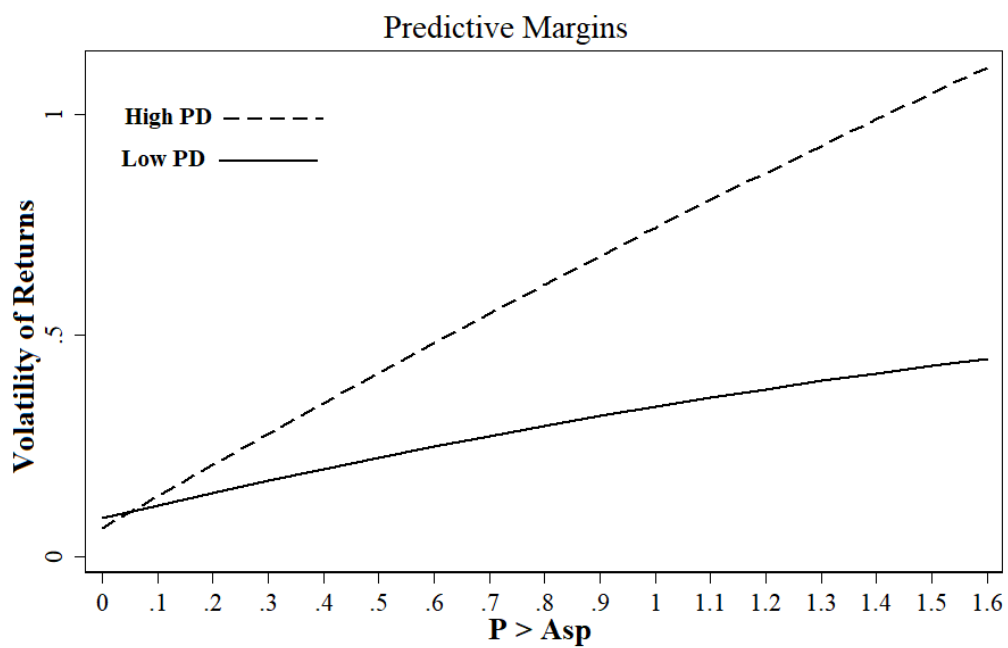
Figure 2 I: (Performance < Asp) x FO x Z-Score

Predictive Margins
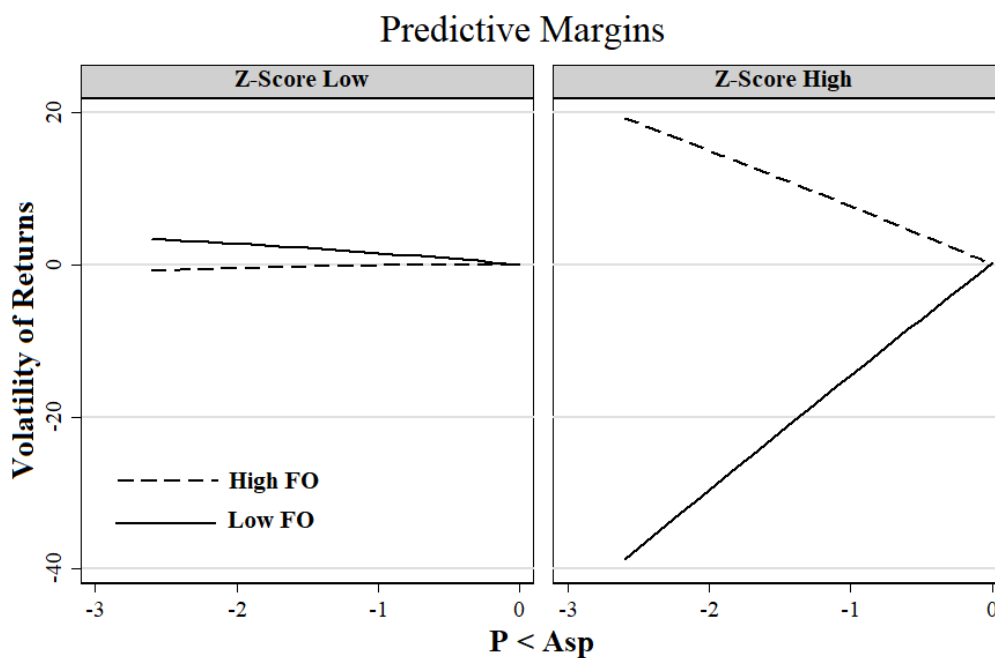
Figure 2 J: (Performance < Asp) x MAS x Z-Score

Predictive Margins
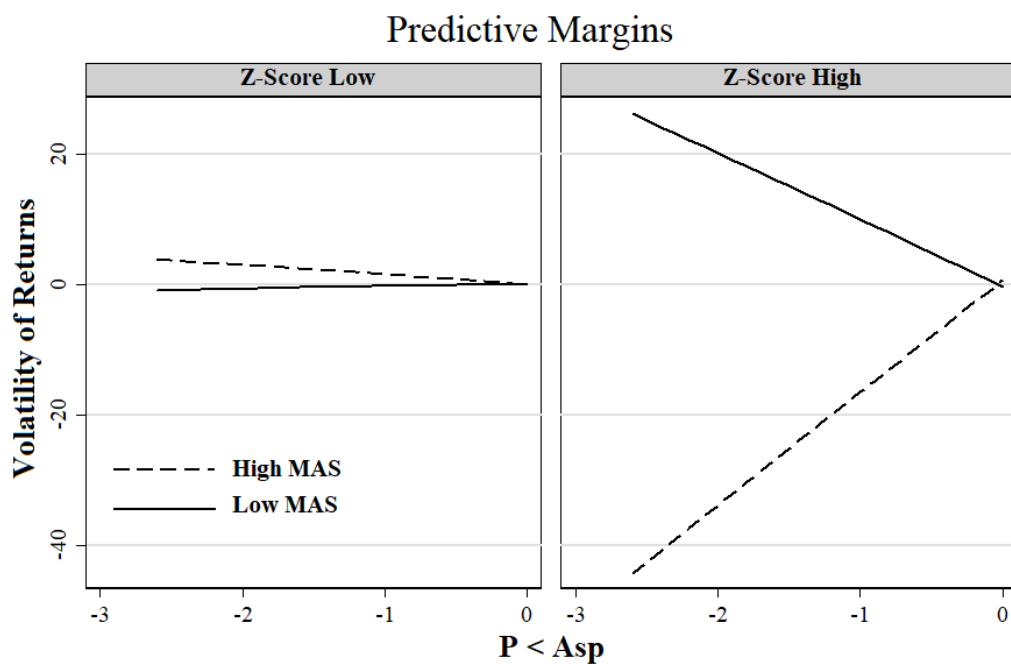
Figure 2 K: (Performance < Asp) x PD x Z-Score

Predictive Margins
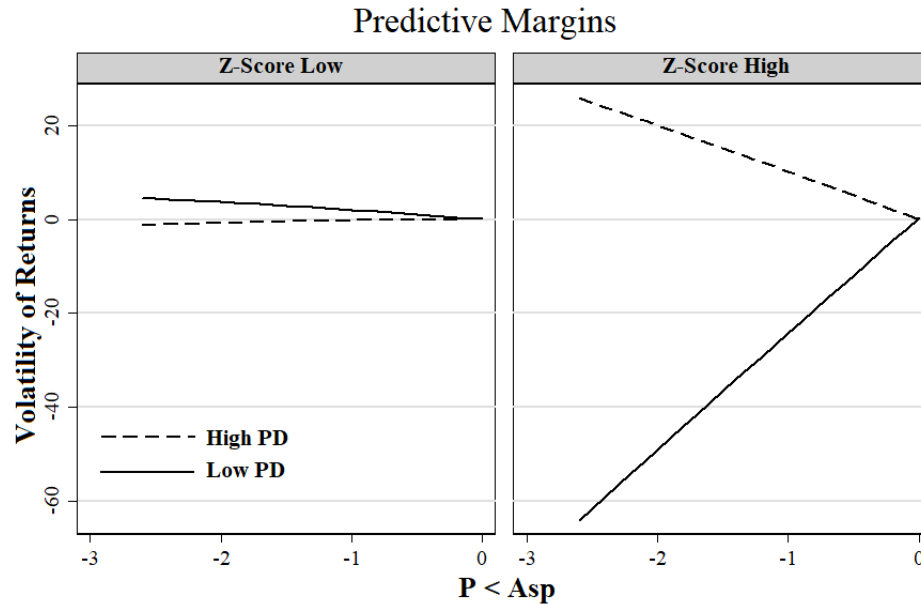
4.5.2.2. *R&D Intensity across Cultures When Performance Declines below / Rises above Aspirations*

Similar to the previous analysis, having included the control variables in model 1, I included the main independent variables along with their squared forms to check for nonlinearity of the relationships in model 2. Table 12 shows the results for these analyses. The coefficient of the impact of performance decline below aspirations on the R&D intensity is negative and significant ($\beta = -0.19$, $p < 0.001$); thus, hypothesis 1A is confirmed. Also, the negative significant coefficient for the performance below aspirations squared ($\beta = -0.11$, $p < 0.001$) indicates that R&D intensity stops increasing or starts to decrease after some point (Figure 3A). Regarding the effect of performance rise above aspirations, the coefficient of performance rise above aspirations is positive and significant ($\beta = 0.87$, $p < 0.001$), but the coefficient of performance rise above aspirations squared is not significant, indicating that the relationship is linear and performance rise above aspirations increases the R&D intensity (Figure 3B). Thus, hypothesis 1B is not confirmed based on the positive significant

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coefficient. The coefficient for the effect of distance from bankruptcy is insignificant indicating that hypothesis 6A cannot be confirmed for R&D intensity.

In models 3 to 6 including the two-way interactions and focusing on the moderating impact of Hofstede's cultural dimensions on the negative performance feedback and R&D intensity, I find support for the moderating impact of all four cultural dimensions. The significant and positive coefficient of the UA and performance decline below aspirations interaction in model 3 ($\beta = 0.01$, $p < 0.001$) indicates that uncertainty avoidance reduces the negative impact of performance decline below aspirations on R&D intensity of firms, confirming hypothesis 2A (Figure 3C). The positive and significant interaction effect of FO and performance decline below aspirations in model 4 ($\beta = 0.85$, $p < 0.001$) also indicates that FO reduces the negative impact of performance decline below aspirations on the R&D intensity of firms, confirming hypothesis 3A (Figure 3D). The significant positive coefficient of the interaction between PD and performance decline below aspirations in model 6 ($\beta = 0.02$, $p < 0.001$) also confirms hypothesis 5A (Figure 3F). The significant negative coefficient of the MAS and performance decline below aspiration interaction in model 5 ($\beta = -0.74$, $p < 0.001$) shows that the negative impact performance decline below aspirations on R&D intensity is relatively stronger in societies with higher MAS (Figure 3E).

With respect to performance rise above aspirations, the interaction effect of performance rise above aspirations and UA in model 7 is not significant. Thus, hypothesis 2B is not confirmed for Hofstede's UA and R&D intensity. In model 8, the interaction effect of FO and performance rise above aspirations is negative and significant ($\beta = -0.02$, $p < 0.001$), based on which hypothesis 3B is confirmed (Figure 3G). Based on the insignificant interaction effect of PD and performance rise above aspirations in model 10, hypothesis 5B cannot be confirmed. Finally, the positive and significant coefficient in model 9 ($\beta = 0.04$, $p < 0.001$) indicates that in societies with higher degrees of MAS, the degree of R&D intensity response to performance rise above aspirations is higher (Figure 3H).

Regarding the three-way interactions in models 11 to 14, the negative significant coefficients for UA (β = -0.23, p < 0.001) and FO (β = -0.18, p < 0.001) in model 11 and model 12 respectively show that distance from bankruptcy reduces the moderating impacts of these two national cultural dimensions. Figures 3I and 3J delineate these three-way interactions. In both figures, the moderating impact of national culture is reduced in bankruptcy situations (low z-score), confirming hypothesis 6B.

Table 12: The HLM Results for R&D Intensity (Hofstede Cultural Dimensions)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
GDP Per Capita	0.05***	0.06**	0.06**	0.06**	0.06**	0.06**	0.06**
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Rule of Law	0.14	-0.08	-0.09	-0.14	-0.11	-0.11	-0.08
	(0.56)	(0.74)	(0.74)	(0.74)	(0.74)	(0.74)	(0.74)
Political Stability (Absence)	0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Investor Protection	-0.04	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Political Rights	-0.04	-0.15	-0.16	-0.14	-0.15	-0.12	-0.15
	(0.62)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)
Domestic Credit to Private Sector	0.62	-0.14	-0.15	-0.16	-0.15	-0.15	-0.15
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Information Sharing	0.03	0.01	0.01	0.02	0.01	0.02	0.01
	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Creditor Rights	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Growth Opportunities	0.41***	0.14***	0.14***	0.14***	0.14***	0.14***	0.14***

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Net Sales	-0.03	0.04	0.04	0.04	0.04	0.04	0.04
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NWC	-0.21***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Composite Slack	0.45***	0.58***	0.58***	0.58***	0.58***	0.58***	0.58***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Total Assets	-0.55	-0.57	-0.58	-0.59	-0.58	-0.58	-0.57
	(0.17)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Ind. Growth Opportunities	-0.02	-0.06	-0.06	-0.06	-0.07	-0.06	-0.06
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Ind. Risk	0.02*	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FO	-0.12	0.10	0.10	0.14	0.10	0.11	0.10
	(0.20)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
MAS	-0.35	-0.21	-0.21	-0.22	0.23	-0.20	-0.21
	(0.22)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
PD	-0.38	-0.32	-0.32	-0.33	-0.33	0.27	-0.32
	(0.24)	(0.29)	(0.28)	(0.29)	(0.29)	(0.29)	(0.29)
Distance from bankruptcy		-0.24	-0.34	-0.35	-0.25	-0.36	-0.24
		(0.42)	(0.42)	(0.42)	(0.42)	(0.42)	(0.42)
Performance < Asp		-0.19***	-0.26***	-0.24***	-0.25***	-0.25***	-0.19***
		(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
(Performance < Asp)^2		-0.11***	-0.11***	-0.12***	-0.14***	-0.12***	-0.15***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Performance > Asp		0.87***	0.88***	0.89***	0.87***	0.89***	1.19**

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.43)
(Performance > Asp)^2		-0.13	-0.13	-0.14	-0.13	-0.14	-0.15
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
(Performance < Asp) x UA				0.01***			
				(0.01)			
(Performance < Asp) x FO					0.85***		
					(0.022)		
(Performance < Asp) x MAS						-0.74*	
						(0.33)	
(Performance < Asp) x PD							0.02***
							(0.00)
(Performance > Asp) x UA							-0.01
							(0.01)
(Performance > Asp) x FO							
(Performance > Asp) x MAS							
(Performance > Asp) x PD							
Bankruptcy x UA							
Bankruptcy x FO							
Bankruptcy x MAS							
Bankruptcy x PD							
(Performance < Asp) x Bankruptcy							
(Performance < Asp) x UA x Bankruptcy							
(Performance < Asp) x FO x Bankruptcy							
(Performance < Asp) x MAS x Bankruptcy							

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Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
(Performance < Asp) x PD x Bankruptcy							
N (Firms)	54146	36606	36606	36606	36606	36606	36606
N (Countries)	55	54	54	54	54	54	54
Wald Statistic	1231***	1310***	1326***	1325***	1315***	1335***	1311***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.$

Table 12 Continued

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
GDP Per Capita	0.06**	0.06**	0.06**	0.05**	0.05**	0.06**	0.07**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Rule of Law	-0.05	-0.06	-0.09	-0.07	-0.04	-0.04	-0.06
	(0.74)	(0.74)	(0.74)	(0.74)	(0.74)	(0.74)	(0.74)
Political Stability (Absence)	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Investor Protection	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.06
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)
Political Rights	-0.13	-0.15	-0.15	-0.11	-0.16	-0.14	-0.12
	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)
Domestic Credit to Private Sector	-0.14	-0.14	-0.14	-0.14	-0.15	-0.17	-0.18
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Information Sharing	0.01	0.01	0.01	0.01	0.02	0.02	0.04
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.08)
Creditor Rights	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.03

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Growth Opportunities	0.15***	0.14***	0.14***	0.14***	0.13***	0.14***	0.15***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Net Sales	0.04*	0.04	0.04	0.04	0.04*	0.04	0.07
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.09)
NWC	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Composite Slack	0.58***	0.58***	0.58***	0.59***	0.59***	0.58***	0.58***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Total Assets	-0.59	-0.58	-0.57	-0.60	-0.62	-0.58	-0.57
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Ind. Growth Opportunities	-0.06	-0.06	-0.06	-0.06	-0.06	-0.07	-0.07
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Ind. Risk	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
FO	0.14	0.11	0.10	0.13	0.12	0.11	0.12
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
MAS	-0.22	0.21	-0.22	-0.21	-0.24	0.24	0.25
	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
PD	-0.32	-0.36	0.38	-0.32	-0.32	-0.34	-0.33
	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)
Distance from bankruptcy	-0.23	-0.24	-0.24	0.24*	-0.72	3.65	0.36
	(0.42)	(0.42)	(0.42)	(0.10)	(1.99)	(2.64)	(0.26)
Performance < Asp	-0.19***	-0.19***	-0.19***	-0.14***	-0.15***	-0.15***	-0.18***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
(Performance < Asp)^2	-0.11***	-0.11***	-0.15***	-0.15***	-0.12***	-0.12***	-0.13***

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Performance > Asp	0.88***	0.88***	0.91***	0.90***	0.90***	0.87***	0.88***
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
$(\text{Performance} > \text{Asp})^2$	-0.29	-0.17	-0.11	-0.15	-0.15	-0.13	-0.14
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
(Performance < Asp) x UA				-0.95*			
				(0.43)			
(Performance < Asp) x FO					-0.92***		
					(0.26)		
(Performance < Asp) x MAS						0.06	
						(0.14)	
(Performance < Asp) x PD							-0.12
							(0.10)
(Performance > Asp) x UA							
(Performance > Asp) x FO	-0.02***						
	(0.01)						
(Performance > Asp) x MAS		0.04***					
		(0.01)					
(Performance > Asp) x PD			0.01				
			(0.01)				
Bankruptcy x UA				-0.05***			
				(0.01)			
Bankruptcy x FO					-0.88		
					(0.86)		
Bankruptcy x MAS						-0.79	
						(0.72)	
Bankruptcy x PD							-0.22
							(0.18)
(Performance < Asp) x Bankruptcy				0.12***	0.95***	-0.82	0.15
				(0.01)	(0.08)	(0.44)	(0.09)
(Performance < Asp) x UA x Bankruptcy				-0.23***			
				(0.02)			

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
(Performance < Asp) x FO x Bankruptcy					-0.18^{***} (0.01)		
(Performance < Asp) x MAS x Bankruptcy						-0.16 (0.25)	
(Performance < Asp) x PD x Bankruptcy							0.24 (0.23)
N (Firms)	36606	36606	36606	36606	36606	36606	36606
N (Countries)	54	54	54	54	54	54	54
Wald Statistic	1355^{***}	1358^{***}	1310^{***}	1422^{***}	1491^{***}	1318^{***}	1347^{***}
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
$^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Figure 3 A: Performance below Aspirations and R&D Intensity

Predictive Margins
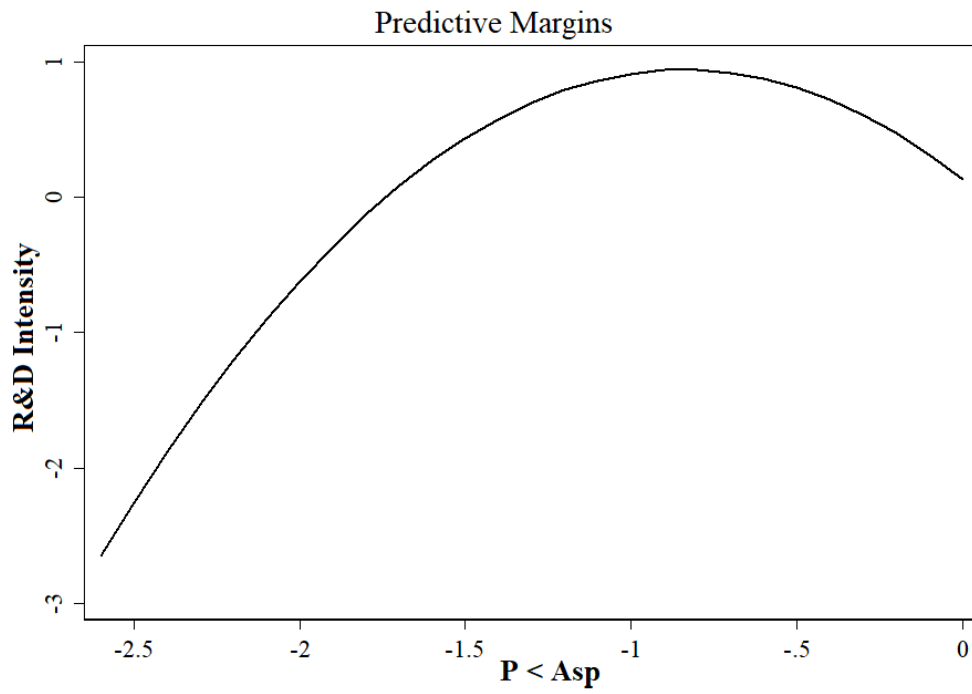
Figure 3 B: Performance above Aspirations and R&D Intensity

Predictive Margins
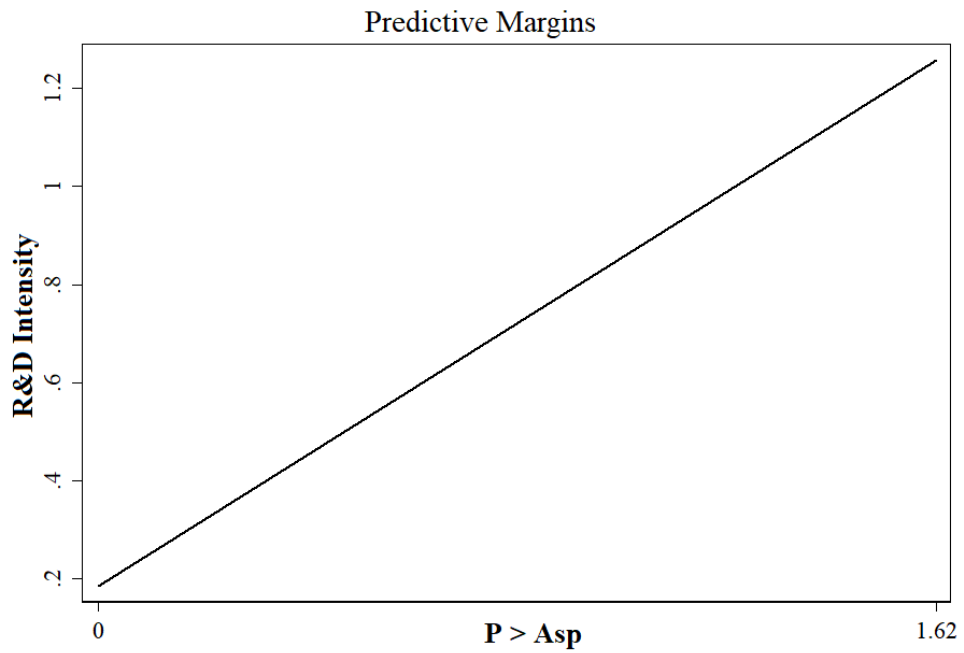
Figure 3 C: (Performance < Asp) x UA

Predictive Margins

R&D Intensity

High UA – – – – –
Low UA ————

P < Asp
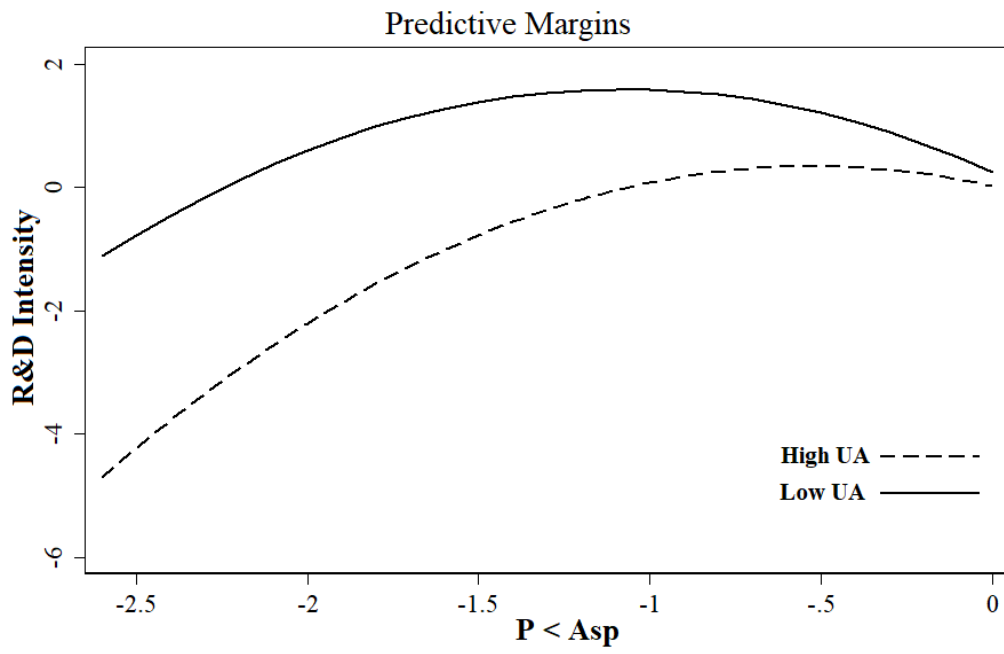
Figure 3 D: (Performance < Asp) x FO

Predictive Margins
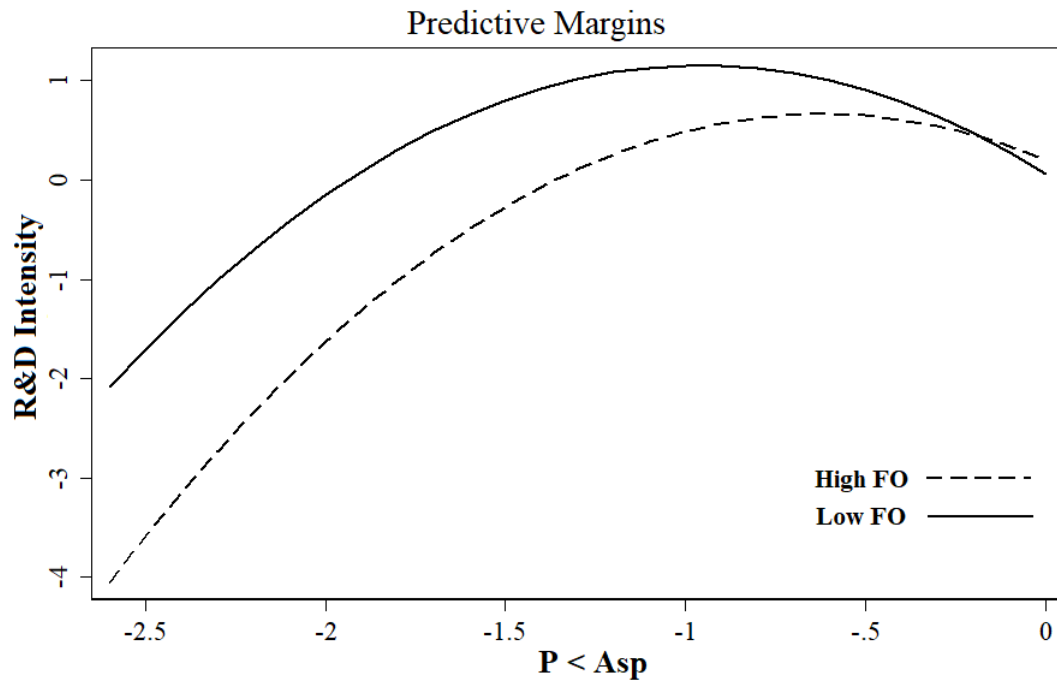
Figure 3 E: (Performance < Asp) x MAS

Predictive Margins
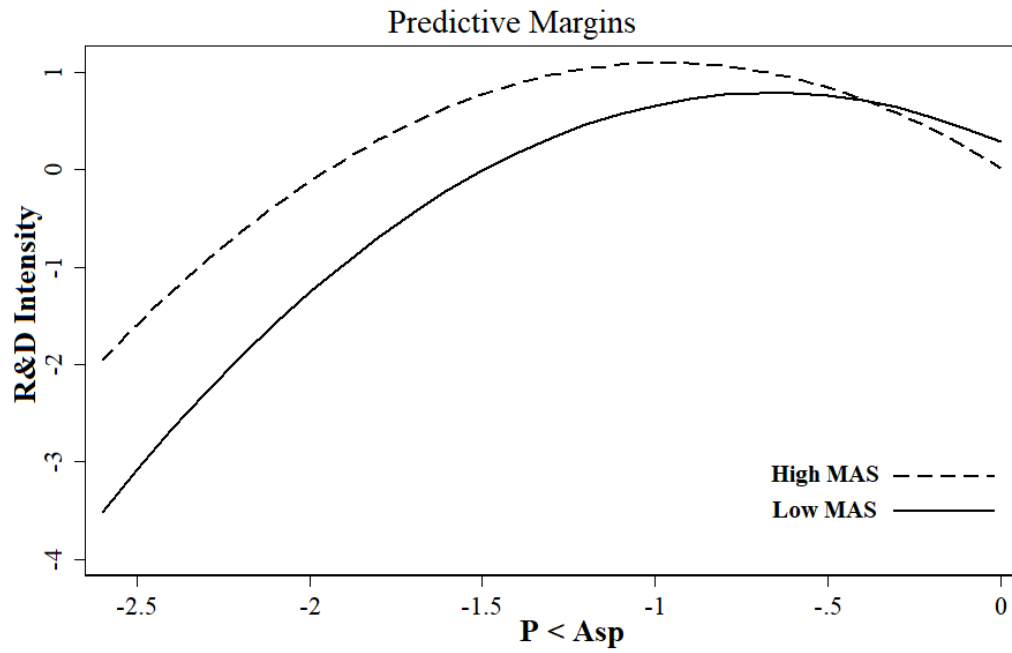
Figure 3 F: (Performance < Asp) x PD

Predictive Margins
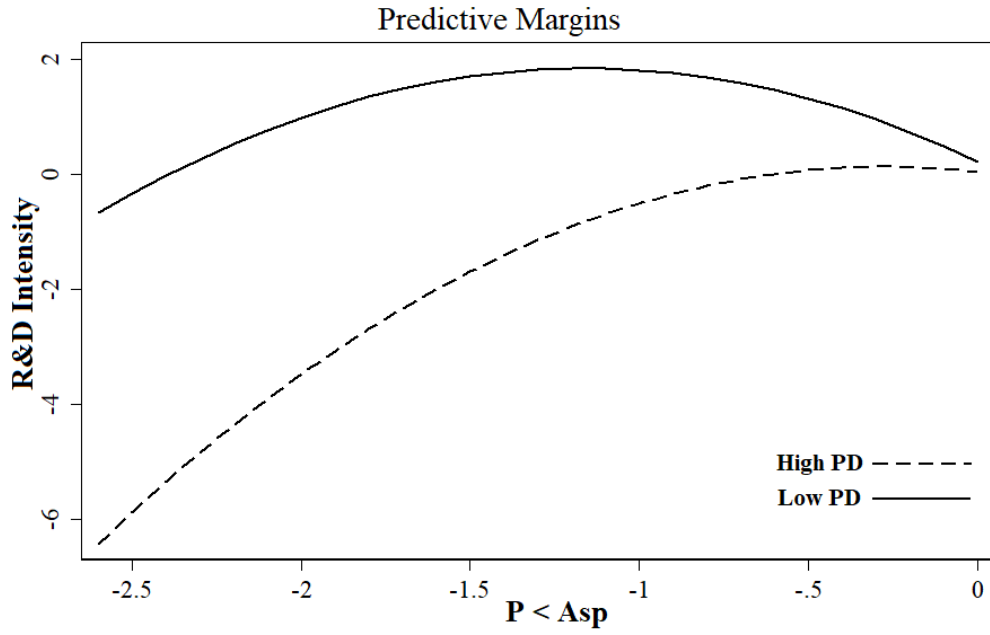
Figure 3 G: (Performance > Asp) x FO

Predictive Margins
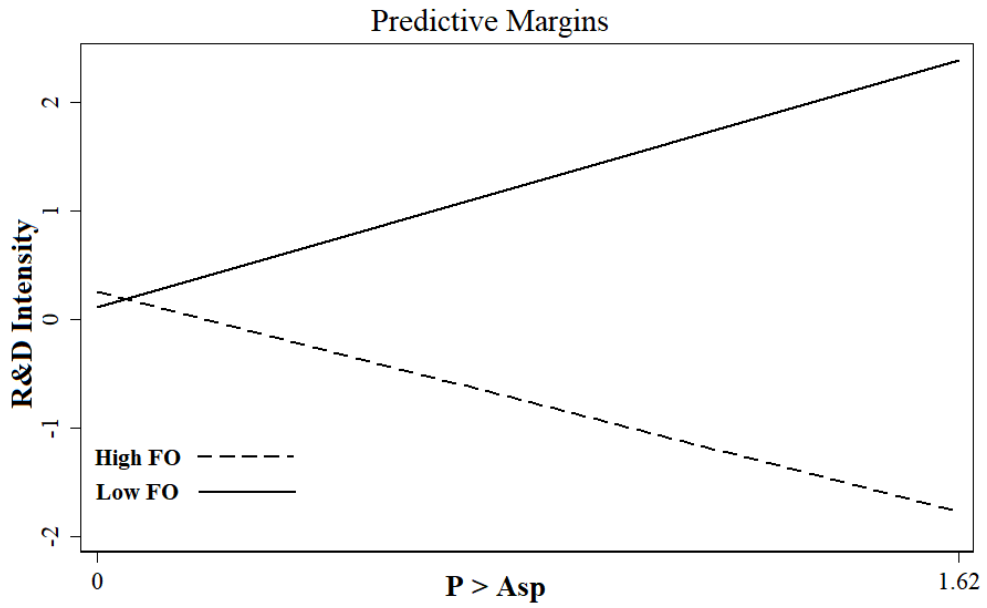
Figure 3 H: (Performance > Asp) x MAS

Predictive Margins
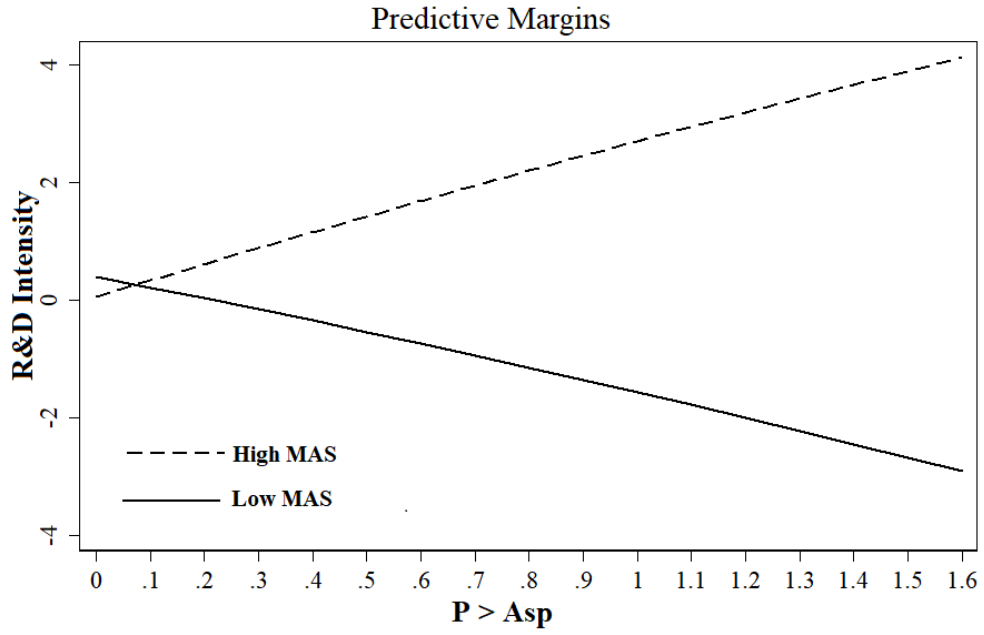
Figure 3 I: (Performance < Asp) x UA x Z-Score

Predictive Margins
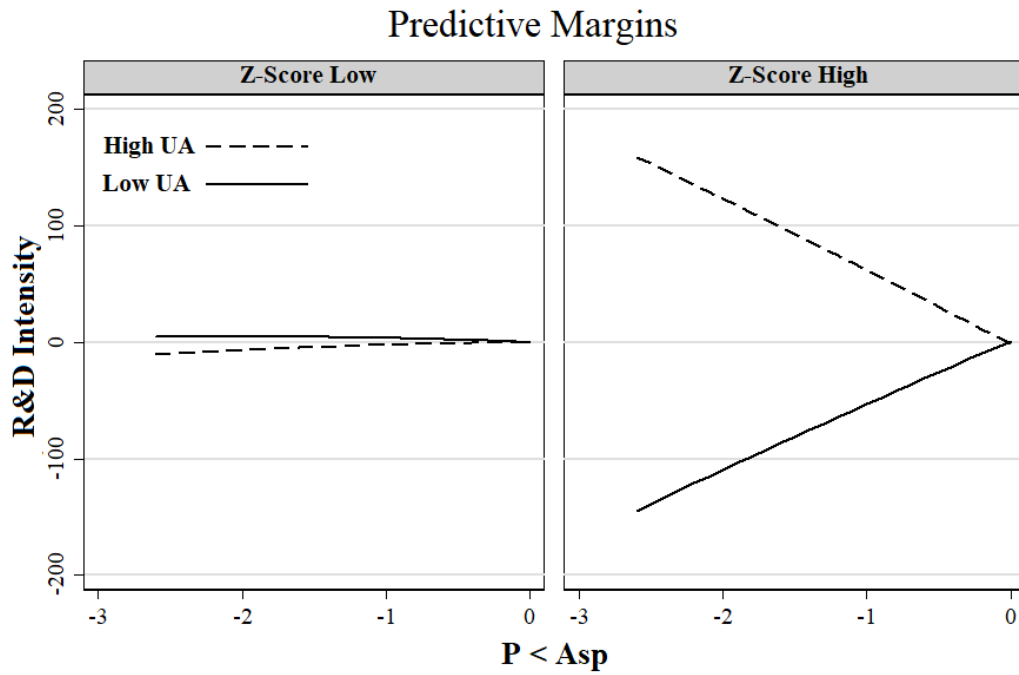
Figure 3 J: (Performance < Asp) x FO x Z-Score

Predictive Margins
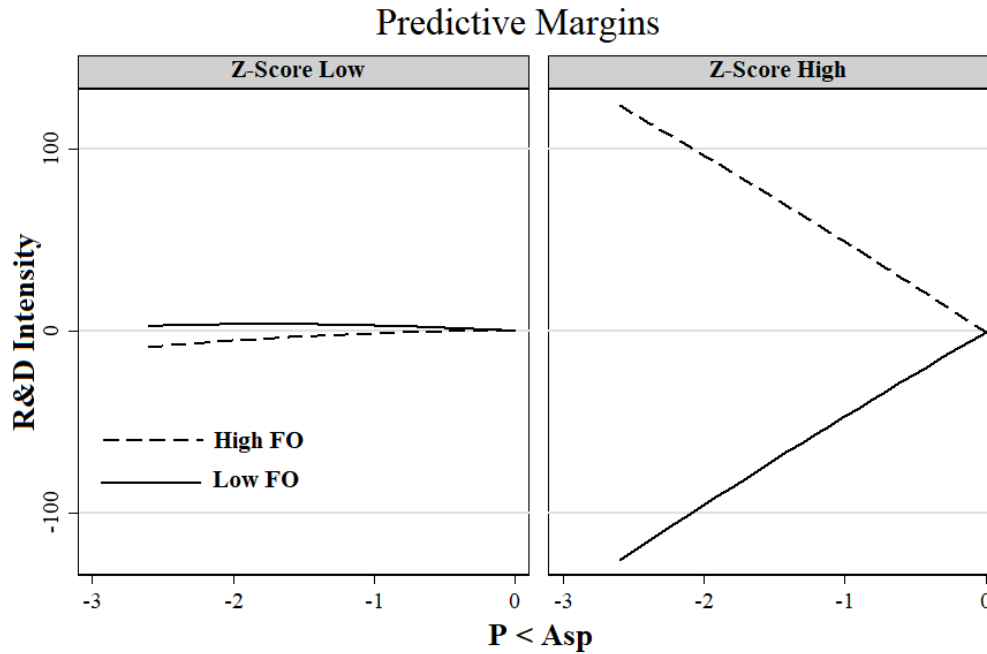
4.5.3. Analyses Based on GLOBE's Scores on Cultural Dimensions

4.5.3.1. *Volatility of Returns across Cultures When Performance Declines below / Rises above Aspirations*

Table 13 shows the results of analyses for GLOBE cultural dimensions and volatility of returns. The coefficient of the impact of performance decline below aspirations on the volatility of returns in model 2 is negative and significant (β = -0.61, p < 0.001); thus, hypothesis 1A is confirmed. Also, the significant negative coefficient for performance decline below aspirations squared (β = -0.06, p < 0.001) indicates that as performance declines far below aspiration levels, the risk-taking behavior stops increasing or starts to decrease (Figure 4A). Regarding the effect of performance rise above aspirations, the positive significant coefficient of performance rise above aspirations (β = 0.48, p < 0.001) and the negative significant coefficient of its squared form (β = -0.05, p < 0.05) show that as

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performance rises above aspirations, the volatility of returns of firms increases, and as it rises far above aspirations, the increase slows down or volatility of returns stops increasing (Figure 4B). Thus, hypothesis 1B is not confirmed. The coefficient for the effect of distance from bankruptcy is positive and significant that confirms hypothesis 6A (Figure 4C).

Based on the models 3 to 6 that represent the coefficients for the moderating impact of GLOBE's national cultural dimensions on the negative performance feedback and volatility of returns relationship, I find support for the moderating effects of UA, PO, and PD in models 3, 5, and 6 respectively. The significant and positive coefficient of the UA and performance decline below aspiration interaction in model 3 ($\beta = 0.31$, $p < 0.001$) indicates that UA reduces the negative impact of performance decline below aspirations on the volatility of returns of firms, confirming hypothesis 2A (Figure 4D). Based on the insignificant interaction effect of FO and performance decline below aspirations in model 4, hypothesis 3A cannot be confirmed. The significant negative coefficient of the PO and performance decline below aspirations interaction in model 5 ($\beta = -0.16$, $p < 0.001$) shows that the negative impact of performance decline below aspirations on volatility of returns is even stronger in societies with higher PO. Thus, hypothesis 4A is confirmed (Figure 4E). The significant positive coefficient of the interaction between PD and performance decline below aspirations in model 6 ($\beta = 0.42$ $p < 0.001$) also confirms hypothesis 5A (Figure 4F).

The interactions of performance rise above aspirations and GLOBE cultural dimensions confirm my arguments for UA, FO, and PO, but not for PD. The interaction effect of performance rise above aspiration and UA is negative and significant in model 7 ($\beta = -0.15$, $p < 0.001$), indicating that in societies with higher degrees of UA, the volatility of returns increases with less strength in response to performance rise above aspirations. Thus, hypothesis 2B is confirmed (Figure 4G). The same conclusion is made for FO based on the significant negative interaction coefficient of the FO and performance rise above aspirations in model 8 ($\beta = -0.17$, $p < 0.01$), and hypothesis 3B is confirmed (Figure 4H). Based on the positive and significant interaction coefficient of the PO and performance rise above aspirations in model 9 ($\beta = 0.09$, $p < 0.01$), I confirm hypothesis 4B (Figure 4I). However,

hypothesis 5B cannot be confirmed due to the insignificant coefficient of PD and negative performance feedback interaction effect in model 10.

Regarding the three-way interaction effects in step 4, except for UA, the three-way interactions for other three GLOBE dimensions are significant. Thus, hypothesis 6B is confirmed for FO (β = 0.31, p < 0.001), PO (β = 0.48, p < 0.01), and PD (β = -0.28, p < 0.001). Figures 4J, 4K, and 4L delineate how these three-way interactions work for FO, PO, and PD respectively.

Table 13: The HLM Results for Volatility of Returns (GLOBE Cultural Dimensions)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
GDP Per Capita	0.02	0.15	0.12	0.15	0.18	0.15	0.14
	(0.22)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Rule of Law	0.30**	0.13	0.16	0.13	0.12	0.12	0.14
	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Political Stability (Absence)	-0.02***	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Investor Protection	-0.73	-0.46	-0.41	-0.45	-0.40	-0.41	-0.43
	(0.95)	(0.68)	(0.68)	(0.68)	(0.67)	(0.66)	(0.68)
Political Rights	-0.15	-0.64	-0.70	-0.63	-0.61	-0.66	-0.66
	(0.61)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)
Domestic Credit to Private Sector	-0.76***	-0.12***	-0.13***	-0.12***	-0.12***	-0.13***	-0.12***
	(0.19)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	0.15	0.60*	0.63**	0.60*	0.61*	0.60*	0.60*
	(0.22)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Information Sharing	0.10	-0.28	-0.23	-0.27	-0.22	-0.13	-0.23
	(0.45)	(0.13)	(0.12)	(0.13)	(0.12)	(0.11)	(0.13)
Creditor Rights	-0.02	0.12	0.09	0.12	0.09	0.06	0.10
	(0.58)	(0.46)	(0.46)	(0.46)	(0.46)	(0.45)	(0.46)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
Growth Opportunities	0.08***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Net Sales	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NWC	-0.32***	-0.14***	-0.14***	-0.14***	-0.15***	-0.15***	-0.15***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Composite Slack	0.37***	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Total Assets	0.21***	0.17***	0.16***	0.17***	0.16***	0.17***	0.17***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Ind. Growth Opportunities	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.01)
UA	-0.01	-0.01	0.00	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FO	0.03	0.01	0.01	0.00	0.02	0.01	0.01
	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
PO	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PD	-0.05*	-0.04*	-0.04*	-0.04*	-0.04*	-0.05*	-0.04*
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Distance from bankruptcy		0.06*	0.07**	0.06*	0.07*	0.06*	0.06*
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Performance < Asp		-0.61***	-0.19***	-0.62***	-0.63***	-0.61***	-0.61***
		(0.03)	(0.08)	(0.03)	(0.03)	(0.03)	(0.03)
(Performance < Asp)^2		-0.06***	-0.06***	-0.06***	-0.06***	-0.09***	-0.06***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Performance > Asp		0.48***	0.49***	0.48***	0.49***	0.49***	1.14***
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.14)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
(Performance > Asp)^2		-0.05*	-0.06*	-0.05*	-0.06*	-0.06*	-0.05
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
(Performance < Asp) x UA			0.31***				
			(0.01)				
(Performance < Asp) x FO				0.01			
				(0.03)			
(Performance < Asp) x PO					-0.16***		
					(0.01)		
(Performance < Asp) x PD						0.42***	
						(0.03)	
(Performance > Asp) x UA							-0.15***
							(0.03)
(Performance > Asp) x FO							
(Performance > Asp) x PO							
(Performance > Asp) x PD							
Bankruptcy x UA							
Bankruptcy x FO							
Bankruptcy x PO							
Bankruptcy x PD							
(Performance < Asp) x Bankruptcy							
(Performance < Asp) x UA x Bankruptcy							
(Performance < Asp) x FO x Bankruptcy							
(Performance < Asp) x PO x Bankruptcy							
(Performance < Asp) x PD x Bankruptcy							
N (Firms)	60808	40888	40888	40888	40888	40888	40888
N (Countries)	45	44	44	44	44	44	44
Wald Statistic	10685***	2546***	2843***	2546***	2699***	2742***	2565***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Variable							
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13 Continued

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
GDP Per Capita	0.16	0.15	0.15	0.14	0.18	0.18	0.19
	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Rule of Law	0.13	0.13	0.14	0.14	0.13	0.12	0.11
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Political Stability (Absence)	-0.01**	-0.01**	-0.01**	-0.01**	-0.01*	-0.01*	-0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Investor Protection	-0.44	-0.45	-0.46	-0.45	-0.41	-0.41	-0.45
	(0.68)	(0.68)	(0.68)	(0.68)	(0.70)	(0.68)	(0.68)
Political Rights	-0.63	-0.64	-0.63	-0.70	-0.67	-0.60	-0.71
	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)	(0.65)
Domestic Credit to Private Sector	-0.12***	-0.12***	-0.12***	-0.13***	-0.12***	-0.13***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	0.59*	0.60*	0.60*	0.65**	0.63**	0.61*	0.64**
	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Information Sharing	-0.25	-0.28	-0.28	-0.34	-0.24	-0.30	-0.23
	(0.13)	(0.12)	(0.12)	(0.13)	(0.15)	(0.12)	(0.12)
Creditor Rights	0.11	0.13	0.13	0.13	0.10	0.11	0.11
	(0.46)	(0.46)	(0.46)	(0.46)	(0.47)	(0.46)	(0.46)
Growth Opportunities	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Net Sales	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
NWC	-0.14***	-0.14***	-0.14***	-0.13***	-0.13***	-0.14***	-0.13***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Composite Slack	0.11***	0.11***	0.11***	0.11***	0.08**	0.10***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Total Assets	0.17***	0.17***	0.17***	0.16***	0.17***	0.16***	0.16***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Ind. Growth Opportunities	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	-0.01	-0.01	-0.01	0.00	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
FO	0.00	0.01	0.01	0.01	0.00	0.01	0.01
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
PO	-0.01	-0.01	-0.01	-0.00	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
PD	-0.04*	-0.04*	0.00	-0.04*	-0.04*	-0.04*	-0.04*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.01)
Distance from bankruptcy	0.07*	0.06*	0.06*	0.88*	2.4***	-0.69	0.18*
	(0.02)	(0.02)	(0.02)	(0.38)	(0.4)	(0.55)	(0.09)
Performance < Asp	-0.61***	-0.61***	-0.61***	-0.19***	-0.01***	-0.00***	-0.00***
	(0.03)	(0.03)	(0.03)	(0.00)	(0.03)	(0.00)	(0.00)
(Performance < Asp)^2	-0.06***	-0.06***	-0.06***	-0.08***	-0.10***	-0.08***	-0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Performance > Asp	0.44***	0.43***	0.43***	0.49***	0.48***	0.48***	0.49***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
(Performance > Asp)^2	-0.06*	-0.06*	-0.06*	-0.06*	-0.04	-0.05*	-0.05*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
(Performance < Asp) x UA				0.30***			
				(0.02)			
(Performance < Asp) x FO					0.12***		
					(0.03)		

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
(Performance < Asp) x PO						-0.14***	
						(0.05)	
(Performance < Asp) x PD							0.28
							(0.03)
(Performance > Asp) x UA							
(Performance > Asp) x FO	-0.17**						
	(0.06)						
(Performance > Asp) x PO		0.09**					
		(0.03)					
(Performance > Asp) x PD			-0.08				
			(0.06)				
Bankruptcy x UA				-0.15			
				(0.09)			
Bankruptcy x FO					0.67***		
					(0.12)		
Bankruptcy x PO						0.21	
						(0.12)	
Bankruptcy x PD							-0.32
							(0.17)
(Performance < Asp) x Bankruptcy				0.57	-0.11***	-0.16*	0.15***
				(0.72)	(0.00)	(0.07)	(0.01)
(Performance < Asp) x UA x Bankruptcy				-0.02			
				(0.17)			
(Performance < Asp) x FO x Bankruptcy					0.31***		
					(0.02)		
(Performance < Asp) x PO x Bankruptcy						0.48**	
						(0.46)	
(Performance < Asp) x PD x Bankruptcy							-0.28***
							(0.02)
N (Firms)	40888	40888	40888	40888	40888	40888	40888
N (Countries)	44	44	44	44	44	44	44
Wald Statistic	2556***	2552***	2547***	3026***	2943***	2883***	3135***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

$^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Figure 4 A: Performance below Aspirations and Volatility of Returns

Predictive Margins

(X-axis: P < Asp, Y-axis: Volatility of Returns)
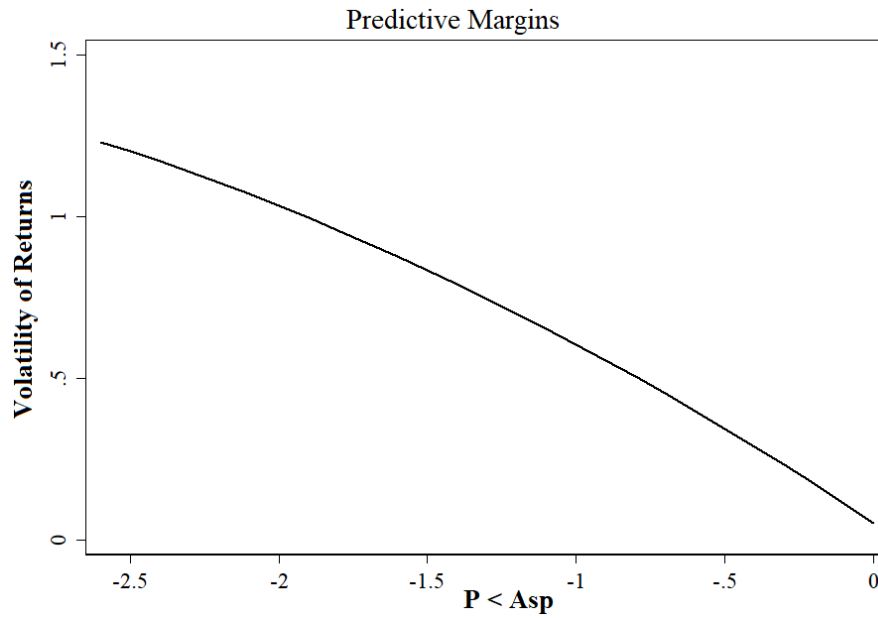
Figure 4 B: Performance above Aspirations and Volatility of Returns

Predictive Margins
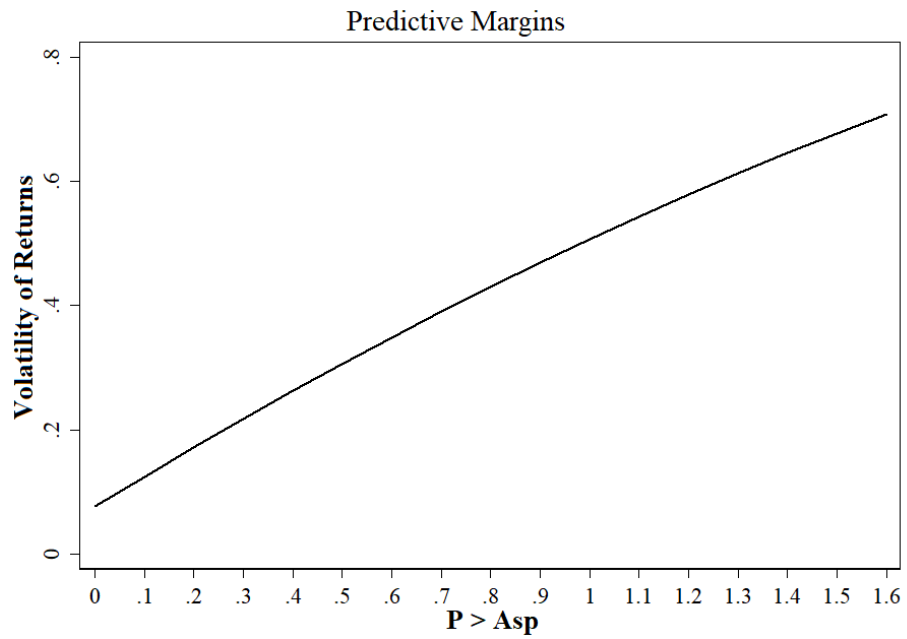
Figure 4 C: Distance from bankruptcy and Volatility of Returns

Predictive Margins
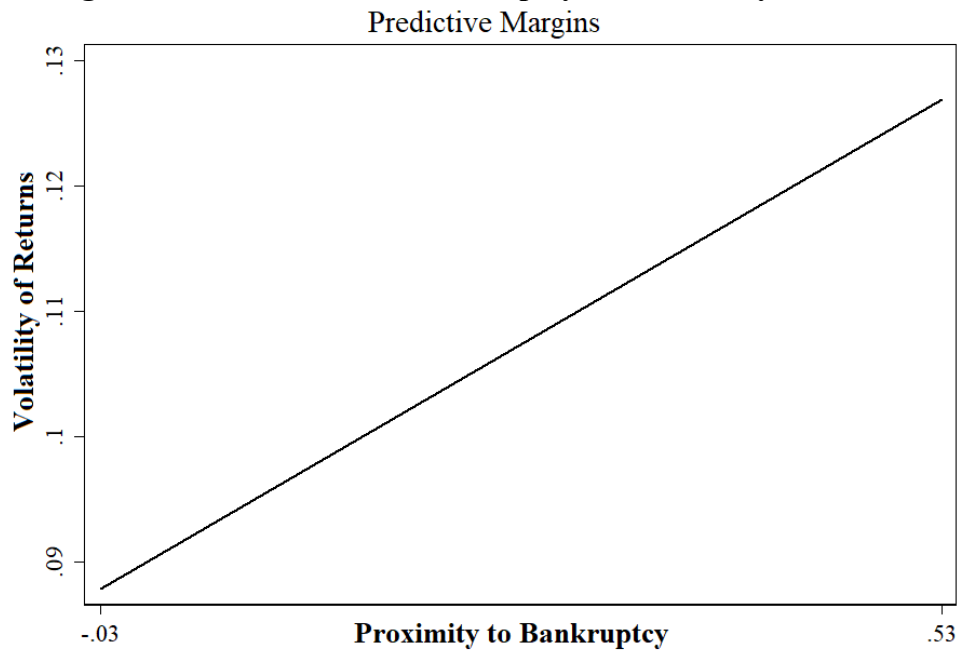
Figure 4 D: (Performance < Asp) x UA

Predictive Margins
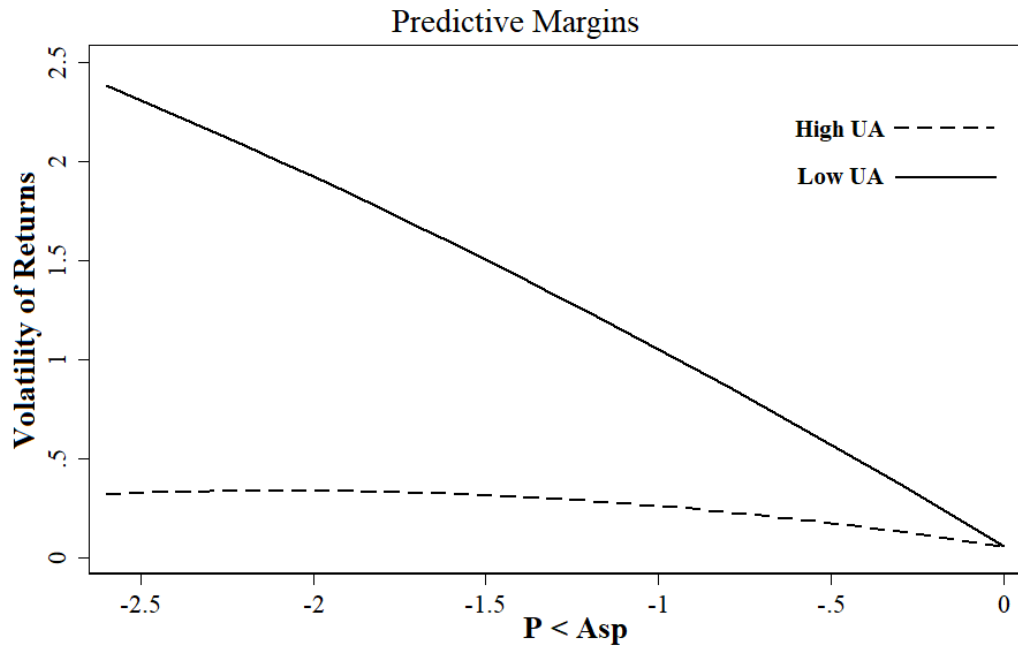
Figure 4 E: (Performance < Asp) x PO

Predictive Margins
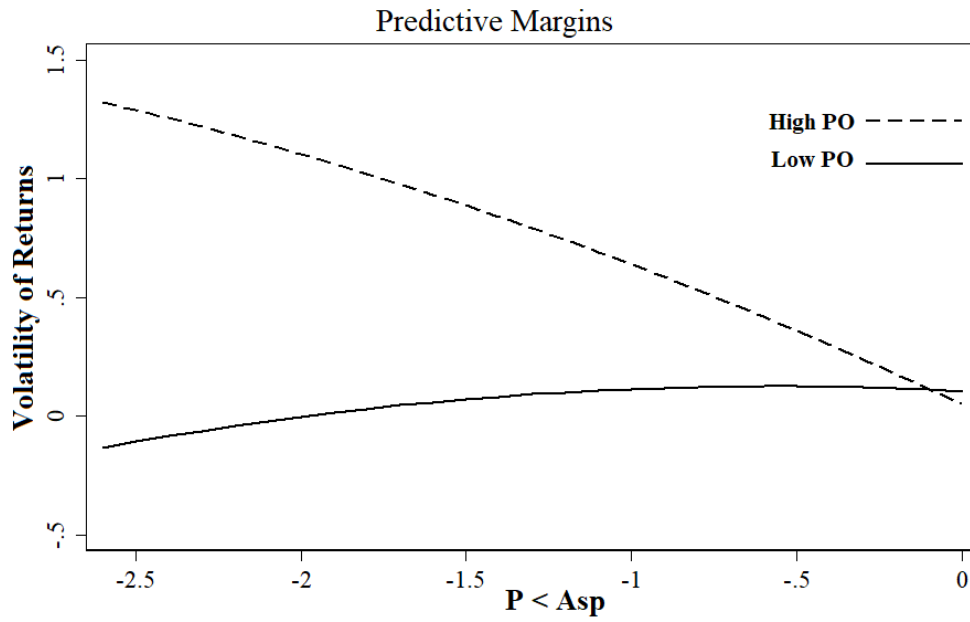
Figure 4 F: (Performance < Asp) x PD

Predictive Margins
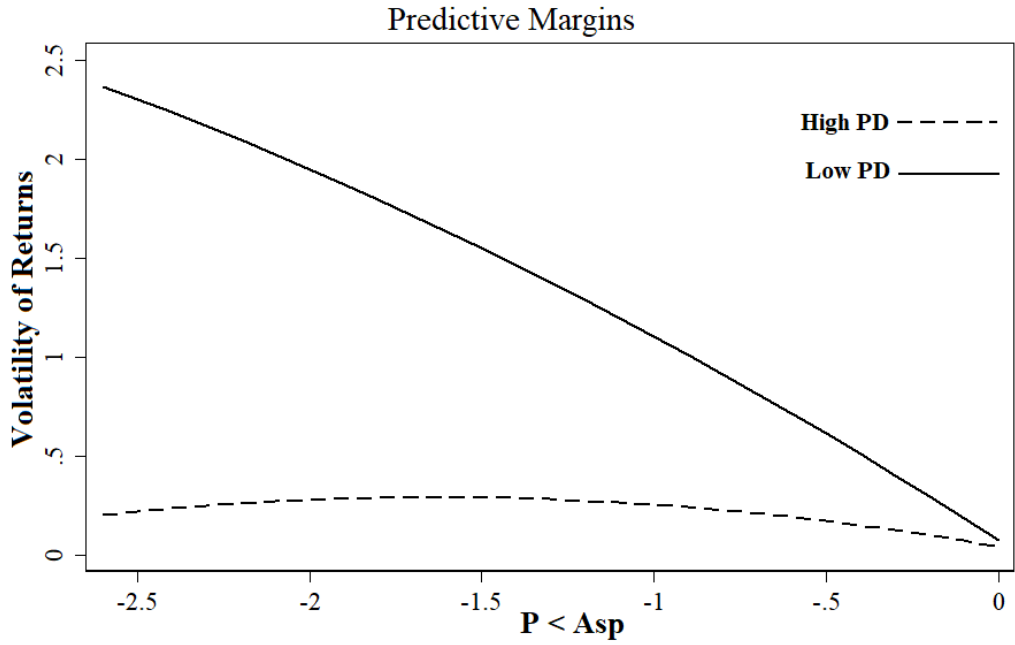
Figure 4 G: (Performance > Asp) x UA

Predictive Margins
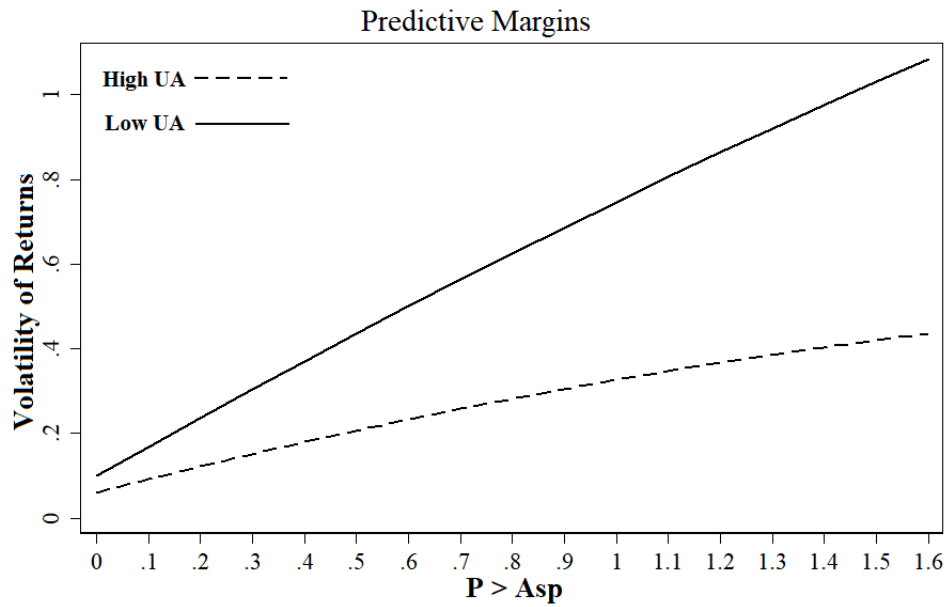
Figure 4 H: (Performance > Asp) x FO
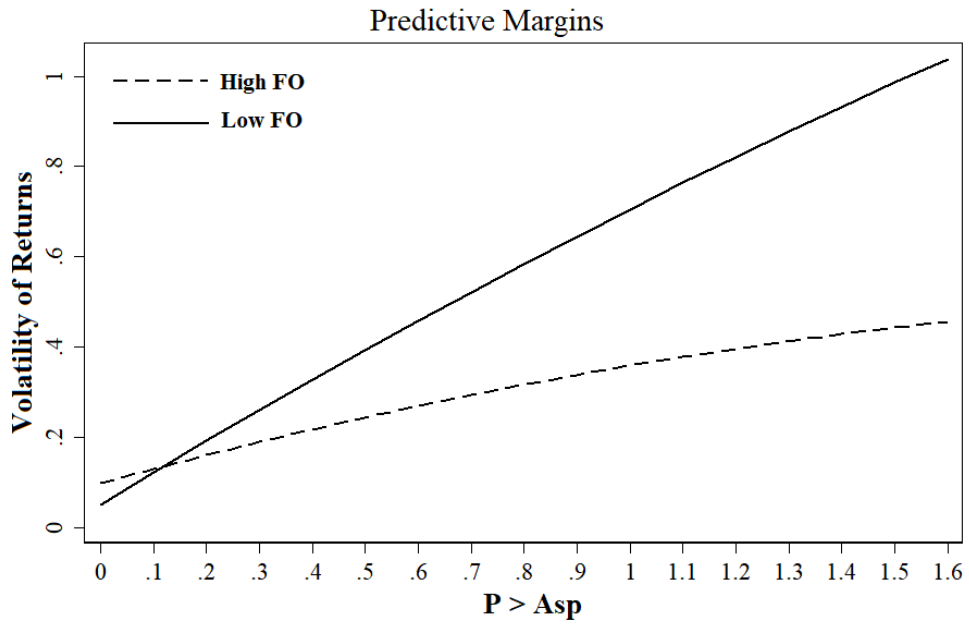
Figure 4 I: (Performance > Asp) x PO
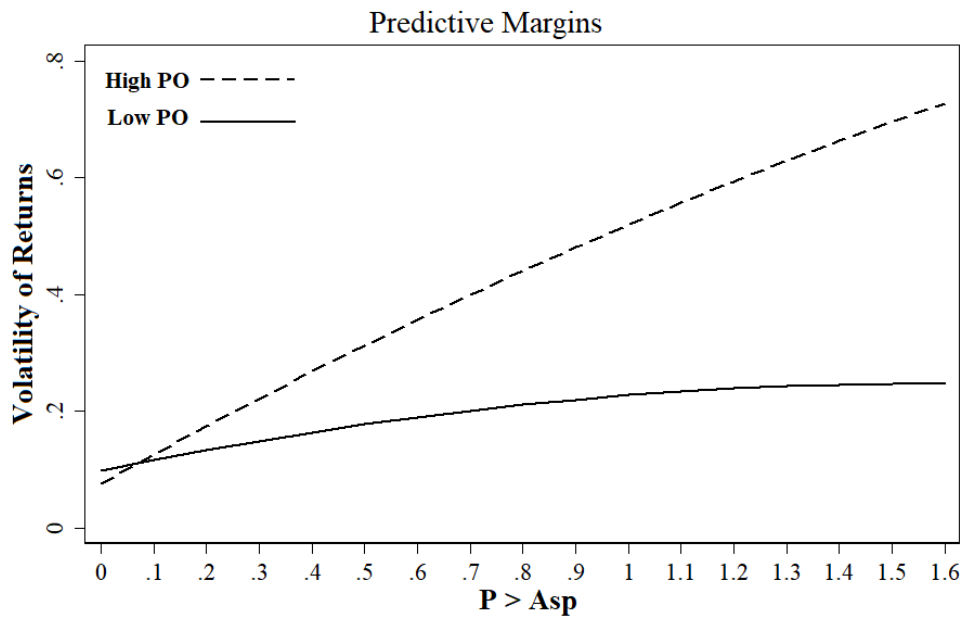
Figure 4 J: (Performance < Asp) x FO x Z-Score

Predictive Margins
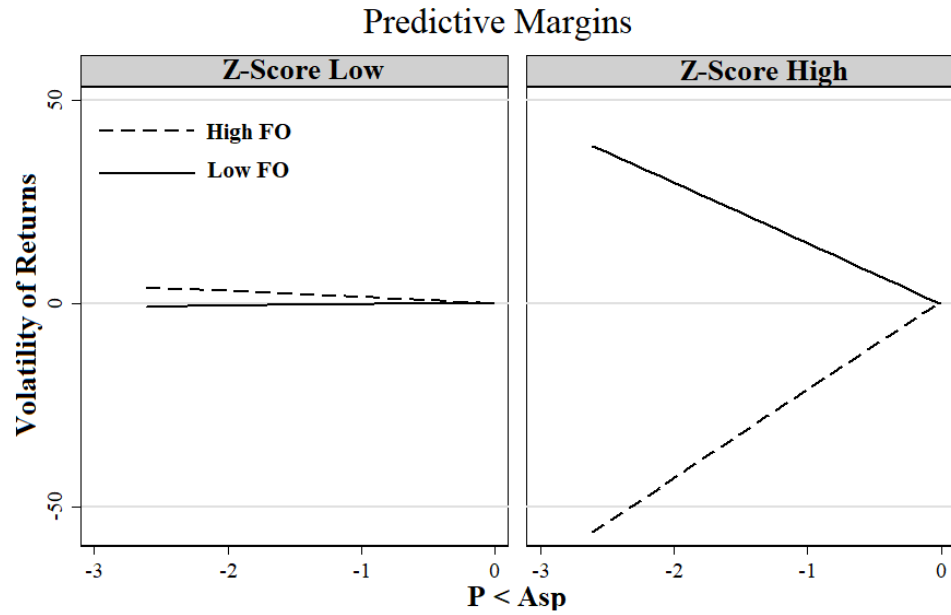
Figure 4 K: (Performance < Asp) x PO x Z-Score

Predictive Margins
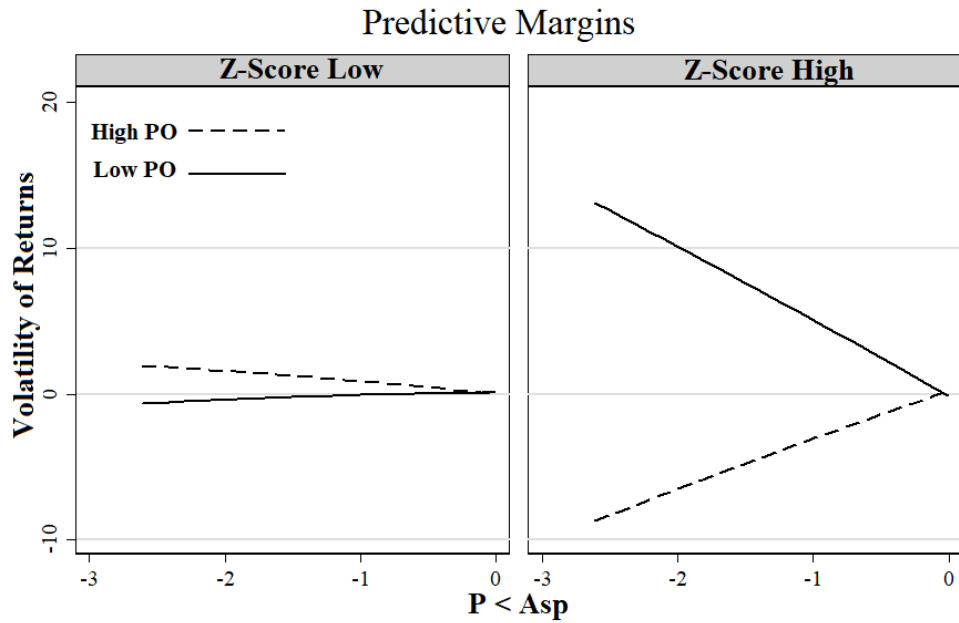
Figure 4 L: (Performance < Asp) x PD x Z-Score

Predictive Margins
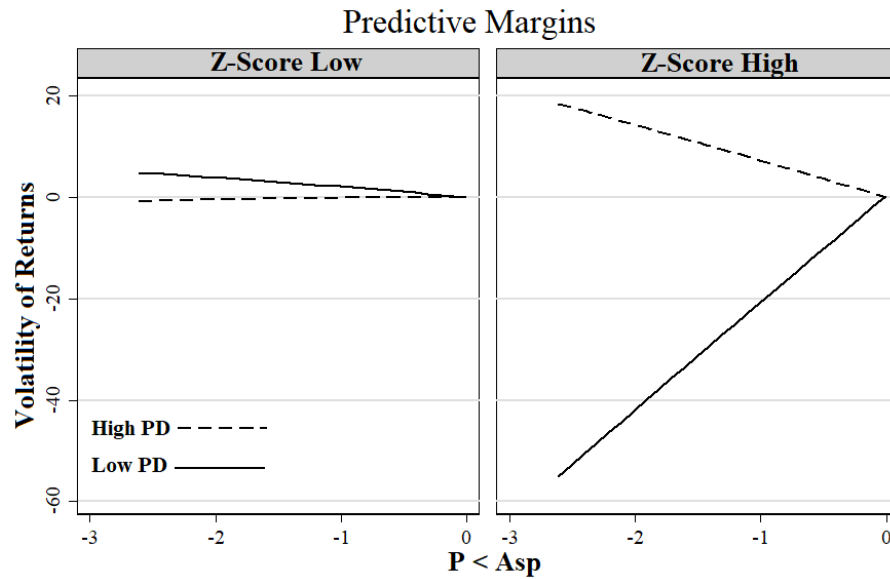
4.5.3.2. R&D Intensity across Cultures When Performance Declines below / Rises above Aspirations

Table 14 shows the results for the analyses on R&D intensity. The coefficient of the impact of performance decline below aspirations on the R&D intensity is negative and significant (β = -0.18, p < 0.001); thus, hypothesis 1A is confirmed. Also, the negative significant coefficient for the performance below aspirations squared (β = -0.10, p < 0.001) indicates that R&D intensity stops increasing or starts to decrease as performance falls far below aspirations (Figure 5A). Regarding the effect of performance rise above aspirations, the coefficient of performance rise above aspirations is positive and significant (β = 0.83, p < 0.001), based on which hypothesis 1B cannot be confirmed. The coefficient of performance rise above aspirations squared is not significant, indicating that the relationship is linear and performance rise above aspirations increases the R&D intensity (Figure 5B). The coefficient for the effect of distance from bankruptcy is insignificant indicating that hypothesis 6A cannot be confirmed for R&D intensity.

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In models 3 to 6 that include the two-way interactions between national cultural dimensions and negative performance feedback, I find support only for the moderating impact of FO in model 4 (β = 0.12, p < 0.001) that confirms hypothesis 3A (Figure 5C). Based on the significant negative interaction coefficient of UA (β = -0.13, p < 0.001) (Figure 5C) and insignificant interaction coefficients of PO and PD in models 5 and 6 respectively, hypotheses 2A, 4A, and 5A cannot be confirmed for GLOBE cultural dimensions and R&D intensity.

With respect to performance rise above aspirations (models 7 to 10), I found support for all two-way interactions. The interaction effect of performance rise above aspirations and UA is negative and significant in model 7 (β = -0.23, p < 0.001), indicating that in societies with higher degrees of UA, the R&D intensity increase in response to performance rise above aspirations is relatively weaker. Thus, hypothesis 2B is confirmed (Figure 5E). In model 8, the interaction effect of FO and performance rise above aspirations is negative and significant (β = -0.15, p < 0.01), based on which hypothesis 3B is confirmed (Figure 5F). The positive and significant coefficient of the interaction between PO and positive performance feedback in model 9 (β = 0.13, p < 0.01) indicates that in societies with higher PO, the degree of R&D intensity as a response to performance rise above aspirations is higher, confirming hypothesis 4B (Figure 5G). Finally, based on the negative significant interaction effect of PD and performance rise above aspirations (β = -0.15, p < 0.05), hypothesis 5B is confirmed (Figure 5H).

Finally, all the three-way interactions in models 11 to 14 are significant indicating that distance from bankruptcy significantly moderates the moderating impacts of GLOBE's cultural dimensions on negative performance feedback and risk relationship. Figures 5I, 5J, 5K, and 5L consistently show that the moderating impacts of UA (β = -0.17, p < 0.001), FO (β = -0.99, p < 0.001), PO (β = 0.43, p < 0.001), and PD (β = -0.71, p < 0.001) decrease when z-score decreases (i.e., distance from bankruptcy increases), confirming hypothesis 6B.

Table 14: The HLM Results for R&D Intensity (GLOBE Cultural Dimensions)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
GDP Per Capita	0.05***	0.09***	0.09***	0.09***	0.09***	0.09***	0.08***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Rule of Law	0.27	-0.06	-0.05	-0.07	-0.08	-0.05	-0.07
	(0.57)	(0.72)	(0.71)	(0.72)	(0.71)	(0.72)	(0.73)
Political Stability (Absence)	0.01	-0.03	-0.04	-0.03	-0.03	-0.03	-0.03
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Investor Protection	-0.01	0.00	-0.00	0.00	0.00	0.00	0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Political Rights	-0.04	-0.15	-0.18	-0.16	-0.16	-0.15	-0.13
	(0.62)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)
Domestic Credit to Private Sector	0.72	-0.18	-0.14	-0.18	-0.18	-0.18	-0.19
	(1.55)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)
Market Capitalization	-0.16	-0.18	-0.19	-0.19	-0.19	-0.19	-0.20
	(0.19)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Information Sharing	0.01	-0.03	-0.03	-0.02	-0.03	-0.03	-0.03
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Creditor Rights	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Growth Opportunities	0.39***	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Net Sales	-0.03	0.04	0.03	0.04	0.04	0.04	0.04
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NWC	-0.21***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Composite Slack	0.45***	0.58***	0.57***	0.58***	0.57***	0.58***	0.58***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
Total Assets	-0.03	-0.64	-0.59	-0.64	-0.62	-0.63	-0.67
	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Ind. Growth Opportunities	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ind. Risk	0.02^*	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{**}
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	0.12	0.22	0.14	0.23	0.21	0.22	0.28
	(0.13)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.13)
FO	-0.01	-0.18	-0.18	-0.18	-0.18	-0.18	-0.19
	(0.15)	(0.15)	(0.14)	(0.15)	(0.15)	(0.15)	(0.16)
PO	-0.13	-0.13	-0.11	-0.13	-0.12	-0.13	-0.13
	(0.08)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)	(0.08)
PD	-0.24	-0.19	-0.17	-0.19	-0.18	-0.16	-0.21
	(0.16)	(0.16)	(0.15)	(0.16)	(0.15)	(0.14)	(0.16)
Distance from bankruptcy		-0.11	-0.29	-0.09	-0.14	-0.07	-0.17
		(0.44)	(0.43)	(0.44)	(0.43)	(0.44)	(0.44)
Performance < Asp		-0.18^{***}	-0.37^{***}	-0.22^{***}	-0.20^{***}	-0.16^{***}	-0.16^{***}
		(0.01)	(0.06)	(0.05)	(0.05)	(0.05)	(0.16)
$(\text{Performance} < \text{Asp})^2$		-0.10^{***}	-0.10^{***}	-0.99^{***}	-0.99^{***}	-0.98^{***}	-0.10^{***}
		(0.00)	(0.00)	(0.07)	(0.07)	(0.07)	(0.00)
Performance > Asp		0.83^{***}	0.81^{***}	0.83^{***}	0.82^{***}	0.82^{***}	0.10^{***}
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.01)
$(\text{Performance} > \text{Asp})^2$		-0.08	-0.06	-0.09	-0.08	-0.08	-0.01
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
(Performance < Asp) x UA			-0.13^{***}				
			(0.01)				
(Performance < Asp) x FO					0.12^{***}		
					(0.02)		

Variable	(M 1)	(M 2)	(M 3)	(M 4)	(M 5)	(M 6)	(M 7)
(Performance < Asp) x PO					0.94 (0.21)		
(Performance < Asp) x PD						-0.41 (0.24)	
(Performance > Asp) x UA							-0.23*** (0.02)
(Performance > Asp) x FO							
(Performance > Asp) x PO							
(Performance > Asp) x PD							
Bankruptcy x UA							
Bankruptcy x FO							
Bankruptcy x PO							
Bankruptcy x PD							
(Performance < Asp) x Bankruptcy							
(Performance < Asp) x UA x Bankruptcy							
(Performance < Asp) x FO x Bankruptcy							
(Performance < Asp) x PO x Bankruptcy							
(Performance < Asp) x PD x Bankruptcy							
N (Firms)	53681	36296	36296	36296	36296	36296	36296
N (Countries)	41	40	40	40	40	40	40
Wald Statistic	1180***	1245***	1336***	1268***	1266***	1247***	1316***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses $^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Table 14 Continued

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
GDP Per Capita	0.09***	0.09***	0.09***	0.09***	0.09***	0.08***	0.08***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Rule of Law	-0.07	-0.10	-0.04	-0.88	-0.12	-0.05	-0.04
	(0.72)	(0.73)	(0.72)	(0.71)	(0.72)	(0.73)	(0.73)
Political Stability (Absence)	-0.03	-0.03	-0.03	-0.04	-0.03	-0.02	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Investor Protection	0.00	0.00	0.00	0.00	0.00	-0.00	0.00
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Political Rights	-0.16	-0.16	-0.15	-0.20	-0.16	-0.16	-0.14
	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)	(0.71)
Domestic Credit to Private Sector	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Market Capitalization	-0.18	-0.18	-0.18	-0.20	-0.19	-0.16	-0.17
	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Information Sharing	-0.02	-0.03	-0.03	-0.03	-0.02	-0.04	-0.03
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Creditor Rights	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Growth Opportunities	0.11***	0.11***	0.11***	0.10***	0.11***	0.09**	0.10***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Net Sales	0.04	0.04	0.04	0.03	0.04	0.04	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NWC	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***	-0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Composite Slack	0.58***	0.58***	0.58***	0.57***	0.58***	0.58***	0.58***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
Total Assets	-0.64	-0.64	-0.64	-0.57	-0.63	-0.67	-0.64
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Ind. Growth Opportunities	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ind. Risk	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{**}	0.03^{***}	0.03^{**}
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
UA	0.22	0.23	0.23	0.12	0.24	0.20	0.22
	(0.12)	(0.13)	(0.12)	(0.12)	(0.12)	(0.13)	(0.12)
FO	0.00	-0.18	-0.18	-0.20	-0.19	-0.19	-0.17
	(0.00)	(0.16)	(0.15)	(0.15)	(0.16)	(0.16)	(0.15)
PO	-0.13	-0.12	-0.13	-0.13	-0.13	0.14	-0.12
	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)	(0.03)	(0.08)
PD	-0.19	-0.19	-0.18	-0.20	-0.20	-0.20	0.21
	(0.16)	(0.16)	(0.15)	(0.15)	(0.16)	(0.16)	(0.16)
Distance from bankruptcy	-0.12	-0.11	-0.09	0.13^{***}	0.10^{*}	0.41^{***}	-0.12
	(0.44)	(0.44)	(0.44)	(0.03)	(0.04)	(0.08)	(0.11)
Performance < Asp	-0.18^{***}	-0.18^{***}	-0.18^{***}	-0.19^{***}	-0.27^{***}	-0.27^{***}	-0.24^{***}
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)
$(\text{Performance} < \text{Asp})^2$	-0.10^{***}	-0.10^{***}	-0.10^{***}	-0.94^{***}	-0.93^{***}	-0.97^{***}	-0.10^{***}
	(0.00)	(0.00)	(0.00)	(0.07)	(0.07)	(0.07)	(0.00)
Performance > Asp	0.84^{***}	0.84^{***}	0.84^{***}	0.78^{***}	0.83^{***}	0.82^{***}	0.83^{***}
	(0.51)	(0.51)	(0.51)	(0.17)	(0.17)	(0.17)	(0.17)
$(\text{Performance} > \text{Asp})^2$	-0.05	-0.14	-0.15	-0.05	-0.09	-0.09	-0.08
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
(Performance < Asp) x UA					-0.21^{***}		
					(0.01)		
(Performance < Asp) x FO						0.10^{***}	
						(0.02)	

Variable	(M 8)	(M 9)	(M 10)	(M 11)	(M 12)	(M 13)	(M 14)
(Performance < Asp) x PO						0.27*** (0.02)	
(Performance < Asp) x PD							-0.91*** (0.26)
(Performance > Asp) x UA							
(Performance > Asp) x FO	-0.15** (0.04)						
(Performance > Asp) x PO		0.13** (0.04)					
(Performance > Asp) x PD			-0.15* (0.04)				
Bankruptcy x UA				-0.32*** (0.09)			
Bankruptcy x FO					-0.24* (0.11)		
Bankruptcy x PO						0.92 (0.18)	
Bankruptcy x PD							0.21 (0.22)
(Performance < Asp) x Bankruptcy				0.74*** (0.07)	0.39*** (0.08)	-0.19*** (0.12)	0.36*** (0.09)
(Performance < Asp) x UA x Bankruptcy				-0.17*** (0.01)			
(Performance < Asp) x FO x Bankruptcy					-0.99*** (0.22)		
(Performance < Asp) x PO x Bankruptcy						0.43*** (0.27)	
(Performance < Asp) x PD x Bankruptcy							-0.71*** (0.17)
N (Firms)	36296	36296	36296	36296	36296	36296	36296
N (Countries)	40	40	40	40	40	40	40

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Wald Statistic	1254***	1251***	1251***	1447***	1290***	1515***	1269***
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 5 A: Performance below Aspirations and R&D Intensity

Predictive Margins
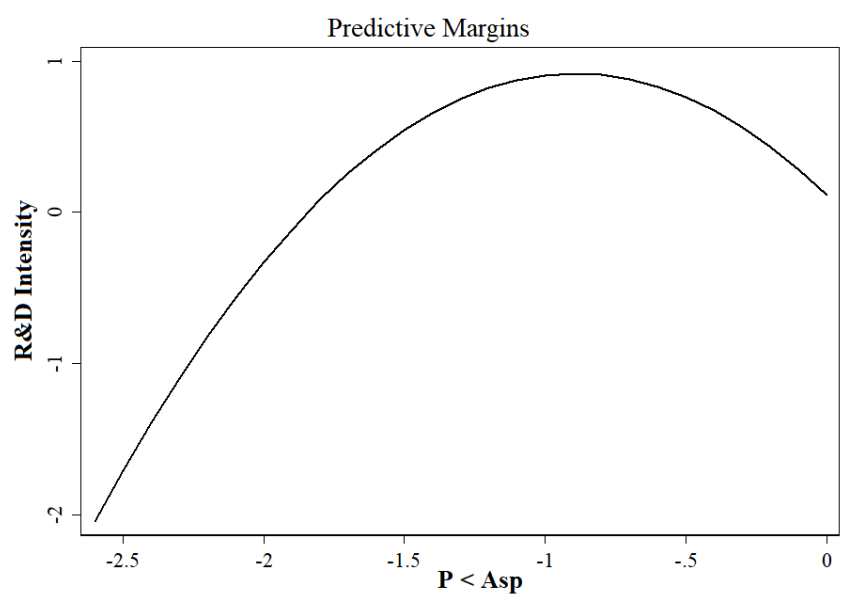
Figure 5 B: Performance above Aspirations and R&D Intensity

Predictive Margins
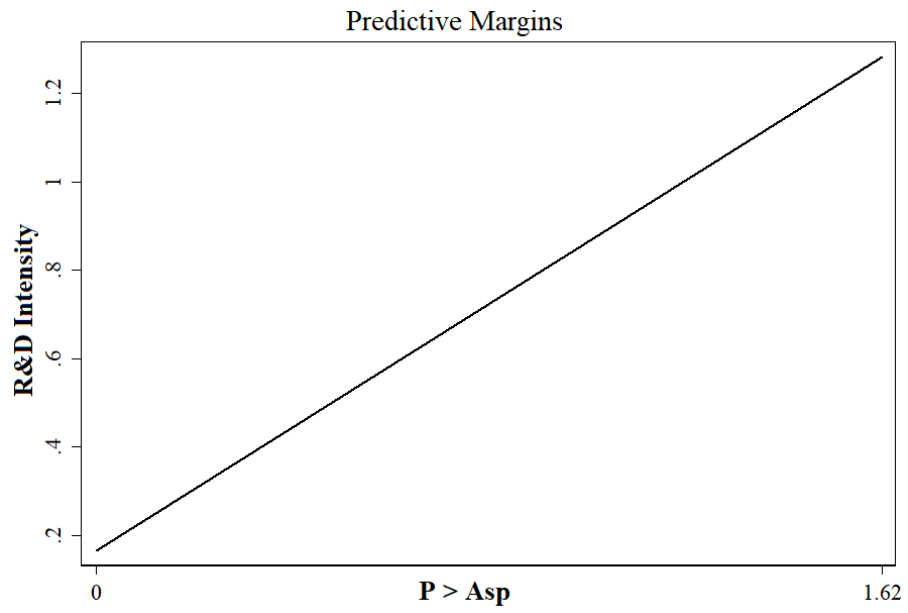
Figure 5 C: (Performance < Asp) x UA

Predictive Margins
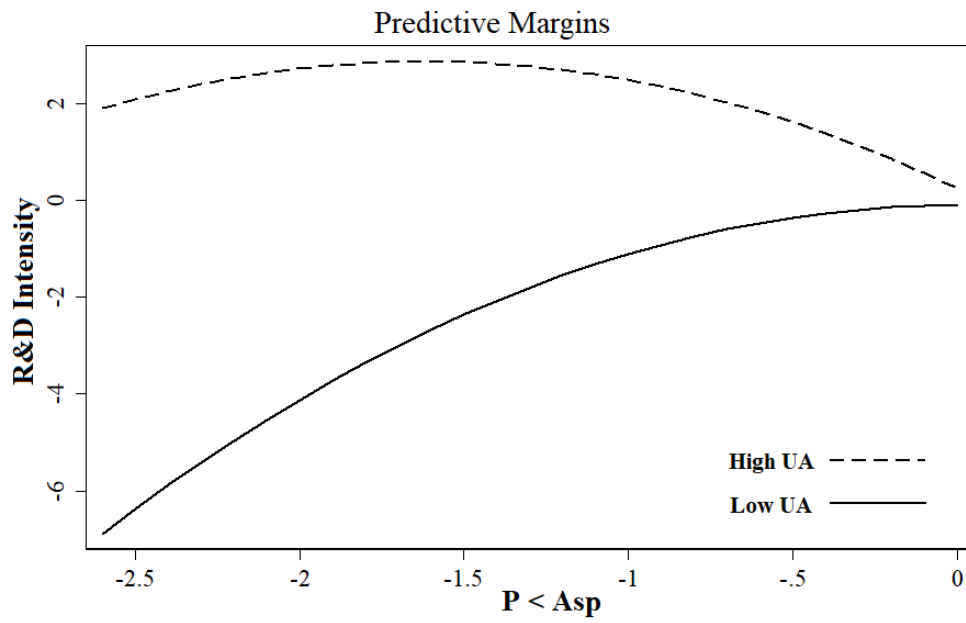
Figure 5 D: (Performance < Asp) x FO

Predictive Margins
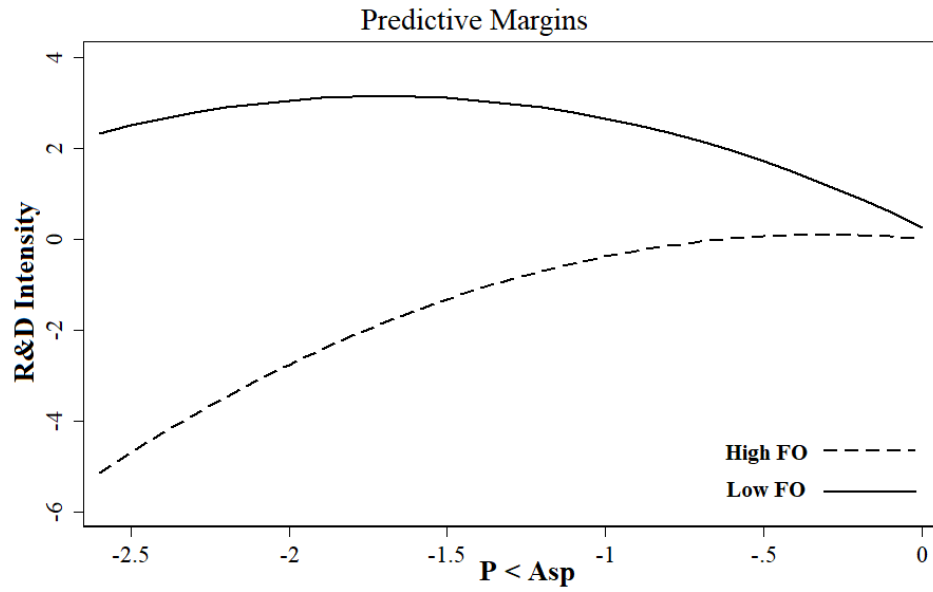
Figure 5 E: (Performance > Asp) x UA

Predictive Margins
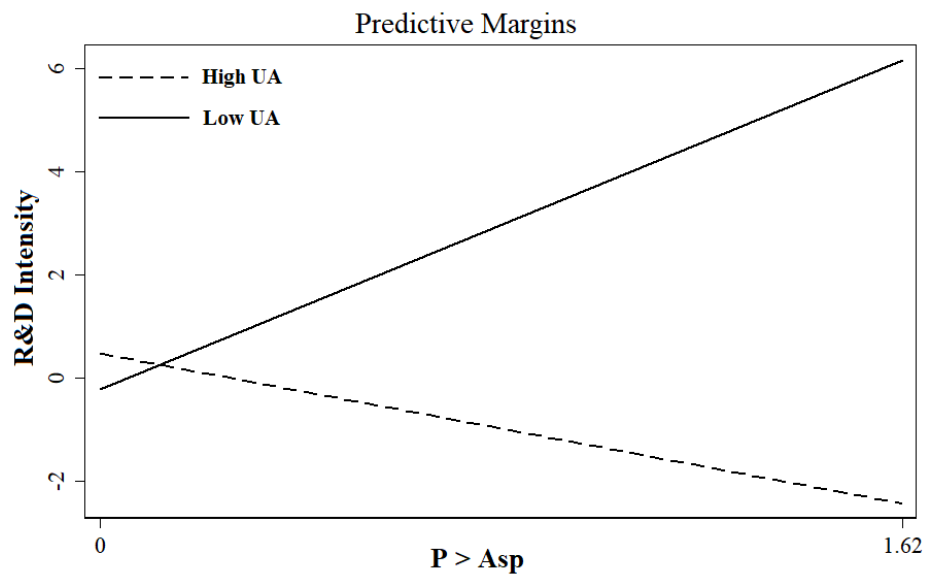
Figure 5 F: (Performance > Asp) x FO

Predictive Margins
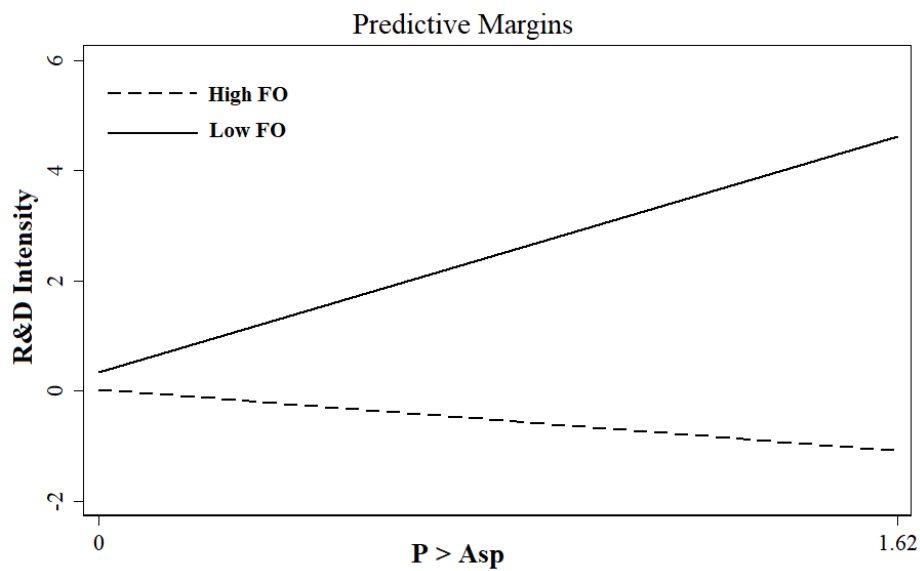
Figure 5 G: (Performance > Asp) x PO

Predictive Margins

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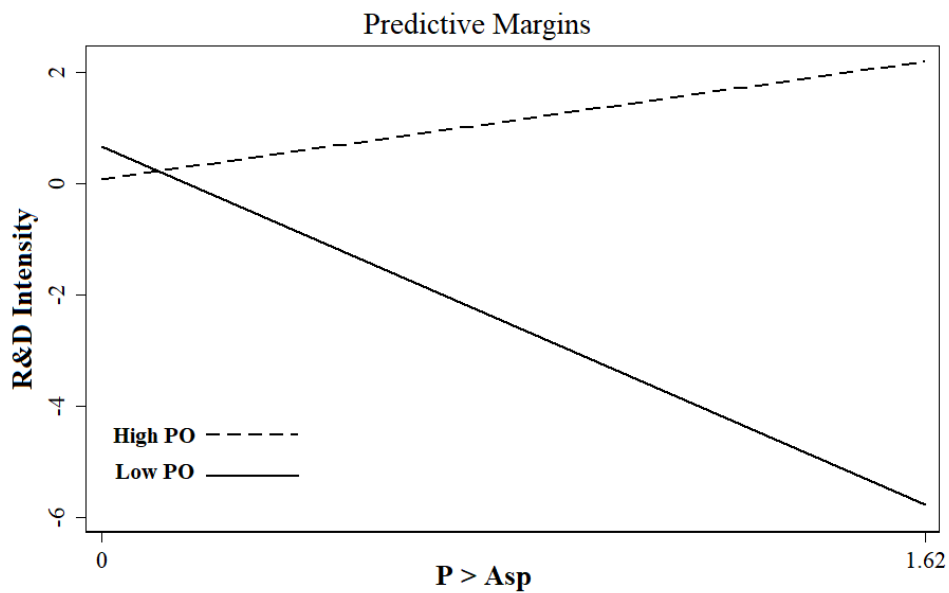
Figure 5 H: (Performance > Asp) x PD

Predictive Margins
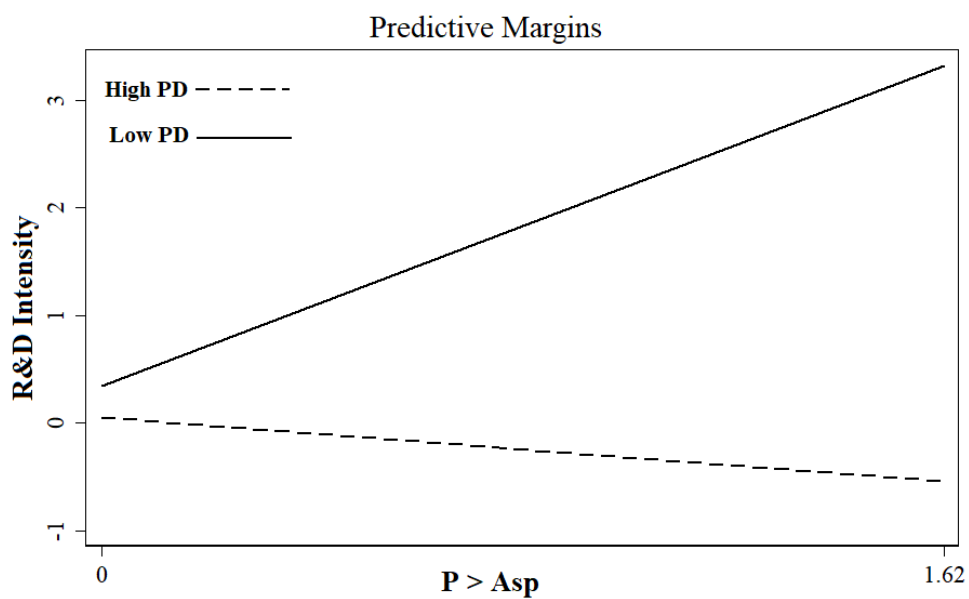
Figure 5 I: (Performance < Asp) x UA x Z-Score

Predictive Margins
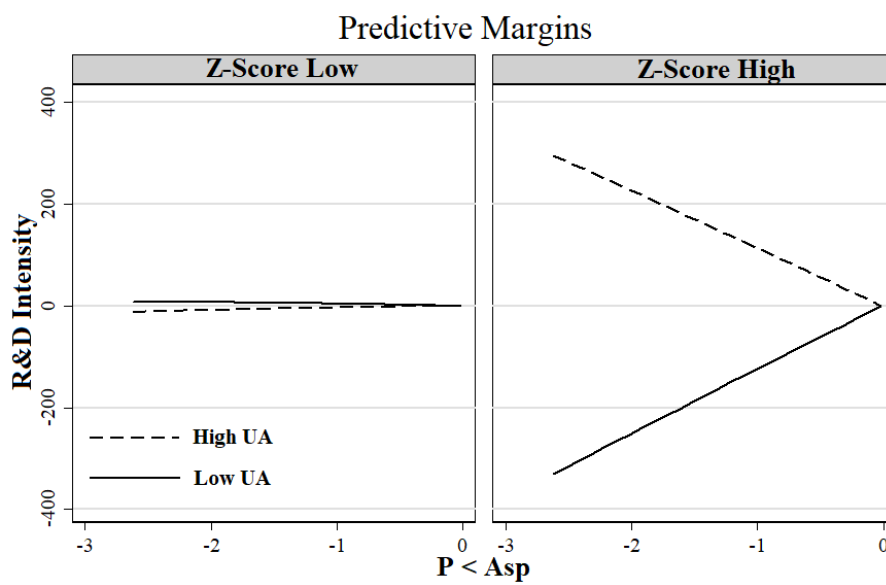
Figure 5 J: (Performance < Asp) x FO x Z-Score

Predictive Margins
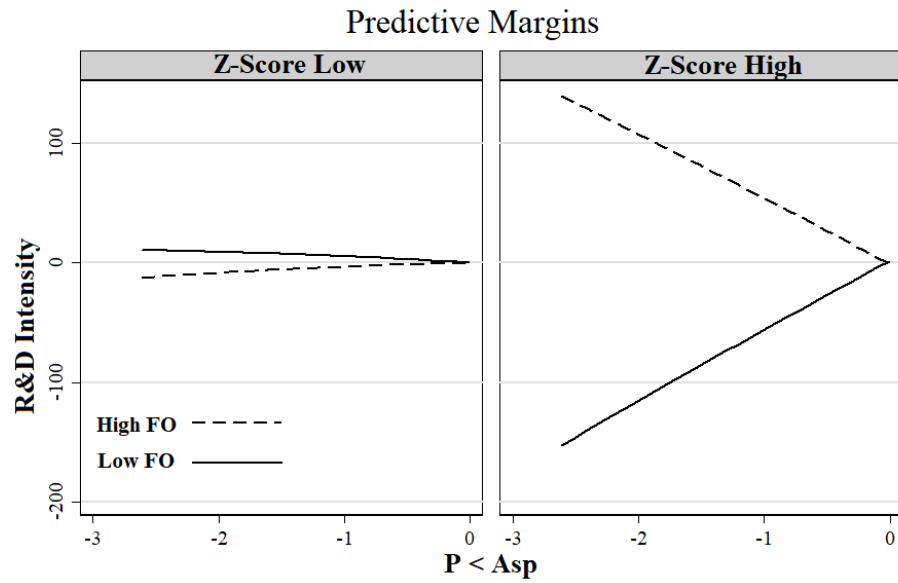
Figure 5 K: (Performance < Asp) x PO x Z-Score

Predictive Margins
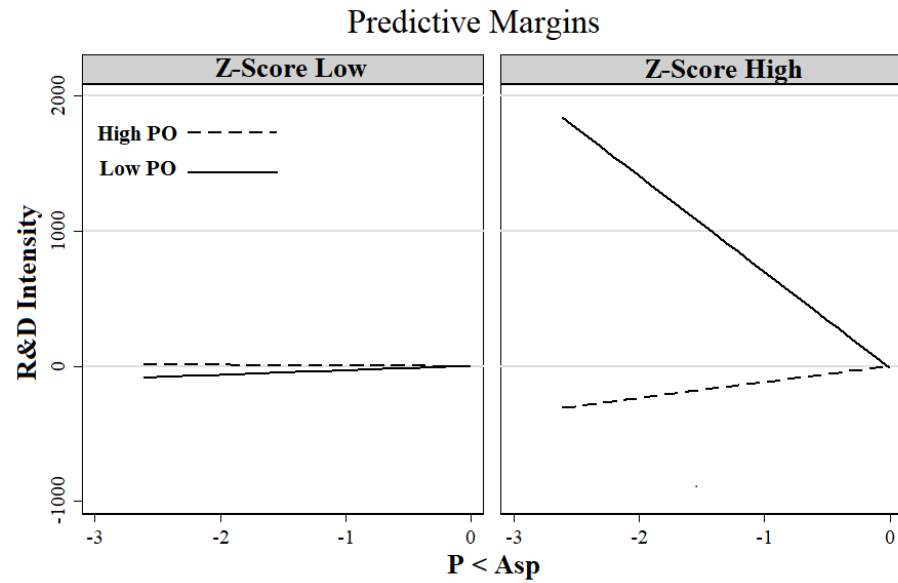
Figure 5 L: (Performance < Asp) x PD x Z-Score

Predictive Margins
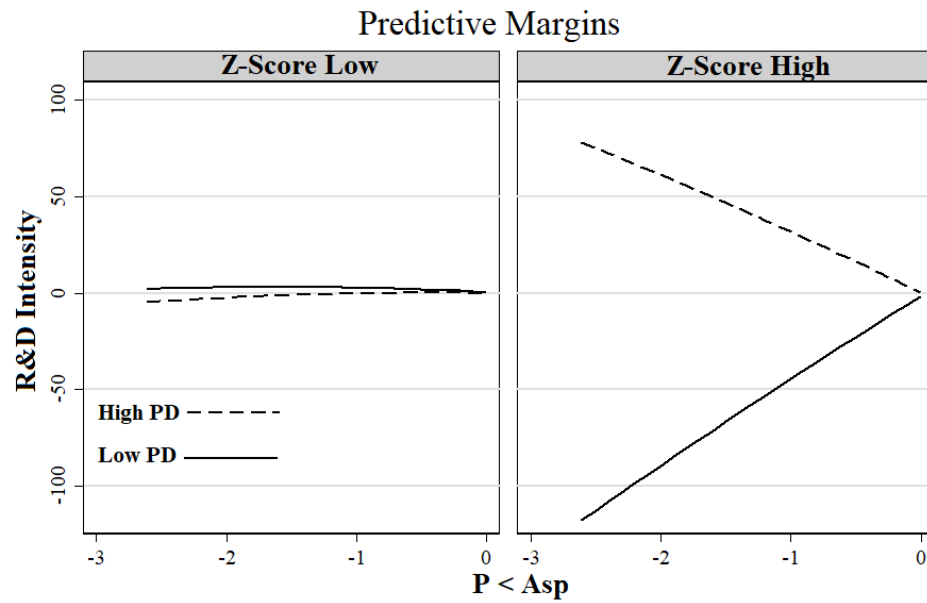
4.6. Summary of Findings

Since I used multiple measures for cultural dimensions and the risk-taking behavior of firms, I provide a summary table that depicts a summary of when hypotheses are confirmed and when they are not. Table 15 presents this summary.

Table 15: Summary of Findings

Volatility of Returns	R&D Intensity	
H1A: Confirmed	**H1A:** Confirmed	Performance < Aspirations
H1B: Not Confirmed	**H1B:** Not Confirmed	Performance > Aspirations
H2A: Confirmed	**H2A:** Confirmed	Hofstede UA x (Performance < Asp)
H2A: Confirmed	**H2A:** Not Confirmed	GLOBE UA x (Performance < Asp)
H2B: Confirmed	**H2B:** Confirmed	GLOBE UA x (Performance > Asp)
H2B: Not Confirmed	**H2B:** Not Confirmed	Hofstede UA x (Performance > Asp)
H3A: Confirmed	**H3A:** Confirmed	Hofstede FO x (Performance < Asp)
H3A: Not Confirmed	**H3A:** Confirmed	GLOBE FO x (Performance < Asp)
H3B: Confirmed	**H3B:** Confirmed	GLOBE FO x (Performance > Asp)
H3B: Not Confirmed	**H3B:** Confirmed	Hofstede FO x (Performance > Asp)
H4A: Confirmed	**H4A:** Not Confirmed	GLOBE PO x (Performance < Asp)
H4B: Confirmed	**H4B:** Confirmed	GLOBE PO x (Performance > Asp)
H5A: Confirmed	**H5A:** Confirmed	Hofstede PD x (Performance < Asp)
H5A: Confirmed	**H5A:** Not Confirmed	GLOBE PD x (Performance < Asp)
H5B: Confirmed	**H5B:** Not Confirmed	Hofstede PD x (Performance > Asp)
H5B: Not Confirmed	**H5B:** Confirmed	GLOBE PD x (Performance > Asp)
H6A: Confirmed	**H6A:** Not Confirmed	Distance from bankruptcy
H6B: Confirmed	**H6B:** Confirmed	Hofstede FO x (Performance < Asp) x Z-Score
H6B: Confirmed	**H6B:** Not Confirmed	Hofstede PD x (Performance < Asp) x Z-Score
H6B: Confirmed	**H6B:** Confirmed	GLOBE FO x (Performance < Asp) x Z-Score
H6B: Confirmed	**H6B:** Confirmed	GLOBE PO x (Performance < Asp) x Z-Score
H6B: Confirmed	**H6B:** Confirmed	GLOBE PD x (Performance < Asp) x Z-Score
H6B: Not Confirmed	**H6B:** Confirmed	Hofstede UA x (Performance < Asp) x Z-Score
H6B: Not Confirmed	**H6B:** Confirmed	GLOBE UA x (Performance < Asp) x Z-Score

4.7.   Robustness Checks and Additional Analyses:

4.7.1.   Fixed Effects Estimation of the Baseline hypotheses

Having observed cross-cultural differences in the performance feedback and risk relationship based on the results of HLM, I also checked the robustness of my findings with respect to the main effects (i.e., the direct impact of performance decline below and rise above aspiration

levels on the risk-taking behavior of firms) using fixed/random effects longitudinal models with panel data. I ran these analyses for the North American observations (i.e., firms from USA and Canada) to check for the consistency of the results with a majority of previous studies that have examined these firms mainly using COMPUSTAT North America database. I also ran fixed/random effects models for the whole data to check for consistency of findings with respect to the main effects.

Using fixed effects models as a robustness check for multi-level models is particularly valuable when the countries selected for study are not randomly selected, and/or when the number of countries under study is not sufficient. Mass and Hox (2005) concluded that less than 50 countries can be problematic. These limitations can, in turn, cause omitted variable bias and lower degrees of freedom in the country level (Möring, 2012). The insufficient number of countries can, in turn, limit the number of the relevant variables that should be included in the model or controlled for, as a result of which the significant coefficients observed could be due to unobserved variables (Schmidt, 2012). Non-random sampling along with the heterogeneity of observations across countries may bias results through omitted variable bias and unbalanced number of samples. Using fixed effects models can be particularly useful since it controls for the cross-country variation and shows whether the causal effects still hold by controlling for country differences or not. Although the number of countries is sufficient across my statistical models, using convenient sampling may still cause bias. I selected the countries mainly based on the availability of national culture scores and removed the countries with less than 3 firms.

The results of the analyses based on longitudinal panel data models are shown in table 16. I ran analyses for the whole sample as well as the sample from USA. The Hausman test confirmed the preference of fixed effects models to random effects across all models. Model 1 represents the results for volatility of returns across all samples, model 2 shows the results for volatility of returns for the American sample, model 3 represents the results for R&D intensity for the whole sample, and model 4 shows R&D intensity results for the American firms (Note: firm level controls in the R&D models are measures of one prior year as in the

main HLM analyses). As the table shows, the results for performance decline below aspirations are negative, indicating that risk-taking behavior increases as performance declines below aspiration levels. The same holds for the squared form of performance decline below aspiration levels. Except for insignificant coefficient in model 4, all the others are negative and significant. However, the results for performance rise above aspiration levels are not consistent with the results of the HLM models. The negative coefficients corresponding performance rise above aspiration levels and positive ones for their squared forms do not match their equivalents in the HLM models.

Table 16: Robustness Checks Using Longitudinal Panel Data Models

Variable	(M 1)	(M 2)	(M 3)	(M 4)
GDP per Capita	0.74^{**} (0.27)		0.78^{***} (0.31)	
Rule of law	0.09 (0.10)		-0.49 (0.94)	
Political Stability (Absence)	-0.56^{***} (0.44)		0.35 (0.97)	
Investor Protection	0.00 (0.00)		0.00 (0.00)	
Political Rights	-0.05 (0.05)		-0.04 (0.71)	
Domestic Credit to Private sector	-0.11^{***} (0.02)		0.02 (0.29)	
Market Capitalization	0.12 (0.20)		-0.05 (0.03)	
Information Sharing	-0.01 (0.01)		-0.11 (0.06)	
Creditor Rights	0.62 (0.60)		-0.32 (0.42)	

Variable	(M 1)	(M 2)	(M 3)	(M 4)
Growth Opportunities	0.01^*	-0.05^*	0.29^{***}	0.83^{***}
	(0.01)	(0.02)	(0.06)	(0.13)
Net Sales	0.00^*	0.00	-0.01	-0.03
	(0.00)	(0.00)	(0.04)	(0.06)
NWC	-0.42^{***}	-0.12^{***}	-0.10^{**}	-1.26^{**}
	(0.05)	(0.94)	(0.0.)	(0.43)
Composite Slack	0.10^{**}	0.23^{***}	0.60^{***}	0.57^{***}
	(0.03)	(0.06)	(0.02)	(0.04)
Total Assets	-0.02	-0.05	0.21	0.17^{***}
	(0.07)	(0.10)	(0.25)	(0.04)
Industry Growth Opportunities	0.01	0.08^{**}	-0.05	-0.04
	(0.01)	(0.03)	(0.07)	(0.22)
Industry Risk			0.40	-0.01^{**}
			(0.98)	(0.04)
Performance < Asp	-0.17^{***}	-0.17^{***}	-0.71^{***}	-0.21^*
	(0.01)	(0.01)	(0.08)	(0.12)
Performance > Asp	-0.03^*	-0.14^{***}	-0.54^{***}	-0.28^*
	(0.01)	(0.02)	(0.12)	(0.16)
Bankruptcy	0.02	-0.53	0.27	-0.0
	(0.03)	(0.13)	(0.73)	(0.75)
$(\text{Performance} < \text{Asp})^2$	-0.01^*	-0.01^*	-0.13^{**}	0.09
	(0.01)	(0.00)	(0.04)	(0.06)
$(\text{Performance} > \text{Asp})^2$	0.06^{***}	0.15^{***}	0.50^{***}	0.15
	(0.01)	(0.02)	(0.12)	(0.15)
Year	YES	YES	YES	YES
Country	YES	NO	YES	NO
Industry	YES	YES	YES	YES
N (Firms)	42069	12059	36606	13991
F Statistic	99.47^{***}	52.05^{***}	24.11^{***}	14.87^{***}

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0$.

4.7.2. Analyses by Including the Firms That Had Been Excluded from the Analysis Due to Different Incorporation and Headquarter Codes:

In my main analyses, I excluded from analysis those firms with different incorporation and headquarter names since the data was too limited to provide sufficient information on whether to categorize their firms under the culture of the country where they were located or the country to which they were incorporated. Although these observations were a small percentage of the total observations (about 4%) and I removed them from my analyses, I did additional analyses by adding these firms to the analyses (categorizing them under the cultural scores of the country of incorporation and vice versa). Inclusion of these firms changed neither the sign nor the significance of the coefficients related to the hypothesized main effects and interactions.

4.7.3. Additional Analyses on Performance Rise above Aspiration Levels

As it was shown in the HLM models, the coefficient of the performance rise above aspiration levels was positive and significant in spite of controlling for slack that indicates the opposite of what was hypothesized. They did not match their corresponding coefficients in the fixed effects models either. I did some additional analyses to delve more into this. The results of my additional analyses showed that slack influences risk-taking-behavior responses not when performance rises above aspiration levels, but when performance rises far above aspiration levels. I observed this for volatility of returns, but not for R&D intensity. Table 17 shows the results for volatility of returns. Showing the results both with Hofstede and GLOBE dimensions, models 1 and 3 are run without slack resources, and models 2 and 4 represent the results with composite slack included in the analyses. Figures 6A and 6B show the difference. when slack is not controlled, the negative significant coefficient of (Performance > Aspirations)^2 changes from negative to positive, that is, slack plays a significant role when performance is far above aspirations rather than just above aspirations.

Table 17: Performance Above Aspiration Levels with and without Slack

Variable	Hofstede		GLOBE	
	(M 1)	(M 2)	(M 3)	(M 4)
GDP per Capita	0.47	0.11	0.47	0.02
	(0.25)	(0.21)	(0.25)	(0.22)
Rule of law	0.13	0.29**	0.13	0.30**
	(0.09)	(0.09)	(0.09)	(0.10)
Political Stability (Absence)	-0.01*	-0.02***	-0.01*	-0.02***
	(0.00)	(0.00)	(0.00)	(0.01)
Investor Protection	-0.00	-0.70	-0.00	-0.73
	(0.00)	(0.74)	(0.00)	(095)
Political Rights	-0.71	-0.02	-0.71	-0.10
	(0.76)	(0.05)	(0.76)	(0.60)
Domestic Credit to Private sector	-0.16***	-0.08***	-0.16***	-0.76***
	(0.02)	(0.02)	(0.02)	(0.19)
Market Capitalization	0.74**	0.16	0.74**	0.15
	(0.28)	(0.22)	(0.28)	(0.22)
Information Sharing	-0.00	-0.01	-0.00	0.10
	(0.01)	(0.01)	(0.01)	(0.45)
Creditor Rights	0.00	0.04	0.00	-0.02
	(0.00)	(0.50)	(0.00)	(0.58)
Growth Opportunities	0.04***	0.08***	0.04***	0.08***
	(0.00)	(0.01)	(0.00)	(0.00)
Net Sales	-0.00***	-0.01**	-0.00***	-0.01***
	(0.00)	(0.01)	(0.00)	(0.01)
NWC	-0.16***	-0.32***	-0.16***	-0.32***
	(0.03)	(0.03)	(0.03)	(0.00)
Composite Slack		0.37***		0.37***
		(0.02)		(0.02)
Total Assets	0.38***	0.21***	0.38***	0.21***

Variable	(M 1)	(M 2)	(M 3)	(M 4)
	(0.02)	(0.02)	(0.02)	(0.02)
Industry Growth Opportunities	0.00	0.01	0.00	0.01
	(0.00)	(0.01)	(0.00)	(0.01)
UA	-0.02	-0.07*	-0.02	-0.01
	(0.02)	(0.03)	(0.02)	(0.02)
FO	-0.05*	-0.07*	-0.05*	0.03
	(0.02)	(0.03)	(0.02)	(0.02)
MAS/PO	0.05*	0.02	0.05*	-0.01
	(0.03)	(0.04)	(0.03)	(0.01)
PD	-0.01	-0.04	-0.01	-0.05*
	(0.03)	(0.04)	(0.03)	(0.02)
Performance < Asp	-0.66***	-0.61***	-0.66***	-0.61***
	(0.03)	(0.03)	(0.03)	(0.03)
Performance > Asp	0.57***	0.48***	0.57***	0.48***
	(0.06)	(0.03)	(0.06)	(0.03)
Bankruptcy	0.08**	0.07**	0.08**	0.06*
	(0.03)	(0.02)	(0.03)	(0.02)
(Performance < Asp)^2	-0.12***	-0.07***	-0.12***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)
(Performance > Asp)^2	0.04*	-0.05*	0.04*	-0.05*
	(0.02)	(0.02)	(0.02)	(0.02)
N (Firms)	43981	42069	43981	40888
N (Countries)	61	61	44	44
Wald Statistic	3442***	2591***	3442***	2546***
Country Random Effects	Yes	Yes	Yes	Yes
Industry Random Effects	Yes	Yes	Yes	Yes
Year Random Effects	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0$.

Figure 6 A: Performance above Aspiration Levels and Volatility of Returns (Slack Excluded)
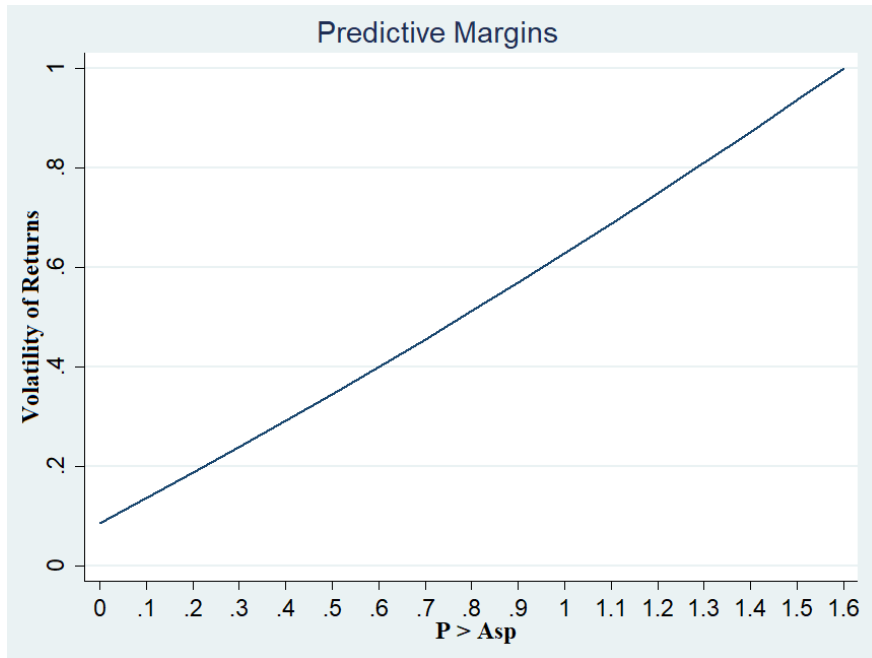
Figure 6 B: Performance above Aspiration Levels and Volatility of Returns (Slack Included)
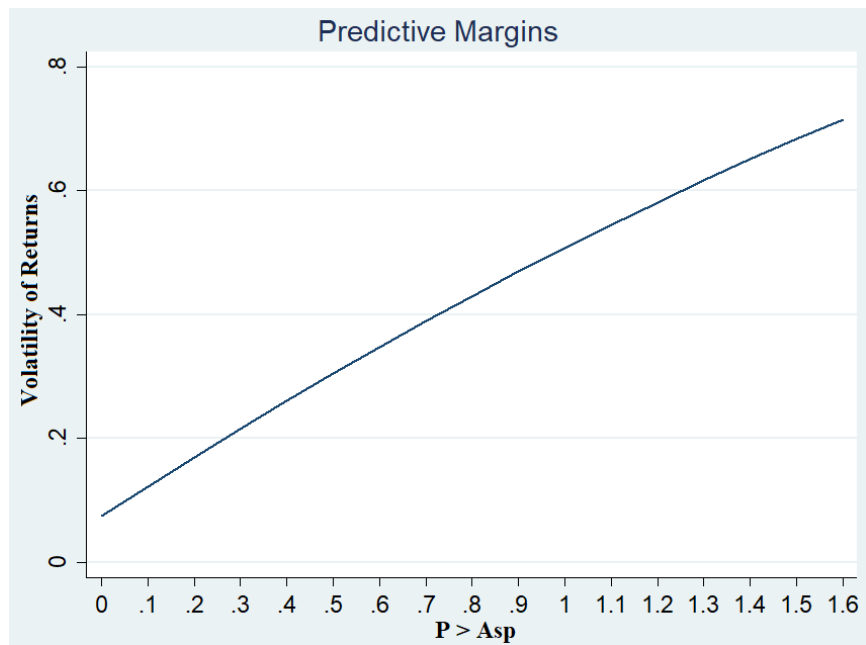
5. CONCLUSION

This dissertation aimed to fill one of the gaps on the boundary conditions of the BTOF research. In doing so, I focused on the cultural boundary conditions of the performance feedback and risk relationship and found that national culture is a significant moderator of the performance feedback and risk relationship. I focused on the role of four main national cultural dimensions including uncertainty avoidance (UA), future orientation (FO), performance orientation (PO), and power distance (PD) as possible moderators. I also investigated the role of distance from bankruptcy as a possible moderator of the moderation effect of national culture. I specifically found that 1) firms increase their risk-taking behavior when their performance declines below their aspiration levels, but stop increasing or start to decrease it after some point when performance starts to decline way below aspirations, 2) firms increase their risk-taking behavior when their performance rises above their aspiration levels, 3) national cultural dimensions of Hofstede and GLOBE significantly moderate the performance feedback and risk relationship both when performance declines below and rises above aspiration levels, and 4) the moderating impact of national culture is not constant at different points of performance decline below aspiration levels, and it decreases as firms get proximate to bankruptcy. I discuss these findings and their implications below.

6. DISCUSSION

6.1. Discussing the Main Findings

6.1.1. National Cultural Dimensions as Moderators (Negative Performance Feedback)

The significant findings regarding the moderating impact of UA (Hofstede dimension) for the negative performance feedback and risk relationship indicates that firms in high UA societies are not as much risk-seeking as those in lower UA ones when their performance declines below aspiration levels. I reason that this variance could be, in turn, due to the higher feelings of threat and anxiety that these societies associate with risk and risk-taking; as a

result, they are less willing to and capable of taking risk and engaging in uncertainty when their performance declines below aspirations. Regarding the rich empirical literature on the negative impact of UA on risk-taking behavior in the firm level, learning can also be another possible reason why UA plays this moderation role. Due to the higher perceptions of fear, threat, and anxiety associated with risk-taking behavior, firms in high UA societies may not have as much experience in risk-involving solutions to their negative performance feedback; as a result, they are more likely to resort to those less risk-involving solutions that they have more experience with and are not distant from their focus of attention.

Unlike Hofstede's UA dimension, I observed the reverse effect of that of GLOBE for R&D intensity. This contrast can be expected due to the distinct nature of these two concepts that embrace the same term. This distinct nature was investigated by Venaik and Brewer (2010) who found that not only are they negatively correlated, but Hofstede and GLOBE have captured different aspects of UA. Although Hofstede focuses on the stress and anxiety associated with uncertainty, GLOBE focuses on the rules, structures, and procedures that reduce uncertainty. Based on these conceptualizations, it appears that Hofstede and GLOBE capture different aspects or dimensions of UA (Venaik and Brewer, 2010). The contrast between Hofstede and GLOBE UA in my findings attests to this distinctness. Although Hofstede UA should reduce the risk-involving responses to negative performance feedback due to its strong association with stress and anxiety related to uncertainty and risk, that of GLOBE may not necessarily play this role since it only captures the rules, procedures, and structures that are created to reduce uncertainty; these rules can even facilitate some particular risk-taking behaviors due to the higher degrees of certainty that they create. My finding on the moderating impact of GLOBE UA for the case of R&D intensity shows this.

This finding is in line with the argument that I built for the moderating impact of UA on negative performance feedback and risk relationship. In developing the hypothesis for the moderating impact of UA on this relationship (hypothesis 2A), I strongly emphasized on the role of perceived threat and anxiety (rather than structures, procedures, and rules) as a main factor that weakens the impact of performance decline below aspirations on risk-taking

behaviors. I argued that risk-involving responses to negative performance feedback will be lower in societies with higher degrees of UA since risk-taking is perceived as more threatening and dangerous in these societies compared to those with lower degrees of UA. Thus, high UA societies may take less risk in response to negative performance feedback due to relatively higher degrees of threat and anxiety that they associate with these behaviors rather than societal rules and structures aimed at reducing uncertainty.

The moderating impact of FO on the negative performance feedback and risk relationship is the most robust one across models. I found support for the negative moderation impact both for volatility of returns and R&D intensity with both Hofstede and GLOBE measures. This challenges the universality of one of the main assumptions of the BTOF that regards firms as short-term oriented entities that are not willing to adopt such risk-involving activities as long-term planning, setting long-term visions, and long-run anticipation of events in the distant future; and are more after short-run feedback. This implies that decision making is not the outcome of long-term planning and predictions, but it is the product of the requirement of organizations to solve problems. My findings show that this assumption may not hold for firms in high FO societies. As the two-way interaction coefficients and their associated graphs showed, the degree of attention to such short-run feedback as performance decline below aspiration levels is relatively lower in these societies. This can, in turn, be due to the higher degrees of attention that firms and managers in these societies allocate to long-term contingencies and problem-solving (Liu et al., 2014), and are not as much attentive to short-run contingencies and feedback.

The moderating impact of PO on negative performance feedback and risk relationship was confirmed for volatility of returns. This indicates that firms in higher PO societies are relatively more risk-seeking when their performance declines below aspiration levels. This may be in part due to the high value that these societies give to outperforming competitors, achieving high levels of performance and continuously improving it, and risk-taking (House et al., 2004; Stevens & Dykes, 2013) along with higher degrees of can-do spirit (Nam et al., 2014). High value given to outperforming competitors and achievement may, in turn, make

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firms in these societies more sensitive to performance decline below their aspiration levels, as a result of which they may perceive change and risk-taking more necessary in order to bring the performance back to their desired levels. Relatively higher degrees of can-do spirit and positive attitudes regarding risk-taking that they enjoy could also play a significant role in increasing their confidence in the success of risk-taking strategies, and hence increase their engagement in risk-taking when their performance declines below aspirations.

In the hypothesis development section, I argued PO to be a better predictor of risk, rather than MAS due to less confounding. However, comparing MAS moderation impact with that of PO, I found that they almost leave the same moderating impact. I argue that the consistent coefficients may not necessarily imply that they capture the same construct. As I explained in the hypothesis development section, PO is a neater form of MAS that lacks the confounding and face validity problems of MAS. Thus, the consistent coefficients may be in part due to the fact that these two constructs capture different concepts and societal characteristics that promote risk-seeking. Although GLOBE's PO may be highly associated with MAS, the mechanism through which these two constructs predict risk-taking behavior may be different and due to societal characteristics and contingencies that are distinct. As a result, more research aiming to find the differences between the two constructs, the dependent variables they may predict, and the different mechanisms of these causalities is encouraged.

Finally, the moderating impact of PD on negative performance feedback and risk relationship was confirmed for all models except for the moderating impact of GLOBE's PD on negative performance feedback and R&D intensity relationship. Hofstede's PD moderated the negative performance feedback and risk both for volatility of returns and R&D intensity, attesting to my argument that higher PD societies are not as much willing to increase their risk-taking behavior when their performance declines below aspirations. I associate this impact with the existence of rigid structures, procedures, and rules in societies with higher degrees of PD that hold a strong potential to hinder change and risk-taking. The BTOF and learning theory also lend support to this finding. Cyert and March (1963) note that the problemistic search and the choices and strategies that follow will be dependent on the firms'

previous experience in these strategies, as well as the degree of support that their organizational structure lends to these strategies. Based on the empirical findings that risk-taking behaviors of firms are relatively lower in higher PD societies (e.g., Kreiser et al., 2010; Mihet, 2013), I argue that even though firms in these societies may find risk-taking strongly necessary when their performance declines below aspirations, these firms will not find risk-involving strategies as available as those in lower PD societies due to relatively lower degrees of experience in these strategies and the structural constraints.

6.1.2. National Cultural Dimensions as Moderators (Positive Performance Feedback)

Even though significant positive relationship derived for positive performance feedback and risk relationship is opposite to the hypothesized negative relationship, the two-way interactions of national culture with performance rise above aspirations still confirm the core arguments of their corresponding hypotheses (except for the PD that will be discussed below), on which basis I consider these hypotheses confirmed. UA was argued to strengthen the negative impact of performance rise above aspirations on risk-taking behavior; however, it weakened the positive relationship in all the significant cases. This holds nothing against arguments I made with respect to this moderation impact. The main argument was that firms in societies with higher UA reduce their risk-taking responses with more strength, and the finding shows that increase in risk-taking responses to positive performance is relatively weaker that attests to my core argument that firms in high UA societies are not as much willing to take risk in response to positive performance feedback as those in lower UA societies.

The same applies to FO. All the significant moderation effects for FO indicate that the degree of increase in risk-taking behavior in high FO societies is not as much as that in lower FO societies when performance rises above aspirations. This confirms my core argument that the strength of risk-taking responses in these societies is relatively weaker mainly due to their less attention to short-run feedback and relatively higher degrees of attention to long-term contingencies and long-term problem solving. On this ground, firms from high FO societies may not be influenced by an increase in their performance relative to their own recent

performance history or the performance of their current competitors. Thus, even though risk-taking increases with performance rise above aspiration levels, this increase is weaker for firms in high FO contexts due to their lower degrees of attention to short-run feedback.

As for PO, increase in risk-taking responses to positive performance feedback in high PO contexts is stronger. I argued that in high PO societies the decrease in risk-taking behavior will not be as strong as that in low PO societies due to relatively higher motivation for growth and maximum profits, need for achievement, and self-confidence and optimism regarding risk-taking. The statistical findings show that the decrease is not weaker, but the increase is stronger that, in turn, confirms the core arguments regarding the moderating impact of PO on positive performance feedback and risk relationship. In both cases, the moderation effect can be associated with what characterizes and forms high and low PO societies.

Even though the moderating impact of PD on negative performance feedback and risk relationship confirmed my arguments, there is a surprising finding regarding the impact of positive performance feedback in high PD societies. The results showed that firms from these societies increase their R&D intensity at higher rates compared to those from lower PD societies when performance rises above aspiration levels. There may be two reasons for this.

First, unlike the other national cultural dimensions such as UA for which there is no alternative explanation with respect to its association with risk-taking behavior, PD has been argued and found to play a dual role in terms of its implications for risk-taking behavior. Although lower degrees of PD and decentralization could facilitate risk-taking due to higher flexibility, less centralization of knowledge, and more lateral communication (Abby & Dickson, 1983; Lwellyn & Bao, 2015), there are some counterarguments and observations that PD characterized by centralized authority can be a facilitator of such risk-taking behaviors as new product introductions by facilitating the institutionalization of innovation, overcoming resistances to change and new concepts, and creating the organizational ethos for risk-taking through by initiating appropriate incentives and rewards for entrepreneurial behavior (Nakata & Sivakumar, 1996). Under this argument, it appears valid to argue that

with higher degrees of performance rise above aspiration levels, higher degrees of authority in the hands of few people will facilitate risk-taking and change.

The second argument is more directly associates with the moderating impact of PD on the performance feedback and risk relationship. Assuming that high PD societies are characterized with members who are resistant to change (Hofstede & Harzing, 1996; Kirkman & Shapiro, 1997), inflexible rules and rigid structures that impede change and innovation (House et al., 2004; Stevens & Dykes, 2013), and lower tendency to break the rules and take risks, it is likely that managers and decision makers in these societies will be reluctant for change and risk unless they enjoy sufficient incentives, assurances, and trust that risk-taking will not be unsuccessful (Lewellyn & Bao, 2015). Thus, firms in high PD societies may increase their risk-taking behavior with positive performance feedback due to the increased assurances about the success of these behaviors. Lewellyn and Bao (2015) made this argument and found that firms increase their R&D intensity when outperforming industry peers, and this positive relationship is even stronger in higher PD societies.

6.1.3. Three-way Interactions

The three-way interactions showing the implications of distance from bankruptcy to the moderating impact of national cultural dimensions on negative performance feedback and risk relationship indicated that the contingency role of national culture is not constant and varies at specific points. They specifically showed that culture loses its contingency role as firms shift their focus of attention from aspiration to survival levels. I argued increased fear of termination and survival and lack/inefficiency of the existing resources and capabilities as of the main reasons. When firms are proximate to bankruptcy, no matter what their program of mind may be, the threat of survival is expected to be taken more seriously that will, in turn, reduce firms' tendency to engage in high uncertainty and risk-taking that are associated with higher likelihoods of loss and termination. Assuming that such cultural traits as UA may cause variance in their degrees of risk-taking in such situations, this role is expected to be weaker, and they are still likely to face a lot of challenges in risk-taking due to the lack of resources and capabilities to take risk, inefficiency of their own resources to do so, and

mismatch of their resources to their environments (Amit & Shoemaker, 1993; Ref & Shapira, 2016).

The insignificant three-way interactions may also have implications. Out of the three-way interactions, only three were insignificant (Hofstede's UA for volatility of returns and R&D intensity and Hofstede's PD for R&D intensity). Considering the two-way interactions of these models, they all were significant. The insignificant coefficients as a result of interacting them with distance from bankruptcy indicate that although UA and PD moderate the negative performance feedback and risk relationship both for volatility of returns and R&D intensity, their moderating effect becomes insignificant as firms' get proximate to bankruptcy. Thus, I argue that even the insignificant coefficients of the three-way interactions confirm my argument that distance from bankruptcy reduces the moderating role of culture, in a way that it may even eliminate it.

6.1.4. The Issue of Performance Rise above Aspirations

I argued that performance rise above aspiration levels reduces the risk-taking behavior and exploratory activities of firms. However, the findings indicated that the relationship is positive both for volatility of returns and R&D intensity. This finding is not exceptional or specific to this study. Although findings with respect to the negative performance feedback and risk relationship are consistent across all studies in the BTOF literature, such a consistency is missing for the case of positive performance feedback. Based on Cyert and March's (1963) slack-driven search argument, some studies have provided arguments counter to what I hypothesized. Cyert and March (1963) argue that in addition to the driving and motivating role of organizational problems (e.g., performance decline below aspirations), search may also be driven by the accumulated slack in organizations. That is, existence of extra slack resources will drive organizations to engage in more experimentation and search aimed at increasing their performance and standing. Based on the assumption that increase in performance increases slack, studies relying on this argument posit that with increase in performance above aspirations, the increasing slack will raise the likelihood of more

experimentation and risk-taking (Baum & Dahlin, 2007; March & Shapira, 1987; Chen & Miller, 2007; Miller & Chen, 2004; Argote & Greve, 2007; Alexy et al., 2016).

With regard to the effect of slack resources on search and risk-taking behavior, studies emphasizing the negative effect of performance above aspirations on risk-taking behavior have taken different approaches. Similar to the focus of attention on aspirations versus survival and bankruptcy, some studies argue that firms will be more risk-prone when their focus of attention is directed towards slack rather than aspirations, positing that focus on slack will be more likely when performance is far above aspirations, and on aspirations when performance is just above aspirations (Lehman et al., 2011; Xie et al., 2016); thus, the negative effect holds when the focus is on aspirations.

On the other hand, some studies consider the role of slack different from that of performance relative to aspirations. For instance, Chen (2008) notes that performance relative to aspirations is a short-term variable, whereas slack refers to an accumulated stock variable that has a long-term connotation. These two concepts, therefore, have distinct effects on risk-taking behavior and should be considered separately. The main approach of the studies emphasizing the negative effect of performance distance above aspirations on risk-taking behavior is to regard the role of slack as distinct from that of aspirations, and to control for the role of slack resources when testing the effect of performance distance above aspirations on risk-taking behavior (e.g., O'Brien & David, 2014; Lim & McCann, 2013). Controlling for the role of slack, the findings regarding the negative effects of performance distance above aspirations on risk-taking are expected to be negative. This is shown in some studies such as O'brien and David (2014). However, the assumption that by controlling for slack resources, the positive performance feedback and risk relationship should be negative does not consistently hold across studies. I briefly review the literature on this matter, aiming to show the contradictory findings.

I categorize this empirical research on positive performance feedback and risk relationship under four categories including: 1) Slack controlled and results negative, 2) Slack not

controlled and Results Negative, 3) Slack not controlled and results positive, and 4) Slack controlled but results positive or non-significant / Slack not controlled but results negative or non-significant.

Slack Controlled and Results Negative: This category includes those studies that find negative coefficients for positive performance feedback and risk relationship and have (all or a number of) slack resources controlled in their analyses. Greve (2007) found that above aspiration levels, performance rise will negatively influence the degree of exploration activities of Japanese shipbuilding firms. Gaba and Bhattcharya (2012) found that with performance rise above aspirations firms are less likely to tolerate risk, as a result of which they are less likely to adopt corporate venture capital. Lin (2014) found that performance rise above aspirations negatively influences firms' internationalization pace in a study on Taiwanese firms. Associated with internationalization, Jung and Bansal (2009) found that the degree of internationalization decreases with higher performance rise above aspiration levels. In a study on global mobile phone industry consisting of six firms including Nokia, Motorola, Samsung, Sony Ericsson, Siemens and LG, Gaba and Joseph (2013) found that performance rise above aspirations negatively influences new product introductions of these firms. In another study on the largest cellular phone manufacturers, Joseph and Gaba (2015) found the same results.

Slack not controlled and Results Negative: This category includes studies that do not control for slack resources; nevertheless, they obtain negative coefficients. Greve (1998) found a negative relationship between performance rise above aspirations and probability of change in USA radio stations without considering the role of slack as a possible factor that may influence a variety of change practices adopted by these stations. Iyer and Miller (2008) found similar results on the acquisition behavior of firms, in a way that performance rise above historical aspirations significantly decreases acquisitions; however, the impact of performance rise above social aspirations was not significant. Wang et al. (2017) found that performance rise above financial performance aspiration levels as well as technological performance rise above technological aspiration levels decreases the degree of technology

advancements in the form of growth in substrate size and technology generations. In a study of US and foreign based pharmaceutical firms Markovitch et al. (2005) found that firms outperforming their industry are relatively less likely to make changes to their current portfolio and distributions. Eggers and Kaul (2017) found that with higher performance above aspirations in the technology area, firms will be less likely to follow radical innovations in USA. Audia and Greve (2006) found that performance rise above historical aspirations reduces risk-taking behavior in a sample of Japanese firms. Delmar and Wennberg (2007) found negative impact of performance above aspirations on growth of firms in Sweden.

Slack not controlled and results positive: Baum et al. (2005) found that performance rise above aspirations increases the propensity of firms for non-local ties as a factor of slack driven search among investment banks in Canada. Fiegenbaum and Thomas (1988) found a positive relationship between performance feedback and risk relationship; the positive relationship was confirmed both across firms and industries. In a study of all industries drawn from COMPUSTAT segment database, Fiegenbaum (1990) found that the performance feedback and risk relationship was negative for 47 industries out of the total 70, and that the relationship was negative and significant only for one of the industries regardless of the slack resources (i.e., slack was not used in the analyses). Based on these findings, he concluded that performance feedback and risk relationship above aspirations is positive.

Slack controlled but results positive or non-significant / Slack not controlled but results negative or non-significant: Ref and Shapira (2016) found that the probability of entry into new markets increases with the higher degrees of performance rise above aspirations but decreases when performance rises way above aspirations among firms drawn from COMPUSTAT Segments database. Chen and Miller (2007) found that R&D intensity decreases in response to performance rise above aspirations in spite of not controlling for slack resources among US firms drawn from COMPUSTAT database. In spite of controlling for the role of absorbed and unabsorbed slack resources, Lu and Fang (2013) found that

performance rise above aspirations increases the amount of R&D investments among firms in Taiwanese electronic industry.

Some of the studies within this category do not find significant results. Tyler and Caner (2012) found no significant relationship between innovative output above aspirations and further innovative output among US biopharmaceutical firms. Schimmer and Brauer (2012) found no significant effect of performance rise above aspirations on the convergence-divergence strategies of firms from their strategic reference groups in USA., In a study on film directors who directed three or more U.S. feature films that were released in any U.S. movie theaters between 1986 and 2006, Kim and Rhee (2014) found no significant relationship between positive performance discrepancy and their risk-taking in the form of change. Lucas et al. (2015) found no significant effect of performance rise above social or historical aspiration levels on the R&D intensity of firms.

As shown in the literature review, controlling for slack resources does not necessarily make the positive performance feedback and risk relationship a negative one, nor is there a consistent positive relationship when slack is not controlled for. My additional analyses on my data also showed that slack played a significant role for the case of performance high above aspirations for volatility of returns, in a way that controlling for slack resources changed the sign of the performance rise above aspiration levels squared from positive to negative. However, this was not found for R&D intensity. In line with the first set of arguments, my finding regarding the role of slack on volatility of returns indicates that slack will catch more focus of attention and influence risk-taking behavior when performance is far above aspirations (Lehman et al., 2011; Xie et al., 2016).

I argue that there could be other unknown factors that can play a significant role in establishing how this relationship works. Associated with the main focus of this study, institutional factors may be of the most influential factors. Considering the role of informal institutions, national culture can play a significant role in this relationship. As my findings showed, national culture moderates the positive performance feedback and risk relationship,

in a way that (as the graphs showed) in most cases the slopes of the relationship were opposite (i.e., positive versus negative) across societies with different national cultures. This cultural argument has caught some attention in the literature recently. For instance, O'brien and David (2014) found that although the slope of the positive performance feedback and risk relationship is negative in the USA, the relationship is positive in Japanese contexts due to high degrees of communitarian culture in Japan. Thus, unlike the case for performance below aspiration levels, the positive performance feedback and risk relationship is not a well-established one in the BTOF literature. As a result, more research on its boundary conditions and contingency factors is needed in order to get a clearer picture of the nature of this relationship.

6.1.5. Direct Effects of National Culture

My findings also showed direct impacts of national culture dimensions on the risk-taking behavior of firms in a few of the models. Hofstede's UA negatively influenced the volatility of returns, but its impact on R&D intensity was not significant. This finding is in line with the previous literature that risk-taking is relatively lower in high UA societies. However, GLOBE's UA predicted neither the volatility of returns nor R&D intensity. This contrast is expected due to the different nature of UA conceptualized by Hofstede versus that by GLOBE. As I discussed in the previous section, Hofstede's UA will be a better predictor of risk-taking behavior of firms due to its emphasis on anxiety and stress aspects of UA. Firms from high UA societies will be less likely to take risks due to relatively higher degrees of stress and anxiety that they perceive regarding risk-taking and uncertainty. Hofstede's FO also negatively influenced the volatility of returns; however, the impact of FO (both that of Hofstede and GLOBE) was insignificant in the other models. This finding contradicts the previous findings and arguments that risk-taking is higher in high FO societies. GLOBE's PD also negatively influenced the volatility of returns, indicating that the degree of risk-taking may be lower in high PD societies. Finally, masculinity also positively influenced the volatility of returns that is in line with previous findings.

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My findings regarding the direct effects of national culture dimensions were not as strong as those of their interactions with positive or negative performance feedback. In most models, although the direct effects of culture dimensions on risk-taking were not significant, their interaction effects with performance feedback appeared significant. This may have implications for the cross-cultural research, suggesting that investigating the impact of national culture on firm or even individual behaviors in a void and without placing it in a particular context may be misleading, that is, national culture may not influence a behavior on its own; however, as a program of mind, it may cause variance in behaviors by influencing the way incidents and environmental stimuli are perceived and framed.

Considering Hofstede's notion of culture as program of mind (Hofstede, 1980), its direct impact on behavior is less likely, but this program may leave its influence best when there is a framing process as well. The program of mind provides a framework for framing and making sense of environmental stimuli. It influences the way firms make sense of and frame these stimuli, and it is the different framings based on different programs of mind (culture) cause variance in the behaviors. Therefore, the same stimulus is likely to be framed differently in different cultures that will, in turn, cause variance in the behaviors as reactions to this stimulus. This argument is evidently realized in my findings. In most of the models, national culture does not directly influence the risk-taking behavior of firms; however, it causes variance in behaviors when interacting with a particular stimulus that is performance decline below or rise above aspirations. Based on different programs and softwares of mind, the way they frame this stimulus is different that, in turn, leads to variance in the degree of risk-taking in response to it. It is not the risk-taking behavior that varies across cultures, but it is the risk-taking behavior as a reaction to performance feedback that varies, highlighting the significant role of stimulus and framing in explaining cross-cultural variance in risk-taking.

6.2. Research Limitations

This research is not without limitations. I elaborate on these limitations and propose additional directions for additional future research aimed at covering these limitations.

6.2.1. Chronological Invariance of National Cultural Dimensions

As it is the case with all the other cross-cultural studies relying on Hofstede and GLOBE national cultural dimensions, the national cultural scores of these studies are invariant across years. Even though there are strong arguments for the stickiness of culture across time and that cultural values barely change across time (North, 1993; Hofstede et al., 2005), these arguments have been strongly criticized. For instance, focusing on the role of modernization and economic development, Inglehart and Baker (2000) found that the cultural values significantly change with economic development. Thus, it is likely that our national cultural scores may bias the results since they are constant across time. I propose additional research using such time varying measures of national culture as those used in the World Value Survey (WVS) that is repeated across years. Matching items from WVS that hold common features with the national cultural dimensions of GLOBE and Hofstede can add to the depth and richness of the cross-cultural understanding of performance feedback and risk relationship.

6.2.2. Country of Incorporation

As mentioned in the *'different Incorporation and Subsidiaries'* section, one of the challenges of this research was whether to assign firms with different incorporation and subsidiary countries to their country of incorporation or to the country where they were active. A variety of methods have been proposed to determine the culture of these types of firms including sending surveys to measure their culture on different dimensions, looking into the degree of cultural diversity within them, checking the board composition, etc. (De Jong et al., 2015; Apetrei et al., 2015; Apetrei et al., 2015). However, following any of these or similar strategies were out of my means due to data limitations. As a result, I only used firms with

the same country of incorporation to avoid bias resulting from this issue. As a robustness check, I conducted the analyses with and without these firms and observed no difference in the statistical results.

6.2.3. Dependent Variables

The two dependent variables that I used in this study are the most frequently used measures of risk-taking behavior in the BTOF literature. And using these variables increases the external validity of my findings to the maximum possible level. However, as a cross-cultural study on the risk-taking behavior of firms, volatility of returns may be criticized for its generality since it is built on the assumption that it will increase when risk-taking behavior increase and decrease when firms become more conservative (John et al., 2008; Zhang, 2009; Li et al., 2013), but it does not directly capture a specific behavior. Similarly, R&D intensity may be criticized in that it may not be as culturally variant as other risk-taking behaviors of firms. Nevertheless, these measures, as the most frequently used measures of risk-taking behaviors in the BTOF, must be used in order for an acceptable degree of external validity. My major limitation was that I could not use any other measures of risk-taking behavior that would face less criticism with respect to its cultural relevance and have also appeared in the BTOF literature as measures of risk-taking behavior, such as acquisitions, new product introductions, entry into new markets, etc. due to the limitations of the main database (COMPUSTAT GLOBAL) used in this study. The database did not include any of these measures. Having attempted to merge acquisition data from SDC Platinum database, the attempt was futile due to problems that came up in matching the data. Having found significant cross-cultural variation of performance feedback and risk relationship using the two most prevalent measures of risk in the BTOF, I propose additional studies on other risk-taking behaviors that are studied in the BTOF that may, in turn, provide a broader picture of this cross-cultural variation.

6.3. The BTOF and Future Research Directions

6.3.1. Culture-specific Risk-taking behavior

Regarding our findings that national culture is a significant boundary condition of performance feedback and risk relationship, as wells as previous empirical findings that national culture significantly influences the risk-taking behavior of firms, one of the promising avenues for future research is to take one more step forward and ask if there are any culture-specific risk-taking behavior in response to performance feedback. Attention to the typology of risk-taking behaviors in response to performance feedback is a very recent phenomenon. Only one study exists in this area (i.e., Xu et al., 2018) finding that firms will take different types of risks at different points of aspiration levels. They specifically found that whereas firms increase such illegal behaviors as bribing when their performance declines below aspiration levels, such behaviors as R&D investments are more likely to increase when performance rises above aspirations. Similar questions asking whether different typology holds for different cultures or not will provide valuable contributions to the field. That is, is the risk-taking behavior in response to performance decline below aspiration levels the same or different across countries and cultures?

6.3.2. Do Distance from bankruptcy and Threats of Termination and Survival always Lead to Reduction in risk-taking behavior?

While working on my dissertation, I had several informal unstructured interviews with Turkish managers and CEOs, all of whom implied that distance from bankruptcy does not necessarily reduce risk-taking behavior, and there may be some particular ones (e.g., such illegal behaviors as bribing) that firms will be willing to take in these situations. This contrasts with the arguments and findings in the BTOF literature that firms are unwilling to take risks when they are proximate to bankruptcy, indicating that there may be a different story in some non-American contexts. The current findings are restricted to a limited number of risk-taking behaviors, including R&D investments, acquisitions, entry into new markets, and new product introductions mainly in the USA. Considering the fact that these behaviors

(e.g., R&D) are not as common in some developing contexts, such as emerging economies, and their institutional environments are significantly different, the performance feedback and risk relationship may follow a different pattern, and the types of behaviors adopted when firms are proximate to bankruptcy may diverge from those adopted in the USA. On this basis, two consecutive questions could be investigated: Are there any risk-taking behaviors that firms may adopt when their performance declines or when they are facing threats of termination and survival that are more prevalent or frequent in particular cultural or institutional contexts? If so, what particular behaviors are adopted by firms in these contexts when they are about to become bankrupt, and why do they emerge in these contexts?

6.3.3. The role of culture of honor and reputation: The performance feedback and risk relationship may also be studied in terms of how its mechanisms hold in honor cultures. Considering Gulf countries and other similar states such as Turkey as prototypical examples of honor cultures, investigate the proposition that in honor cultures, managers are more likely to take *extreme* risks when they face losses and when their firms face the threat of bankruptcy may provide a valuable contribution. I expect this relationship to be even stronger for managers with relatively higher reputation, status, and previous success. This may happen because managers with higher reputation or higher rates of previous success in honor cultures are likely to feel higher threats of losing honor as a result of performance decline and are more likely to take more *extreme* risks. Challenging the already taken for granted assumption that risk decreases with distance from bankruptcy, this research could be a significant contribution to a deeper and more contextual understanding of risk-taking in response to performance feedback by providing a new cultural perspective that can enrich the agency theory, prospect theory, and BTOF predictions with respect to this relationship. This research can also be a significant contribution in that the role of previous records (e.g., success, failure) on the performance feedback and risk relationship has not been investigated.

6.3.4. The Degree of Attention to Forward versus Backward-Looking Aspirations

The BTOF research to date has mainly focused on the role of feedback from experience (backward-looking aspirations or social/historical aspirations) on firm behaviors, ignoring the role of future prospects or forward-looking aspirations. One main reason for this is that Cyert and March (1963) have provided little, if not any, insight on the role of forward-looking aspirations which refer to expectations of growth or performance rise with respect to future targets. Chen (2008) finds that in addition to the backward-looking aspirations, degree of attention to forward-looking aspirations also influences the risk-taking behavior of firms. The question whether backward- or forward-looking aspiration holds more potential for influencing firm behaviors is starting to become a hot debate in the field (Blettner et al., 2015; Chen, 2008), and identifying the circumstances under which they are more influential for the risk-taking behavior of firms would provide a significant contribution to the field. What factors make the forward-versus-backward aspirations more important for firms? For instance, one of the potential factors that can shift the focus of attention of firms from backward to forward-looking aspirations is future orientation as a national cultural dimension, as well as future orientation in the firm and managerial levels. Higher degrees of future orientation across these levels can drive the focus of attention of firms to forward-looking aspirations and future contingencies rather than the classic backward-looking ones due to their higher degree of attention to future contingencies and future based problem solving (House et al., 2004), making their risk-taking behavior more influenced by forward rather than backward aspirations. Finding and investigating these possible factors appears to be mandatory in order to provide a deeper understanding of whether (and under what circumstances) firms set their aspirations based on past, present, or future.

6.3.5. Historical or Social Aspirations

Studies on the performance feedback and risk relationship mainly use historical aspirations (performance relative to the focal firm's past performance) and social aspirations (the focal firm's performance relative to the performance of competitors) as firms' main reference

points, based on which they increase or decrease their exploratory and risk-involving activities. A rising debate in the field is associated with the how and when firms allocate their attention to each of these aspirations. Studies on the contingency factors that shift firms' focus of attention between the two, and under what circumstances are firms' risk-involving policies and strategies influenced relatively more or less by social or historical aspirations will be significant contributions since only a little research has captured these questions (e.g., Vissa et al, 2010; Blettner et al., 2015) and factors influencing the allocation and shift of attention have been quite unknown to date.

6.3.6. Who Exactly Is My Reference Point?

One of the questions that remains open to more investigation in the BTOF is who exactly firms compare themselves with when it comes to social aspiration. Although a majority of studies measure social aspiration as the average of the performance of the other firms in the same industry, this has been criticized as a biased measure. Thus, some studies have aimed to break this into different fragments. For instance, Labianca et al. (2009) divide social aspirations into competitive and striving aspirations, and Baum et al. (2005) provide an alternative measure of social aspirations that brings size of the firms into account when identifying the competitors. In spite of the existence of some other similar studies, this track is open for more investigation. For instance, such factors as the role of industry characteristics, institutions, and such micro-level factors as CEO characteristics are still unknown. Thus, research on which firms are more visible to the focal firm as their main competitors, or which firms they are specifically willing to compare themselves with in terms of their performance will be a valuable effort.

6.3.7. Hofstede or GLOBE?

Review of literature on the impact of national culture on the risk-taking behavior of firms indicates that all the studies used both Hofstede and GLOBE measures of national culture alternatively, assuming that each of these measures of national cultural dimensions in these

studies represent the same concept. This assumption has been harshly criticized in some recent studies and found to be erroneous. For instance, investigating uncertainty avoidance represented by Hofstede versus that represented by GLOBE, Venaik and Brewer (2010) showed that not only are these not the same constructs regarding their content, but they are also negatively correlated, concluding that the concept in each study may represent a distinct aspect of uncertainty avoidance. Whereas Hofstede's uncertainty avoidance represents the degree of a society's fear and anxiety associated with engagement in uncertainty and risk, that of GLOBE represents the degree to which a society builds rules, norms, and structures to reduce uncertainty (Venaik and Brewer, 2010). The opposing moderation effects of Hofstede's UA and that of GLOBE on performance feedback and R&D intensity in this study also attested to this contrast. Taking one step beyond the current literature on the impact of national culture on the risk-taking behavior of firms and finding how differently the national cultural dimensions of Hofstede and GLOBE may influence the risk-taking behavior of firms is necessary in order to get a deeper understanding of the different implications of these similar dimensions to the same constructs. For instance, regarding uncertainty avoidance, that of Hofstede's may be argued as a better predictor of risk-taking behavior of firms since it directly addresses the degree of anxiety and stress associated with uncertainty and risk, and my early analyses of COMPUSTAT GLOBAL data attest to this.

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