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TAKING CHANCES? THE EFFECT OF CEO RISK PROPENSITY ON FIRMS' RISKY INTERNATIONALIZATION DECISIONS

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ABSTRACT

This study addresses the growing calls among international business and international entrepreneurship scholars for greater research attention to the effect of leaders' characteristics on their firms' risky internationalization choices. Focusing on the fundamental leader characteristic identified in the international entrepreneurship literature, i.e., risk propensity, we develop and test an original framework for analysis suggesting that CEOs with greater risk propensity will tend to steer their firms towards greater degrees of internationalization and towards more risky venues/locations (countries at a greater cultural distance) and vehicles/entry modes (acquisitions versus alliances). We also more precisely assess our underlying assumption of agentic CEOs affecting firms' internationalization decisions by positing and testing additional moderator relationships, in which we suggest that the effect of CEO risk propensity on the riskiness of firms' internationalization choices will be (1) amplified when CEOs enjoy greater power, and (2) attenuated for firms with greater internationalization experience. Empirically, our analyses show significant and robust support for both our main effect and moderator hypotheses. We conclude by discussing the implications of our theoretical perspective and empirical findings for the burgeoning literature on the micro-foundations of internationalization, as well as the upper echelons and international entrepreneurship literatures.

Keywords: CEO risk propensity, CEO/Board power, internationalization, entry modes, cultural distance

INTRODUCTION

Gaining a greater understanding of firms' internationalization choices and the antecedents of those choices has long been the focus of research attention from an intellectually diverse array of international business (IB) scholars. While some accentuate internationalization's presumed benefits/rewards, considering them to be "the basic proposition that underlies the field of international business studies" (Contractor, 2012:328), others have focused more prominently on the risks of internationalization, captured in the popular umbrella term *liability of foreignness* (Hymer, 1976; Johanson and Vahlne, 2009; Zaheer, 1995). Indeed, a focus on mitigating the riskiness of internationalization choices (i.e., a firm's degree of internationalization, specific entry modes, and locations) has been the hallmark of IB research since the origins of the well-known Uppsala model advanced over forty years ago, when Johanson and Vahlne (1977) first proposed that a firm's internationalization decisions are aimed at minimizing risk-taking. As Buckley, Chen, Clegg, and Voss (2016:140) note, "the Uppsala model claims that managers are risk averse and have an inherently low level of maximum tolerable risk, which serves as a behavioral base for cautious, stepwise internationalization patterns, in terms of both location and entry mode choice."

In contrast, a nascent literature at the intersection of IB and entrepreneurship (Oviatt and McDougall, 1994) led to a very different emphasis with respect to managerial risk and internationalization. Specifically, the literature of international entrepreneurship (IE) eschewed the historical IB presumption of risk averse managers, instead conceptualizing internationalization as entrepreneurial behavior driven by individuals with greater "risk-taking propensity" (Oviatt and McDougall, 2005:542). Moreover, this IE literature also implicitly, if not explicitly, assumed the likely existence (and relevance) of *differences* in individual-level risk propensity, consistent with the entrepreneurship literature's tradition of seeing the "foremost characteristic of entrepreneurs" in terms of their being "willing to take risks, to go where others will not" (Schendel, 2007:53).

Interestingly, Johanson and Vahlne (2009), in an updated version of their 1977 Uppsala model, noted the rise and relevance of the IE perspective, even suggesting that internationalization is essentially corporate entrepreneurship. While this linkage suggests a growing convergence between traditional IB research and the more recent IE research in viewing internationalization as

entrepreneurial behavior, there remains the unanswered question of the potential force of the entrepreneurial leader in internationalization. This gap is noted in Coviello, Kano, and Lietsch's (2017:1152) effort to extend the Uppsala model (and its most recent articulation in Vahlne and Johanson (2017)): "in contrast to much IB research…research in IE attends more fully to individual-level influences and their impact on firm-level outcomes."

Indeed, the rise of the IE literature and its focus on entrepreneurial behavior driven by entrepreneurial individuals has coincided with additional attention in the strategy (and IB) literatures to identifying *micro-foundational* explanations for firms' strategic choices (Buckley et al., 2016; Felin et al., 2015). This direct influence can be seen in Coviello, et al. (2017:1156), who note that "the micro-level characteristics and actions of individuals are tightly intertwined with firm-level outcomes," and suggest that "locating the causes of firm internationalization" should involve "the people making strategic decisions that impact the organization.". Similarly, Buckley, Chen, Clegg, and Voss (2018:154) express concerns with traditional firm-level explanations for the antecedents of internationalization choices, even suggesting that "inferring the capabilities explanation from the observed risk-taking seems tautological," and propose instead that "a compelling argument – yet to be fully incorporated in the existing studies -- is that it is managers who ultimately make the location decision."

In this study, we seek to answer these calls by developing and testing a framework for analysis that explains internationalization choices and antecedents with a primary focus on (1) the entrepreneurial corporate leaders who make internationalization decisions and (2) differences in the intrinsic risk propensities of these corporate leaders.[1] In particular, as we will discuss in detail in subsequent sections, our framework for analysis views differences in CEOs' risk propensity (Meertens and Lion, 2008) as a significant antecedent not only of the extent to which firms internationalize, but also the extent to which they opt to do so in more risky arenas/locations (i.e.,

[1] We follow the work in social psychology and use the term "risk propensity" to capture differences in individuals' "general risk-taking tendency" (Meertens and Lion 2008: 1507). Others have used the term "intrinsic risk attitude" (Schoemaker, 1993) or "risk taking propensity" (Brockhaus, 1980) to capture the same notion. Finally, Merriam-Webster's dictionary defines propensity as "an often intense inclination or preference."

culturally more distant) and with more risky vehicles/entry modes (i.e., acquisition versus alliance). We view our focus on differences in CEOs' risk propensity as central to understanding the micro-foundational differences that drive internationalization choices (Buckley et al., 2016). We also view our approach as consistent with Kraus, Ambos, Eggers, and Cesinger's (2015:1501) recent observation that the IB literature is "replete with studies on location choice and international entry modes" and that while "different theoretical streams highlight a variety of explanations…the most notable explanation is what drives such decisions is risk perception." [2]

More fundamentally, our theoretical framework is built upon the tenets of upper echelons theory (UET), originally articulated in Hambrick and Mason (1984). Given the many streams of research that have invoked upper echelons theory over the decades, we link our work to Hambrick's (2018) most recent articulation of UET, which appears in the Palgrave Encyclopedia of Strategic Management, in which he notes that the foundation of UET is the belief that: (1) top executives view their situation through their own highly personalized lenses; (2) that differences among executives will influence company strategy; and (3) that understanding strategy therefore requires understanding strategists. Our novel study of how differences in CEOs' risk propensity can affect risky internationalization decisions joins those very few upper echelons studies that have focused on CEO risk propensity as an individual trait that can influence corporate decisions, e.g., the pursuit of innovation (Kraiczy et al., 2015), and opting for exploration over exploitation (Strandholm et al., 2004).

With respect to the question of the significance of individual traits (i.e., stable within an individual and varying across individuals), a number of studies have shown that individuals do vary significantly in their intrinsic preferences for risk, ranging from risk-seeking to risk-averse (Das and Teng, 2001; Stewart Jr and Roth, 2001). More recently, empirical studies in the finance literature have linked a CEO's personal risk propensity (revealed in personal decisions) to that CEO's corporate risk propensity (revealed in the firm's risk-taking). For instance, Cronqvist et al. (2012) show that CEOs

[2] Figure 1 provides a high-level overview of the IB literature on the expected antecedents of risky internationalization (i.e., country-, firm-, and/or managerial-level predictors), as well as the assumptions made regarding managerial risk propensity.

who choose greater leverage in their home purchases also choose riskier (i.e., higher leverage) capital structures for their firms. Similarly, Cain and McKeon (2016) find that more risk-seeking CEOs (as indicated by having earned an airplane pilot license) tend to also pursue riskier firm policies. Our study contributes to the nascent literature that suggests that stable differences across CEOs in their personal risk propensity influence the magnitude of their firms' strategic risk taking (in our study, firms' risk taking relates to internationalization choices).

Empirically, we are fortunate to be able to capture a CEO's intrinsic risk propensity using a rich dataset comprising disaggregated administrative panel data on the wealth of every CEO in Norway from 1995 to 2013. Access to these data enabled us to examine the CEO's personal financial investments made outside the firm (specifically, we capture the share of a CEO's financial wealth invested in risky financial securities). The use of personal investments as an indicator of risk propensity can also be found in several finance studies (Calvet et al., 2009; Calvet and Sodini, 2014; Hvide and Panos, 2014).[3] We then test our hypothesis using Norwegian data for the universe of firms and their CEOs in the 2000–2013 timeframe.

The longitudinal dimension of the data offers several advantages for examining the nature and role of risk propensity. First, it allows us to measure risk propensity dynamically and show that CEOs' proportion of financial wealth invested in risky assets is highly consistent over time, thus implying general stability in (relative) risk propensity. Second, we are able to minimize any short-term, context-induced variability in risk propensity by looking at average values across an extended period of time. Third, it overcomes the endogenous matching limitations between CEOs and firms arising from previous cross-sectional analysis of the determinants of managers' risky behavior (Acedo and Jones, 2007; Kraus et al., 2015) by allowing us to investigate how, within the same firm, change from one CEO to another with a different risk preference affects observed internationalization characteristics (in the Online Appendix, we detail a battery of analyses aimed at eliminating potential

[3] We note that this measure of CEO risk propensity is not based on hypothetical questions regarding risk (as often found in survey responses or lab experiments), but rather the real actions of CEOs involving their real personal assets. This addresses the criticism of hypothetical risk-related questions that economists have long directed at behavioral decision research.

endogeneity concerns). Our final sample is comprised of 3,392 mergers and acquisitions (M&As) and 535 alliances undertaken from 932 public and private firms. The results of our main empirical analyses, reinforced by a variety of supplementary analyses and robustness checks, strongly support our main hypotheses regarding the significant effect of differences in CEO risk propensity on firms' internationalization choices, as well as additional moderator hypotheses that incorporate relevant firm-level contextual factors.

THEORY AND HYPOTHESES

How CEO risk propensity influences firms' internationalization decisions

The IB literature has long held that internationalization is an important -- but also risky -- corporate decision. With respect to the myriad risks of internationalization that foreign firm (relative to local firms) face, researchers have aggregated these risks under the umbrella concept of *liability of foreignness* (LOF) (Hymer, 1976; Kindleberger, 1969). Risks include the possibility of discriminatory treatment from buyers, who might discriminate against foreign products due to nationalistic feelings or brand unfamiliarity, and/or from host country governments, who may impose restrictions on foreign firms. Foreign firms are thought to also face difficulties in interpreting signals coming from the local environment and/or implementing established routines due to institutional differences between the home and host country. These risks are also thought to be consequential, with some researchers linking the LOF to a lower probability of survival (Hennart et al., 2002; Mata and Freitas, 2012; Zaheer and Mosakowski, 1997) and poorer performance (Miller and Parkhe, 2002). Such risks are thought to transcend specific industries. For instance, Bell et al. (2012) suggest that LOF is pronounced in capital markets where foreign firms are disadvantaged in raising funds in capital markets. Similarly, in a recent study of the US stock market, Baik et al. (2013) find that foreign institutional investors experience more uncertainty in forecasting returns due to the negative effects of country-specific LOF. Indeed, other empirical studies have directly linked internationalization with overall measures of firm-level risk (Berger et al., 2017; Reeb et al., 1998).

As noted earlier, the focus on internationalization as an important – but also risky – corporate decision has led IB researchers to generally emphasize the importance of risk mitigation in

internationalization choices. However, as Liesch, et al. (2011:852) note, in the newer IE literature, there was a "shift away from stressing risk averse behavior to an emphasis on entrepreneurs' risk tolerance." This recognition of meaningful differences in the risk-taking propensity of corporate leaders is not only central to the entrepreneurship literature, but the strategy literature more generally. Indeed, Hoskisson, Chirico, Zyung, Gambeta (2017) view managerial risk taking as a central component of strategic management research, and show its connectedness to at least sixteen different corporate decisions. Given the extensive research that has addressed managerial risk taking, we are careful to ensure that our use of the term CEO *risk propensity* is consistent with that of Sitkin and Pablo (1992:12), who define it as "the tendency of a decision maker either to take or avoid risks," and Buckley, Chen, Clegg, and Voss (2018:154), who use the term to refer to "an individual's tendency to assume a specific risk…."

In stating that decision-makers who "enjoy the challenge that risks entail will be more likely to undertake risky actions than those individuals who do not", Sitkin and Pablo (1992:12) also highlight the notion of an enduring and largely stable component to individual differences in risk propensity. Similarly, the stability of differences across CEOs in risk propensity is often described in prior UET studies in terms of stable differences in personality traits such as hubris (Hayward and Hambrick, 1997; Li and Tang, 2010; Roll, 1986; Tang et al., 2015), narcissism (Campbell et al., 2004; Gerstner et al., 2013; Zhu and Chen, 2015), core-self evaluations (Simsek et al., 2010), extroversion (Benischke et al., 2019), and overconfidence (Malmendier and Tate, 2008; Russo and Schoemaker, 1992).

Our study shares this view of CEO risk propensity as an individual-level predisposition, as suggested by trait theories and behavioral consistency theories of risk (Brockhaus, 1980; MacCrimmon and Wehrung, 1990; Schoemaker, 1990). Indeed, there is considerable empirical evidence indicating the stability of individual-differences in risk propensity (Andersen et al., 2008; Barseghyan et al., 2013), including recent research exploring the genetic basis for such differences, as indicated by risk-related brain activation (Rao et al., 2018).[4]

[4] The evidence on genetic effects in risk aversion and risk-taking behavior includes studies involving biological twins and actual portfolio investment decisions, in which approximately one-quarter to one-third of the total

Having established the general riskiness of firms' internationalization decisions and the possibility of stable differences across CEOs in their intrinsic risk propensity, we can now consider the potential relevance of such individual-level differences in CEO risk propensity for firm-level decisions relating to internationalization. Before offering specific hypotheses, however, we wish to make several clarifying points. First, please note that by emphasizing the heterogeneity of CEO risk propensity across firms, we neither assume that CEOs are generally risk averse (the IB assumption), nor that they are generally entrepreneurial risk seekers (the IE assumption). Indeed, our emphasis on CEO heterogeneity in risk propensity incorporates the merit in both assumptions, and hope that our research serves as a bridge between these two related literatures on the individual-level antecedents of internationalization.

Second, we wish to acknowledge the valuable prior research on internationalization that considers the influence of CEOs but does not incorporate the notion of CEOs having intrinsic differences in risk propensity. This line of research has focused on the role of certain structural or historical factors that channel a CEO's preferences towards internationalization. These include differences in CEO compensation (Lin and Cheng, 2013; Musteen et al., 2009) or CEO ownership share (George et al., 2005), or differences in managers' international experience (Buckley et al., 2007; Maitland and Sammartino, 2015; Reuber and Fischer, 1997). Note, however, the difference in the mechanism involved: while a CEO incentive contract can be structured to change the financial rewards that would accrue to a CEO who chooses internationalization, it would not change his/her intrinsic risk propensity. Very recently, Buckley et al. (2018) have focused directly on CEO risk propensity, but even here, their focus is on contextual factors only, i.e., they use a quasi-experimental

variation in asset allocation and portfolio risk is explained by the genetic factor (Barnea et al. (2010); Cesarini et al. (2010). Of course, we accept the notion that risk propensity, just as other personality traits (Extraversion, Emotional Stability, Agreeableness, Conscientiousness, and Openness to Experience), can change over an individual's life span (Specht et al., 2011) due to experience or other major events (Hanaoka et al., 2018). For working-age adults, however, these traits have been considered fairly stable and thus modelled as constant in economic decision models (Cobb-Clark and Schurer, 2012).

design to manipulate contextual factors that they expect will affect a manager's willingness to engage in risky internationalization.[5]

Third, we wish to also acknowledge that the (mostly psychological) research that does focus on intrinsic differences in individuals' risk propensity often seeks to explain such differences by constructing complex process models of individual-level risky decision-making. Similarly, complex process models have been advanced to describe firm-level risky decision-making. At the individual level, such process models range from more calculating "cognitive-consequentialist" theories of choice under risk to more affective "risk-as-feelings" theories of risky decision making (Loewenstein et al., 2001). At the firm-level, one finds process models of risky decision making (in the context of internationalization) that range from the familiar Cyert and March (1963) behavioral processes in the Uppsala model to critiques of such an approach that instead use dialectical and discourse-based analyses (Treviño and Doh, 2020) that accentuate the relevance of power and contestation dynamics underlying internationalization decisions.

In our study, we do not claim to offer insights into either the intrapsychic processes underlying differences in CEO risk propensity nor the specific intraorganizational dynamics underlying internationalization choices. Indeed, to use Mohr's (1982) well-known distinction, our study offers a variance model (and not a process model).[6] Our variance model posits a causal relationship between individual-level antecedents (i.e., differences in CEO risk propensity) and differences in firm-level outcomes (i.e., more risky internationalization decisions). Of course, as Payne et al. (2017) note, variance models typically assume some type of process/mechanism when

[5] Buckley et al. (2018) are careful to note that their study does not capture managerial dispositions at all: "our study cannot effectively differentiate managerial characteristics from firm-level antecedents." Indeed, in their discussion section, they state that: "We encourage future research to decompose the heterogeneity arising from both individual and firm-level antecedents to risk propensity." While our main effect predictions emphasize individual-level antecedents, we also consider firm-level moderators, as discussed in detail in subsequent sections.

[6] As Payne et al. (2017) note in highlighting the complementarity of the two basic types of research models used to guide methodological and empirical decisions: "Process models examine events and narratives to address the question, 'How does the issue or phenomenon change over time?" Variance models, on the other hand, examine the relationships between independent and dependent variables to address the question, 'What are the antecedents and consequences associated with the issue or phenomenon?'". As Van de Ven (2007) has also noted, in variance models, causality is indicated by covariation, temporal lags between variables, and the absence of spurious factors.

discussing the linkage between independent and dependent variables, and our study is no exception. Specifically, we share the basic assumption of virtually all UET studies seeking to assess the effect of top executives on corporate decisions); namely, that top executives' preferences are not only identifiably heterogeneous across executives, but also that they are consequential in the direction of top executives seeking to pursue firm-level decisions that are *consistent* with their individual preferences.

Indeed, the unstated commonality of much of the UET research is the presumption of cognitive or behavioral consistency that suggests (in the context of our study) that a CEO's risk propensity will be mirrored in a consonant way in corporate strategic decisions over which s/he has considerable influence. This intuitive understanding is supported by a variety of psychological theories, ranging from Festinger (1957) well-known discussion of individuals' avoiding cognitive dissonance to notions of individuals' having easier accessibility of cognitions and attitudes linked to prior behaviors (Albarracín and Wyer Jr, 2000). Singer (1966:48) has referred to this as "consistency as a cognitive style." There is a clear intuitive appeal associated with the general notion of behavioral consistency, but its application in our study context (i.e., CEO risk propensity) is not so obvious.

Specifically, some psychological research has suggested that there are more subtle distinctions (and predictions) regarding consistency in individual behavior relating to risk-taking propensity. This line of research emphasizes risk homeostasis (Wilde, 1982) across multiple spheres of activity, such that an individual with a higher risk position in one sphere of activity will likely prefer a lower risk position in another sphere of activity. This portfolio notion of risk-balancing is, of course, quite familiar in the more finance-oriented agency literature that has explored managerial risk aversion (and the suboptimal choices --for the firm--that flow from it). For example, Amihud and Lev (1981) suggested that managers engage in mergers to reduce their undiversifiable employment risk, and May (1995) provides evidence that CEOs with more wealth vested in their firm equity tend to diversify more at their firm. While this notion of risk-balancing across a portfolio of activities highlights the non-obvious nature of our consistency hypothesis, we nonetheless accept the more widely-held positions that there are stable cross-sectional differences among CEOs, in terms of their risk propensity, and that CEOs'

desire for behavioral consistency will lead them, when considering corporate decisions, to generally prefer a level of riskiness for those decisions that is consonant with their personal risk propensity.

Thus, when Sitkin and Pablo (1992:12) write that decision-makers who "enjoy the challenge that risks entail will be more likely to undertake risky actions than those individuals who do not" they are both identifying an individual-level difference between decision-makers who "enjoy" risk and those who do not, and also positing a consistency argument that links this individual-level difference to a difference in organization decisions. Similarly, we also rely on such a consistency argument to hypothesize the following first hypothesis in our variance model:

> *Hypothesis 1: The greater the risk propensity of a firm's CEO, the greater the degree of that firm's internationalization.*

We also extend our risk propensity consistency argument (rather than risk balancing) to include additional risky internationalization choices. For example, an additional refinement of our arguments regarding CEO risk propensity and the risks of internationalization involves the choice of internationalization location/venue. In a recent meta-analytical review, Beugelsdijk et al. (2018) note that "to better understand the essence and impact of the cross-border condition, international business scholars have introduced the concept of *distance* (i.e., differences between countries)" when considering the relative riskiness of internationalization decisions, and moreover, that "*cultural distance*, that is, the difference in cultural values, remains the most widely used type of distance in international business." In their review of 156 articles on cultural distance and internationalization published in management and international business journals over three decades, Beugelsdijk et al. (2018) found that the vast majority of these studies have viewed greater cultural distance as contributing to a greater liability of foreignness (LOF). In other words, prior literature strongly suggests that firms face increased risk when internationalizing into more culturally distant countries. Given this situation, we can extend our predictions regarding the likelihood that CEOs who have greater risk propensity would exhibit consistency and be more likely (relative to their more risk-averse CEO counterparts) to steer their firms towards internationalization into more culturally distant countries. Formally, we hypothesize that:

Hypothesis 2: The greater the risk propensity of a firm's CEO, the greater the cultural distance in that firm's internationalization.

Another refinement of our arguments regarding CEO risk propensity and risky internationalization decisions involves the specific choice of internationalization vehicle (or mode of entry). Specifically, we focus on entry via alliance versus acquisition, based on prior research in both the strategic management and the IB literatures on the likely difference in riskiness between these two vehicles. In the strategy literature, research on the comparative choice between acquisitions and alliances has highlighted the relevance of information asymmetry concerns, which occurs when two firms are not well-informed about each other's business environment and operations (Balakrishnan and Koza, 1993), with Wang and Zajac (2007) suggesting this risk is typically higher in acquisitions versus alliances. Alliances allow firms to learn and gather new information about each other, and as real option theory suggests, firms in an alliance often have the option to either fully integrate by acquiring the other firm or terminate the alliance if they are not satisfied with the relationship (Chi, 2000; Kogut, 1991; Miller and Folta, 2002). In contrast, an acquisition involves a final irreversible transaction of transferring ownership. For these reasons, risks associated with information asymmetry problems are considered to be greater for acquisitions when compared with alliances.

One finds a similar conclusion in the IB literature, where there is a long history of suggesting internationalizing via vehicles that require greater levels of equity commitment implies a riskier decision, even though the focus is on different risks. Specifically, researchers studying entry modes (Kogut and Singh, 1988) have typically noted that an internationalizing firm faces a variety of non-partner specific risks (e.g., industry- and country-level risks), with the irreversibility of acquisitions relative to alliances again implying greater risk, *ceteris paribus*, for firms opting to internationalize via cross-border acquisition. Given this situation, we can again extend our predictions regarding the likelihood that firms with CEOs who have greater risk propensity would exhibit consistency and be more likely (relative to their more risk-averse CEO counterparts) to internationalize via acquisitions versus alliances. Formally, we hypothesize that:

Hypothesis 3: The greater the risk propensity of a firm's CEO, the greater the use of acquisitions (versus alliances) in that firm's internationalization.

To recap, our framework for analysis has sought to answer the call in the IB literature for greater attention to the managerial decision makers responsible for risky internationalization decisions. We have built upon the fundamental notion in UET that "if we want to understand strategy, we must understand strategists" (Hambrick, 2018) to posit that differences in a fundamental individual-level characteristic (i.e., CEO risk propensity) will predict differences in the riskiness of firms' internationalization choices. The three firm-level decisions, i.e., the dependent variables in our variance model, refer to internationalization choices accepted in the IB literature that vary in risk: (1) internationalization levels/degrees, where higher levels are viewed as generally riskier than lower levels; (2) internationalization venues/locations, where more culturally distant venues are generally viewed as riskier than less distant ones; and (3) internationalization vehicles/modes, where acquisitions are generally viewed as riskier than alliances.

Moderators of the CEO risk propensity→risky internationalization relationship

We now seek to extend these predictions by incorporating two important corporate contextual factors: one that we expect to exert an amplifying effect on the hypothesized relationships noted above, and another that we expect will exert an attenuating effect. While there are innumerable corporate contextual factors one could consider, we first focus our attention on one likely amplifying effect that is clearly related to our theoretical perspective. Specifically, our arguments thus far have presumed that agentic CEOs, as the top decision-maker in their firms, are typically powerful enough to realize their dispositional preferences for particular corporate decisions. While this reasonable presumption also undergirds the many studies that have focused on how CEOs affect corporate decision-making, we acknowledge that there is likely considerable variation across firms in terms of CEO/Board relative power. Indeed, prior research has noted that differences in CEO/Board relative power can exert an important amplifying/attenuating force on the realization of CEOs' preferences for particular strategic decisions (Golden and Zajac, 2001; Zajac and Westphal, 1996).

The relevance of this element of corporate context suggests that we can further refine our first three predictions regarding the relevance of a CEO's risk propensity in predicting internationalization choices (H1, H2, and H3). Specifically, we posit that these three hypothesized relationships will be

even stronger when the corporate context provides the CEO with greater power vis-à-vis the board of directors (e.g., by having the CEO also hold the Board Chair position, or by having fewer independent directors on the board). Thus, we can combine our main-effect predictions regarding CEO risk propensity with a moderator-effect prediction based on a theoretically relevant context-based factor. Specifically, our framework for analysis would predict that CEOs with greater risk propensity will be even more likely to steer their firms towards risky internationalization choices when the corporate context also provides them with a largely unencumbered pathway to act on his/her preferences. Formally, we state the following:

> *Hypothesis 4: The effect hypothesized in H1 (i.e., that the greater the risk propensity of a firm's CEO, the greater the degree of that firm's internationalization) will be amplified for firms where the CEO enjoys greater CEO/Board relative power.*
>
> *Hypothesis 5: The effect hypothesized in H2 (i.e., that the greater the risk propensity of a firm's CEO, the greater the cultural distance in that firm's internationalization) will be amplified for firms where the CEO enjoys greater CEO/Board relative power.*
>
> *Hypothesis 6: The effect hypothesized in H3 (i.e., that the greater the risk propensity of a firm's CEO, the greater the use of acquisitions [versus alliances] in that firm's internationalization) will be amplified for firms where the CEO enjoys greater CEO/Board relative power.*

We also consider a contextual factor that we expect will attenuate the relationship between CEO risk propensity and internationalization. Specifically, while we have sought to answer the calls for greater attention to how differences in individual-level risk propensity could affect internationalization, IB researchers have long had an interest in how differences in firm-level risk propensity, thought to be largely shaped by prior internationalization experience, affects subsequent internationalization. Indeed, the Uppsala model and its view of internationalization as a generally cautious and gradual process is driven by the assumption of firm-level, experience-based learning. International experience is thought to build a firm's knowledge of operating in foreign markets, "and that body of knowledge influences decisions about the level of commitment and the activities that subsequently grow out of them" (Johanson and Vahlne, 2009: p. 1412). This presumed gradual increase in competence and/or confidence in dealing with the challenges of internationalization serves to reduce the firm's objective and/or subjective risks of operating in foreign markets (Johanson and

Vahlne, 2006).[7] From this perspective, international experience is considered a likely antecedent of the extent, as well as the speed, of a firm's internationalization (Casillas and Moreno-Menéndez, 2014; Martin and Salomon, 2003).

While this suggests the need to control for firms' prior internationalization experience, we suggest that this contextual factor can also moderate our main-effect prediction in an attenuating direction. Recall that for our expected main effect relationship, we posited that a CEO will tend to influence firm-level risky internationalization decisions in a direction consistent with his/her individual risk propensity (i.e., CEO greater risk propensity→riskier firm-level internationalization). We can further contextualize this prediction of a generally positive relationship (based on the CEO's desire to move the firm towards greater consonance with his/her preferences) is likely further heightened when the dissonance would be most evident/notable, i.e., in those firms whose history suggests very little risky internationalization. In other words, the need for the CEO to resolve a desire for individual/firm risk-taking consistency is lower for firms that have already engaged in considerable prior risky internationalization. We therefore expect that our main-effect prediction regarding the positive relationship between CEOs risk propensity and internationalization (H1) will be moderated by a firm's international experience, i.e., attenuated (amplified) for firms with greater (lesser) experience.[8] Formally, we state the following:

> *Hypothesis 7: The effect hypothesized in H1 (i.e., that the greater the risk propensity of a firm's CEO, the greater the degree of that firm's internationalization) will be attenuated for firms with greater international experience.*

METHOD

Sample and data

Our empirical context is based on the population of all Norwegian limited liabilities firms, private and public, that engaged in at least one M&A or alliance (either domestic or international) over a fourteen-year period from 2000 through 2013 (of our final sample of 932 firms, 304 had at

[7] Indeed, the Uppsala IP model is frequently interpreted as a model of risk reduction in firms' internationalization.

[8] In the interest of conceptual and empirical brevity, we do not extend this logic to propose additional experience-based moderating relationships for our H2 and H3.

least one international M&A or alliance). Subsidiaries are excluded from the sample. While our single-country focus suggests a potential study limitation, we view this research context as particularly well-suited for investigating the impact of CEO risk propensity on internationalization for several reasons. First, Norway is an advanced open economy with variation in internationalization across firms, as noted above. Second, we have access to novel and high-quality longitudinal data about the personal wealth, detailed investments and demographic variables of every CEO in Norway. This detailed personal investment data allows us to construct reliable measures of CEO risk propensity, and to also include a variety of CEO-level control variables. Third, it allows us to assess the representativeness of our data, and we observe that: (1) our average CEO characteristics (such as age, tenure, and education) are very similar to those reported for CEOs in the US in Jenter and KLewellen (2015); and (2) individuals' investment behavior in Norway is comparable to that found in other advanced economies, as noted by Doskeland and Hvide (2011). Moreover, Norway (despite its relatively small size) has diverse industries ranging from petroleum (46% of all export), manufacturing (30%) and services industry (20%). Finally, Norwegian data have been frequently used in assessing the behavior of investors as well as the role of CEOs and boards on firm outcomes (Ahern and Dittmar, 2012; Bertrand et al., 2018; Hvide and Møen, 2010; Hvide and Panos, 2014; Oxelheim and Randøy, 2005).

To construct our initial sample, we use the Thompson–Reuters SDC Platinum database to obtain a list of all M&As and alliances conducted by Norwegian firms for the 14-year period beginning in 2000 and ending in 2013, inclusively. This database contains information on company profile (e.g., industry, location, ultimate parent) for public and private deals. We then merge these data with firms' financial, accounting, governance, and ownership data.

Information on CEOs' age, gender, education, work experience, and other sociodemographic data as well as detailed and disaggregate information about their wealth and income is obtained from Statistics Norway, the official administrative authority in Norway. Due to the wealth tax, all individuals residing in Norway are required to submit a yearly overview of their assets and income sources. In Norway, employers and banks send information on individuals' income, holdings of financial securities, bank deposits, etc., *directly* to the tax authorities. The data specifies total annual

income by its sources (e.g., full-time employment, remuneration, dividend and interest income etc), wealth by its sources (e.g., cash in bank accounts, details of financial assets, real estate, etc.) and loans taken by individuals (e.g., mortgages). Measures of the cultural distance have been calculated by Berry et al. (2010) and are available through Wharton Resources.

Dependent variables

We look at a wide range of modes of international expansion: acquisitions and alliances in our main analysis and all subsidiaries (hence, including greenfield investment) in the robustness check. We see our focus on alliances, acquisitions and greenfield investments as capturing particularly appropriate strategic alternatives with respect to risk-taking, given that they reside on the riskier end of the continuum of governance models that IB researchers have examined when studying internationalization. More specifically, these modes have been traditionally characterized as requiring a higher level of resource commitment and exposing the firm to a more pronounced risk-return trade-off when compared with more incremental entry modes such as exports and licensing (Pan and Tse, 2000). In other words, for our study and its focus on the potential influence of CEO risk propensity on risky internationalization decisions, we emphasize these modes -- termed **more aggressive** internationalization modes, relative to other forms of international activity (Kumar et al., 2020). Indeed, these more aggressive/riskier modes that we study are real substitutes for each other, which is not the case for incremental modes such as exports, as shown empirically by Conconi et al. (2016).

While there are a variety of ways to measure the degree of internationalization, most ”structural indicators” rely on a measure based on counts or amounts (Dörrenbächer, 2000). Thus, our first dependent variable in H1 (and H4) measures *internationalization levels* as the number of international acquisitions and alliances normalized by the total (i.e., domestic and international) acquisitions and alliances for each firm (Erel et al., 2012).[9]

[9] In addition, we also test our H1 in supplemental analyses using LexisNexis Corporate Affiliation Database that allows us to compute a broader internationalization measure that includes all foreign direct investments. The results are reported in the Online Appendix.

The dependent variable in H2 (and H5) is the log of cultural distance between the Norwegian focal firm and the nation of its international target/partner. Here, our choice follows a stream of prior research that has used cultural distance to understand international acquisition activities (Reus and Lamont, 2009), choice of entry modes (Tihanyi et al., 2005) and foreign locations (Benito and Gripsrud, 1992; Ma et al., 2013). As noted earlier, Beugelsdijk et al. (2018) massive review of articles on cultural distance and internationalization published in management and international business journals over three decades have equated greater cultural distance with greater internationalizing risk.

Finally, in H3 (and H6), our dependent variable captures whether a firm's preferred mode of internationalization is via acquisition (1) or alliance (0), based on the number of international acquisitions versus alliances for each firm. The comparative choice of alliances versus acquisitions has been long recognized in the strategy literature as providing firms with comparable but distinct choices when seeking to expand operations (Villalonga and McGahan, 2005). Indeed, in our study context, it is important to recognize that considering acquisition versus alliance (as opposed to acquisition and exporting) presents a comparison of two more similar strategic options. In other words, as also noted earlier, it is more likely a manager would consider the choice between alliances vs acquisitions (Jandik and Kali, 2009) or acquisitions vs greenfield investments (Harzing, 2002; Hennart and Park, 1993), rather than the choice between exporting and acquisitions. Indeed, it is for this reason that numerous prior studies have focused on the comparative choice between cross-border acquisitions and cross-border alliances when considering how external risks, i.e., those arising from legal systems and information asymmetry (Jandik and Kali, 2009) or nation-dyadic history (Arikan et al., 2020), affect internationalization decisions. Each of our dependent variables is measured on a yearly basis to allow for our longitudinal analysis.

Independent variables

CEO risk propensity

As noted earlier, our main effect predictions, based on the UET notion that strategists affect strategy, are that CEOs will seek to influence firm-level internationalization decisions in a way that is

consistent with their personal risk propensity, i.e., higher risk-propensity CEOs will pursue riskier internationalization decisions, defined in terms of (1) higher levels, (2) more risky locations/venues (i.e., those that are more culturally distant), and (3) more risky vehicles/entry modes (i.e., make greater use of acquisitions versus alliances). To establish differences in CEOs' risk propensity, we analyzed detailed data on the riskiness of CEOs investment decisions *in their personal portfolio*. Specifically, we first measured the personal portfolio (i.e., each CEO's financial wealth) as the sum of holdings in cash (bank accounts), bonds, stocks, and mutual funds. When choosing their personal investment portfolio, individuals with higher intrinsic risk propensity would invest a larger proportion of their wealth in riskier assets, which on average pay higher returns (Hallahan et al., 2004; MacCrimmon and Wehrung, 1990; Sharpe, 1964). There are two types of liquid assets in which one can invest: low-risk assets such as bank accounts or bonds, or risky assets such as investments in stocks and equity funds. We therefore followed prior research (Calvet and Sodini, 2014; Cronqvist et al., 2012; Hvide and Panos, 2014; Lundborg et al., 2017) and measured CEO's risk propensity using the percentage of each CEO's financial wealth that was invested in stocks and equity mutual funds (hereafter referred to as risky assets) from 2000–2013.[10]

CEO Power measures

In introducing contextual moderators of our main-effect predictions, we hypothesized that the effect of CEO risk propensity on our three firm internationalization choices (how much [H1], how distant [H2], and with what preferred vehicle [H3]) will be amplified for firms where the CEO enjoys greater CEO/Board relative power (our H4, H5, and H6, respectively). Given prior research

[10] This measure has also been cross-validated with survey data, e.g., Dimmock and Kouwenberg (2010)'s study showing that individual risk propensity based on participation in stock markets is positively correlated with individual risk propensity as revealed in self-assessed, survey-based proxies. Dohmen et al. (2011) also find that individual risk propensity is highly correlated across specific contexts such as equity holding, driving of vehicles, management of financial matters, engagement in sports and leisure, approaches to health, and behavior related to career. Of course, we cannot and do not claim that our indicator captures a CEO's *true* risk propensity, which as a latent variable would require the integration of everything that could be known about the CEO's thoughts, behaviors, genetics, and environmental situation. As a result, our manifest variable surely includes errors, but we also note that to the extent that these errors reflect "noise" that leads to larger estimated standard errors, they would work against our finding significant results. We have shown this formally in the Online Appendix. Finally, we also assess the robustness of our findings to an alternative measurement of CEO risk propensity in the Appendix.

highlighting alternative indicators for CEO power, we use three different measures, each described below with an accompanying rationale: (1) *CEO/chair duality*, indicating whether the CEO is also the chairman of the board (1=yes; 0=no), (2) *Low board independence*, indicating whether the share of independent board members in the firm is less than the average in the sample (1=yes; 0=no), and (3) *Family CEO*, indicating whether the CEO is from the major family owner of the firm (1=yes; 0=no). With respect to the first measure, the practice of a single individual serving as both CEO and board chair is thought to enhance CEO power based on unity of command and less monitoring oversight from the board (Krause et al., 2014). As for board independence, boards with a higher share of outside members are viewed as more capable at monitoring the CEO activities, whereas inside directors are more susceptible to CEO influence and hence less likely to challenge the CEO (Joseph et al., 2014; Westphal and Zajac, 1995). Finally, family CEOs are typically less accountable to general shareholders while seeking to advance the family agenda, and also less susceptible to dismissal for reasons of performance (Gomez-Mejia et al., 2001), which is why this measure has been systematically used in indices of CEO power (Cao et al., 2017; Chikh and Filbien, 2011).

For greatest clarity, we test our hypotheses using each of these three indicators of CEO power separately, but we also used the three indicators jointly in a composite index of CEO power (Sauerwald et al., 2016), which ranges from 0 to 3. In this way, we test our moderating hypotheses regarding the expected amplifying effect of CEO/Board relative power in four ways: with each of the three different measures of CEO power as well as with a composite index of all three measures.

Firm international experience

For our final moderator hypothesis (H7), we considered the likely attenuating effect of a firm's prior international experience on the relation between CEO risk propensity and internationalization (H1). To measure international experience, we use LexisNexis Corporate Affiliate Database that reports all foreign and domestic subsidiaries (both greenfield and acquired units) and affiliates of each firm by year. Based on these data, *Firm international experience* is an indicator variable and gets the value of 1 for a firm i in year t if the number of foreign subsidiaries and

joint-ventures for the firm is larger than the median in that year, and zero otherwise. The variable is lagged one year to measure previous international experience.[11]

Control Variables

We include a number of control variables based on the previous literature (at the firm and CEO level) that may influence firms' internationalization. At the CEO level, we control for CEO age, gender, civil status (married or not), tenure, education, ownership, compensation, and international experience. Age has been used as a proxy for individuals' risk propensity (Child, 1974), where young managers tend to take on more risks compared to their older counterparties because they have higher physical and mental endurance. Furthermore, they are less committed to the status quo, and thus exhibit less inertia and are less inclined to search for financial security and stability (Hambrick and Mason, 1984). Younger CEOs also have a higher likelihood of engaging in riskier firm policies such as M&As (Yim, 2013) or internationalization (Cavusgil and Naor, 1987; Sambharya, 1996; Tihanyi et al., 2000). We control for gender, as female CEOs are perceived to be more risk-averse and this is reflected in the acquisition policies of firms, earnings volatility, and leverage (Faccio et al., 2016; Huang and Kisgen, 2013).

CEO tenure may be related to risk-taking, with longer tenured CEOs more committed to the status quo (Stevens et al., 1978). Given that education also influences the way CEOs analyze situations, frame problems, and set goals, CEO education is expected to influence the strategic choices they make. Furthermore, CEOs with higher levels of education may have more knowledge related to internationalization, which in turn influences their perceptions of risk. We operationalize education with a categorical variable ranging from 0 to 3 (high school diploma to PhD level). CEO ownership and compensation both could impact managers' their risk taking at the firm and hence internationalization. Last, we control for CEO international exposure as exposure to foreign countries is positively related to the extent to which CEOs enter international markets and the choice of entry

[11] We also created an alternative measure of prior international experience using the number of different countries in which the firm had operations, and found that our results were robust to this alternative measure.

(Herrmann and Datta, 2002; Reuber and Fischer, 1997; Sambharya, 1996). International exposure captures whether the CEO or one of his parents were born outside Norway (1=yes; 0=no).

Firm-specific controls, consistent with the previous literature (Galasso and Simcoe, 2011; Herrmann and Datta, 2006) include R&D intensity, property plant and equipment (PPE), leverage, ROA, relative ROA, firm age, and size. R&D intensity serves as a proxy for firm-specific advantage and is measured as log of R&D expenditures. Leverage is measured as the ratio of total debt to total assets. We measure firm size using the logarithm of assets. Larger and higher performing firms would find it easier to expand internationally because they have more funds and capacity to process information about foreign markets. We control for performance relative to peers, relative ROA because risk preferences depend on the actual performance compared to some targets (March, 1988). When firms are underperforming relative to their industry, the managers tend to take more risks compared to the cases of over-performance (March and Shapira, 1987). Performance relative to peers is measured as the average of the difference between a firm's ROA and the industry's ROA for the period under study. Firm age is measured as the number of years the firm has been active since its date of founding.

Table 1 provides summary statistics of the measures used in the analysis.

[Insert Table 1 about here]

Data analysis and regression specification

Hypothesis 1 predicts that CEOs with higher risk propensity internationalize more. To test this hypothesis, we use the following panel regressions estimated with Ordinary Least Squares (OLS):

$$\text{Internationalization}_{ikjt} = \alpha + \beta\text{CEO RiskPropensity}_{j} + \theta\text{CEO Controls}_{jt} + \Delta\text{Firm Controls}_{it} + \mu\text{IndustryFixedEffects}_{k} + \emptyset\text{YearFixedEffects}_{t} + \varepsilon_{ikjt} \quad (1)$$

where $Internationalization_{ikjt}$ stands for internationalization of firm i, which is in industry k, and is run by CEO j, in year t.

Other than CEO and firm level controls described before, the regression includes year fixed effects to control for any general macro variable that affects overall internationalization in the economy such as recessions, booms, and overall access to credit by firms. In addition, we include industry fixed effects to control for any unobserved omitted variable arising from different industry characteristics and conditions that impact internationalization decisions. Indeed, environmental dimensions such as munificence, dynamism and complexity of the industry can affect the extent to which CEOs (and boards) can exercise discretion over firm outcomes. Our industry fixed effects control for such differences across industries and therefore β in the regression above estimates the effect of CEO risk propensity on firm internationalization *within* each industry.

Hypothesis 2 is tested using regression equation (1) with the difference that we use log of cultural distance between the acquirer and target nations as the dependent variable. We expect a positive effect of CEO risk propensity on internationalizing into more distant locations. To test Hypothesis 3, we run a probit regression similar to regression equation (1) with the difference that our dependent variable capture whether the firm internationalizes more via acquisition versus alliance (1=yes; 0=no). We expect a positive effect of CEO risk propensity on internationalizing more via acquisitions than alliances. We then proceed to test our arguments (Hypotheses 4-6) that the strength of the main-effect hypothesized relationships (H1-H3) is positively moderated (i.e., amplified) for those firms whose CEOs enjoy greater CEO/board relative power. We use a similar regression setup as noted above, but with the added interaction of *CEO Risk Propensity* and measures of CEO power in the regression. Specifically, we run the following regression:

$$\text{Internationalization}_{\text{ikjt}} = \alpha + \beta\text{CEO RiskPropensity}_{\text{j}} \times \text{CEO Power}_{\text{ji}} + \gamma\text{CEO RiskPropensity}_{\text{j}} + \mu\text{CEO Power}_{\text{ji}} + \text{CEO Controls}_{\text{jt}} + \text{Firm Controls}_{\text{it}} + \text{IndustryFixedEffects}_{\text{k}} + \text{YearFixedEffects}_{\text{t}} + \varepsilon_{\text{ikjt}} \quad (2)$$

Our coefficient of interest is β, which estimates the additional effect of CEO risk propensity on internationalization decisions in firms where the CEO has high power (compared to firms with low power CEOs). We predict a positive and significant β, meaning that for firms where the CEO enjoys higher power, we expect that his/her risk propensity will have an even larger effect on internationalization (H4), cultural distance of the target (H5), and preference for acquisition mode (H6). Finally, we introduce a firm international experience variable as an additional moderator (H7) of our main-effect prediction (H1), this time suggesting that the effect of CEO risk propensity on internationalization will be attenuated for firms with greater previous international experience. Here, we use the same regression setup as in (2) but with the variable *Firm international experience* instead of *CEO Power*.

RESULTS

Table 2 shows the results of the regression analyses for Hypothesis 1, which predicted that firms run by CEOs with higher risk propensity will internationalize more via cross-border acquisitions and alliances. We find strong support for this prediction. Specifically, the coefficient on *CEO risk propensity* is positive and statistically significant (β=0.039, p-value = 0.009). The effect is also economically significant. A one standard deviation increase in *CEO risk propensity* is associated with 5% increase in internationalization.

[Insert Table 2 about here]

Hypothesis 2 refined our main prediction further by positing that internationalization venues were possibly differentially risky, with cultural distance often invoked as capturing such differences in internationalization risk. We therefore predicted that CEOs with higher risk propensity will tend to internationalize more into countries with greater cultural distance, *ceteris paribus*. The results are shown in Table 3 Column 1 supports this prediction (β=0.227, p-value = 0.005). This effect is also economically large: A one standard deviation increase in *CEO risk propensity* is, on average, associated with internationalizing in countries with 8.4% greater cultural distance.

In Hypothesis 3, we refined our prediction regarding the riskiness of these two internationalization vehicles and hypothesized that CEOs with higher risk propensity would also be

more likely to internationalize via acquisition versus alliance. Recall that foreign acquisitions have been thought to have more pronounced information asymmetry relative to alliances and thus expose the firm to greater financial risks (Wang and Zajac, 2007). Indeed, prior research suggests reducing the risks related to foreign acquisitions by opting for alliances (McCann et al., 2016; Villalonga and McGahan, 2005). In Table 3 Column 2, we find significant support for this hypothesis (β=0.610, p-value = 0.002).[12] A one standard deviation increase in *CEO risk propensity* is associated with 23% increase in the likelihood of preference for acquisition versus alliance while internationalizing, which is an economically significant effect.[13]

[Insert Table 3 about here]

Hypotheses 4-6 combined the managerial disposition-based predictions of (H1-H3) with our first corporate context-based prediction. Specifically, we posited that the effect of *CEO risk propensity* on firms' risky internationalization, as hypothesized in H1-H3, would be amplified for those firms where the CEO enjoys higher CEO/Board relative power. In other words, we expect that the strength of the relationship between *CEO risk propensity* and internationalization decisions (H1-H3) will be moderated by CEO power. Indeed, as shown in Table 4, this effect is robust across multiple indicators of CEO power. Specifically, the effect of CEO risk propensity on internationalization (Panel A, Columns 1-3) is stronger when the CEO is also Board Chair, when the level of board independence is low, and when the CEO is from the main family owner. As shown in Panel A, Column 4, we also find strong support that the effect of *CEO risk propensity* is stronger when *CEO power index* (a composite index combining all three measures) is high (β=0.028, p-value = 0.009).

[12] Please note that we report the marginal effects (and not the raw coefficients) from the probit regression for easier interpretation.

[13] We simply measure preference for acquisition versus alliance by counting the number of each of these vehicles per year and per firm. For those firms who have undertaken more acquisitions than alliances in a given year, the dependent variable for that firm-year is 1 and zero otherwise. While this does not consider the intensity of acquisition versus alliances, when we run the regressions at deal level, we find that the economic magnitude and statistical significance of our coefficient of interest increases somewhat ($\beta = 0.67$; p-value = 0.00). Given no significant differences in interpretation, and given that we already have several different specifications and models, we opted to keep the analysis at the firm level.

It is also noteworthy, and consistent with our arguments, that when the *CEO power index* is very low, i.e., when the corporate context clearly does not support the realization of a CEO's risk propensity, the effect of CEO risk propensity on internationalization moves towards statistical insignificance. All regressions include similar control variables, fixed effects as well as each variable of interaction separately. For brevity, we only report the coefficients on the interaction terms, which show the *additional* impact of high CEO power on the CEO risk propensity→internationalization relationship. Panel B and C of Table 4 show similar results supporting our Hypotheses 5 and 6.[14] Overall, Table 4 reveals strong support for Hypotheses 4-6 that predicted higher CEO power moderates the effect of risk propensity of the CEO on internationalization, choosing a target with further cultural distance, and preference for acquisition mode. Taken together, these significant results are quite consistent with our main-effect theoretical argument (i.e., that agentic CEOs with different risk propensities tend to steer their firms towards internationalization choices consistent with the CEO's risk preferences), but also that this effect will be even stronger when the corporate context suggests that the agentic CEO will be able to realize those preferences relatively unencumbered by constraints on his/her influence over those internationalization choices.

[Insert Table 4 about here]

Finally, our Hypothesis 7 considers an alternative firm-level factor often discussed in the IB literature as relevant for internationalization choices; namely, prior firm internationalization experience. As discussed earlier, we suggest that for firms with greater experience, the CEO effect on internationalization (H1) will be more muted. *Table 5* shows the results. Since these regressions include fewer observations due to inclusion of lagged international experience, we replicate the result of H1 using this sample in Column 1. As shown the estimated coefficient is very similar to the one reported in Table 2 (0.035 compared to 0.039). In Column 2, we add the indicator for *Firm international experience* as an additional control variable. The significance of this variable shows that firms with greater previous international experience do internationalize more, as expected and consistent with IB expectations (Johanson and Vahlne, 2009; Martin and Salomon, 2003). However,

[14] The only exception is the marginally significant result supporting board independence as a moderator between CEO risk propensity and cultural distance (Hypothesis 5; p-value = 0.104).

it should be noted that the estimated coefficient on *CEO risk propensity* is unaffected by the inclusion/exclusion of previous international experience as a control, suggesting that the assignment of CEOs with high versus low risk propensity to each firm is exogenous to the firm's previous international experience.

With respect to our hypothesized moderator relationship (H7), the results reported in Column 3 of *Table 5* support the prediction: the "CEO risk propensity effect" on internationalization is muted somewhat for those firms with more international experience, relative to their less experienced counterparts. Specifically, we find a negative coefficient (β= -0.051, p-value = 0.053) on the interaction of *CEO risk propensity* and *Firm international experience*, while the coefficient on *CEO risk propensity* increases from 0.034 to 0.056. This implies that the estimated effect of CEO risk propensity on internationalization of firms with low and high previous experience is 0.056 and 0.005= [0.056 - 0.051], respectively. We interpret these results as consistent with the traditional IB/Uppsala view that prior internationalization experience reduces the (real or perceived) risk of further internationalization, but also the IE literature's view that individuals with greater risk propensity can also stimulate internationalization, serving as a (partial) substitute for a firm's lack of previous international experience.

[Insert Table 5 about here]

To ensure the highest level of confidence in our supportive findings, we also subjected our results to an extensive battery of tests (involving CEO turnovers, propensity score matching, and instrumental variable analysis) aimed at reducing any potential endogeneity concerns, along with a variety of robustness tests utilizing alternative measures of our main constructs. We describe these tests and their results in detail in the Online Appendix. Virtually without exception, we find our results to be robust; in particular, we eliminate (as much as possible, short of a laboratory experiment involving random assignment of CEOs to firms) possible speculation relating to reverse causation. In other words, our varied supplemental analyses reject the hypothetical notion that internationalization is driving firms' selection of CEOs with different risk propensities, and instead provide additional support for our main argument: CEOs of identifiably different risk propensity are predictably driving the observed differences in their firms' internationalization choices.

DISCUSSION

We began noting that gaining a greater understanding of firms' internationalization decisions and their antecedents has been perhaps one of the most fundamental and longstanding research goals of IB research over the last four decades. We suggested that with the general acceptance of the concept of the "liability of foreignness", IB research logically focused on mitigating the riskiness of internationalization choices, which encompassed not only the extent of internationalization, but also the choice of specific locations and entry modes. This dominant view was reflected in Johanson and Vahlne's (1977) influential Uppsala model, where firms' internationalization decisions are viewed as striving to minimize risk-taking and made by senior managers assumed to be risk averse (Buckley, et al., 2016). We then contrasted this traditional view with the more recent IE literature, in which internationalization was reframed as entrepreneurial behavior led by individuals with greater risk-taking propensity (Oviatt and McDougall, 2005). We noted that as a point of convergence, both the IB and the IE literatures began to emphasize the importance of devoting greater attention to the individual-level factors (sometimes expressed in terms of micro-foundations) driving firm-level internationalization choices.

Our study has sought to answer this call by developing and testing an original framework of analysis that focuses on the likely relevance of CEO risk propensity as a causal antecedent of firms' internationalization choices. Rather than assuming that CEOs are either inherently risk averse or entrepreneurially risk-seeking, we suggest that CEOs are identifiably heterogeneous in their intrinsic risk propensity, that such differences are largely stable, and that these CEOs are agentic in seeking to steer their firms towards internationalization risks that are consistent with their stable and heterogeneous personal risk preferences. Specifically, we posited that differences across CEOs in risk propensity will predict differences not only in the level of their firms' internationalization, but also differences in the pursuit of more versus less risky internationalization venues/locations (culturally distant versus proximate countries), as well as differences in the pursuit of more versus less risky internationalization vehicles/entry modes (acquisitions versus alliances). We found robust main-effect

results for the significance of differences in CEO risk propensity across all three of these firm-level internationalization choices.

We then sought to examine more closely our assumption of agentic CEO behavior by introducing additional moderating relationships rooted in differences in corporate context. Most prominently, we suggested that the ability of an agentic CEO to realize his/her risk preferences would be particularly strong in corporate situations of relatively unencumbered influence. We found consistently supportive results, showing that the impact of a CEO's risk propensity on his/her firm's internationalization choices is in fact amplified under the corporate context condition of high CEO/Board relative power. Additionally, we considered the moderating effect of another firm-level contextual factor; namely, a firm's prior internationalization experience, which is often cited in the IB literature as reducing the risk of internationalization. Here, we posited that the moderation would work in an attenuating manner, with greater firm-level experience in internationalization muting the strong "CEO effect" that we showed in our main-effect results. We again found supportive results, suggesting to us that the antecedents of risky internationalization include the type of evolving firm-level knowledge emphasized by IB researchers, and the more stable individual-level differences in risk propensity emphasized by IE researchers.

In seeking to provide a theoretically and empirically rigorous examination of the causal relationship between a CEO's risk propensity and his/her firms' internationalization choices, we hope to contribute to the internationalization research traditions found in both the IB and IE literatures. For example, our attention and our measurement of identifiable and stable differences in CEO risk propensity (based on their personal investment portfolios) allow us to incorporate a central claim of the IE literature on internationalization, which is that there are relevant differences across organizational leaders in terms of their entrepreneurial tendencies. Interestingly, our robust finding that observed differences in CEO risk propensity consistently predict the riskiness of firms' three major internationalization choices (levels, venues/locations, and vehicles/entry modes) goes even further than prior IE research, which has suggested that entrepreneurial leaders might seek to reduce overall firm risk by balancing trade-offs in the riskiness of internationalization levels, locations, and entry modes (see, for example, empirical study of Shrader et al. (2000b) and Miller (1992) theoretical

discussion). Of course, those studies do not consider or measure differences in CEO risk propensity, as we do. We encourage future research to consider the possible individual-level and/or firm-level factors that might lead entrepreneurial leaders to be more versus less likely to seek to limit their firms' "total firm internationalization risk" in the combination of choices of internationalization levels, locations, and entry modes.

With respect to study limitations and extensions, while our assumption of agentic CEOs is consistent with virtually all prior UET research on the "CEO effect" on firm decisions (Quigley and Hambrick, 2015), there still remains a number of open questions for future UET research to address regarding the precise mechanism by which CEO preferences translate into corporate strategic decisions, such as internationalization. In other words, we welcome future research that might blend our variance-model approach with alternative approaches, such as the prior IB studies on internationalization that try to develop detailed process models to more precisely identify the mechanisms linking individual-level factors and firm-level decisions (Hadjikhani et al., 2014; Maitland and Sammartino, 2015; Treviño and Doh, 2020). Those studies, which are usually conceptual or use qualitative methods, generally focus their process model development efforts to better understand the specific intraorganizational dynamics underlying internationalization choices. Given the observed relevance of our CEO risk propensity variable, however, we would suggest that there may be additional value in future research that seeks to use process models to better understand the more micro-level (i.e., intrapsychic) processes underlying the likely differences in individuals' conception of risky decisions, such as internationalization. Indeed, advances in entrepreneurship research in the area of opportunity recognition and opportunity beliefs (McMullen and Shepherd, 2006) would appear promising for process researchers interested in how different CEOs tend to view internationalization decisions.

Another related and potentially promising extension of our study of CEO risk propensity as a relevant antecedent of internationalization choices would be to connect CEO risk propensity to other related CEO characteristics thought to be influential in affecting corporate decisions. For example, Gamache et al. (2015) invoke regulatory focus as a fundamental psychological attribute and show that CEOs with a promotion focus (a sensitivity to gains) tend to engage in acquisitions more than CEOs

with a prevention focus (a sensitivity to losses). Attention to the genesis, evolution, and development of such psychological attributes could potentially shed additional light on the intrapsychic processes underlying differences in CEO risk propensity.

An additional extension of our focus on the individual-level antecedents of internationalization would be to consider the consequences of such CEO-driven choices. In other words, while our outcome of interest is corporate strategic behavior (in the form of internationalization choices), we would welcome future studies that extended our work to consider additional outcomes. An obvious choice would be firm performance, but with careful attention to linking performance predictions to the CEO risk propensity→internationalization relationship. While we are agnostic in this study regarding the likely performance consequences of "CEO-driven" internationalization (based on CEO risk propensity), one could consider and examine potential performance differences between firms whose internationalization is primarily CEO-driven versus firm-driven (e.g., based on prior firm experience).

Future research on CEO-driven internationalization could also go beyond our predictions of internationalization entry to predictions of internationalization exit. For example, would CEO risk propensity predict earlier or later exit in the face of poor performance? One could also incorporate our firm-specific moderators in the following manner: Since we know that internationalization decisions are particularly CEO-driven when the CEO enjoys greater CEO/Board power, are such decisions likely to endure longer even in the face of poor performance? One could also use our study to approach the question of internationalization exit from another theoretical angle by blending our three internationalization choices to develop and test predictions regarding the possibility of a differential likelihood of internationalization exit, depending on the specific prior choice of location and mode of entry.

In conclusion, it is our hope that our study, which begins with an emphasis on the identifiable heterogeneity of CEO risk propensity across firms and links this heterogeneity causally to multiple differences in firms' internationalization choices, can both reconcile prior research and stimulate future research on the micro-foundations of internationalization. With respect to reconciliation, we show that one need not assume that CEOs are generally risk averse (the IB assumption), nor that they

are generally entrepreneurial risk seekers (the IE assumption). More specifically, our framework for analysis builds upon the upper echelons perspective in identifying the likely heterogeneity across CEOs in risk propensity and the likely consequential nature of such individual-level heterogeneity for risky firm-level internationalization choices. With respect to future research, we have identified above a number of promising avenues for study, extending our framework for analysis and our findings in ways that could further advance current understanding of both the individual-level and firm-level antecedents and consequences of firms' internationalization choices.

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TABLES

Table 1: Descriptive Statistics

Variables	Mean	Median	Standard deviation
CEO-level variables			
Tenure	5	3	4
Age	54.3	56	8.47
Gender	0.95	1	0.21
Married	0.8	1	0.4
Education dummy	1.97	2	0.79
Risk propensity	0.56	0.62	0.37
Risk propensity index	1.54	1	0.62
Log Compensation	14.37	14.26	0.99
Log wealth	16.15	15.97	1.51
Log financial capital	14.26	14.49	3.18
Log income	14.54	14.41	0.99
International experience	0.14	0	0.35
Firm-level variables			
Log R&D	4.82	0	7.33
Log Assets	19.28	19.26	2.39
Company age	20.6	11	29.51
Relative ROA	0	0	0.2
ROA	2.83	1.51	24
Leverage	0.52	0.58	0.25
Log PPE	18.61	18.7	2.64
Log employees	3.27	3.2	1.85
CEO duality	0.33	0	0.47
Independent board member share dummy	0.42	0	0.45
CEO Ownership	0.11	0	0.24
Family CEO	0.23	0	0.47
CEO power index	1.35	1	0.51

Variables	Mean	Median	Standard deviation
Dependent variables			
Internationalization levels	0.31	0.11	0.45
Prefer acquisition over alliance	0.35	0	0.38
Log cultural distance	2.03	1.98	0.51

Table 2: CEO risk propensity predicting internationalization (H1)

Dependent variable:	Internationalization (acquisitions and alliances)
CEO risk propensity	**0.039**
	(0.009)
Log assets	0.011
	(0.057)
Company age	-0.013
	(0.051)
Relative ROA	0.131
	(0.062)
Log R&D	0.001
	(0.317)
ROA	0.002
	(0.221)
Leverage	-0.022
	(0.076)
Log PPE	0.005
	(0.038)
CEO age	-0.002
	(0.187)
CEO gender	0.011
	(0.077)
CEO married	0.016
	(0.084)
CEO education	0.013
	(0.092)
CEO tenure	-0.002
	(0.118)
CEO compensation	0.003
	(0.294)
CEO ownership	-0.023
	(0.069)
International experience	0.034
	(0.047)
Industry fixed effects	Yes
Year fixed effects	Yes
Observations	6323
R-squared	0.095

P-values are reported in parentheses.

Table 3: CEO risk propensity predicting internationalization venue (H2) and vehicle (H3)

	Hypothesis 2: More internationalization in culturally distant countries	**Hypothesis 3:** More internationalization via acquisition versus alliance
	(1)	(2)
CEO risk propensity	**0.227**	**0.610**
	(0.005)	**(0.002)**
Log assets	0.049	0.028
	(0.148)	(0.063)
Company age	-0.001	-0.003
	(0.449)	(0.273)
Relative ROA	0.334	0.619
	(0.086)	(0.318)
Log R&D	0.003	0.01
	(0.364)	(0.291)
ROA	-0.002	-0.005
	(0.211)	(0.190)
Leverage	0.02	0.055
	(0.006)	(0.003)
Log PPE	0.027	0.153
	(0.243)	(0.083)
CEO age	0.018	0.005
	(0.299)	(0.410)
CEO gender	0.164	0.126
	(0.187)	(0.573)
CEO married	0.074	0.151
	(0.331)	(0.189)
CEO education	0.079	0.108
	(0.066)	(0.366)
CEO tenure	-0.008	-0.006
	(0.624)	(0.169)
CEO compensation	0.001	0.022
	(0.077)	(0.198)
CEO ownership	-0.003	-0.01
	(0.032)	(0.073)
International experience	0.182	0.109
	(0.007)	(0.059)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
R-squared	0.096	0.17
Observations	6323	6323

Table 4: CEO risk propensity and CEO/Board power predicting internationalization (H4, H5, & H6)

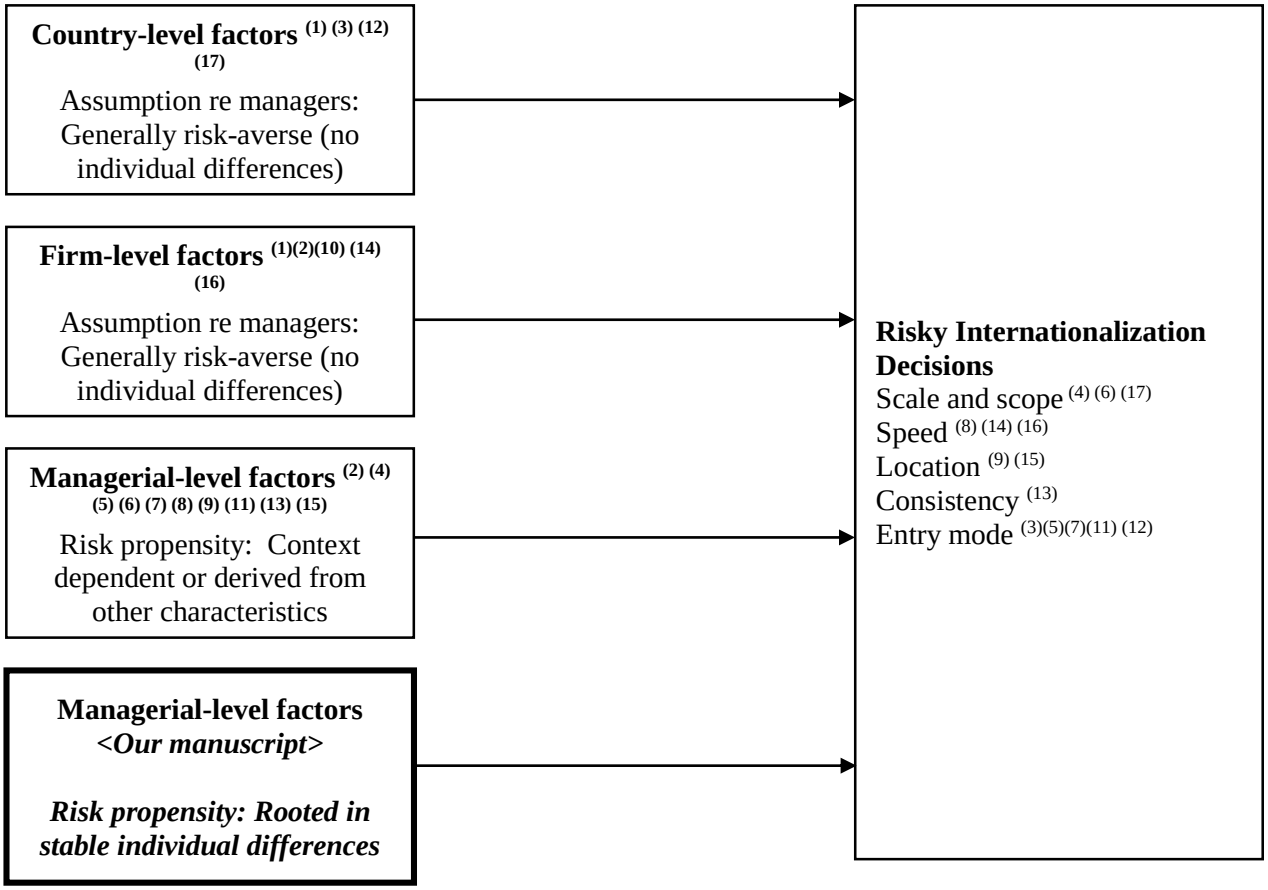
	(1)	(2)	(3)	(4)
Panel A. Hypothesis 4	DV: Internationalization (Same as H1)			
Interaction variables				
CEO risk propensity x CEO/chair duality	0.035			
	(0.040)			
CEO risk propensity x Low board independence		0.007		
		(0.080)		
CEO risk propensity x Family CEO			0.050	
			(0.035)	
CEO risk propensity x CEO power Index				0.028
				(0.009)
Panel B. Hypothesis 5	DV: Internationalization Venue: culturally distant countries (Same as H2)			
CEO risk propensity x CEO/chair duality	0.102			
	(0.033)			
CEO risk propensity x Low board independence		0.023		
		(0.104)		
CEO risk propensity x Family CEO			0.111	
			(0.038)	
CEO risk propensity x CEO power Index				0.079
				(0.043)
Panel C. Hypothesis 6	DV: Internationalization Vehicle: acquisition vs alliance (Same as H3)			
CEO risk propensity x CEO/chair duality	0.131			
	(0.031)			
CEO risk propensity x Low board independence		0.004		
		(0.028)		
CEO risk propensity x Family CEO			0.193	
			(0.059)	
CEO risk propensity x CEO power Index				0.134
				(0.046)
Controls and variables of interactions separately	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	6323	6323	6323	6323

P-values are reported in parentheses.

Table 5: Firm international experience moderating the relation between CEO risk propensity internationalization (H7)

Dependent variable:	Internationalization (acq. and alli)		
	(1)	(2)	(3)
CEO risk propensity	0.035	0.034	0.056
	(0.014)	(0.010)	(0.003)
Firm international experience		0.135	0.112
		(0.000)	(0.000)
CEO risk propensity ×			**-0.051**
Firm international experience			**(0.053)**
Controls	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	5412	5412	5412
R-squared	0.088	0.117	0.119

Figure 1. What predicts firms' risky internationalization decisions? How does our study relate to prior IB research addressing this question?



(1) Johanson & Vahlne, *JIBS* (1977)
(2) Cavusgil & Naor, *JBR* (1987)
(3) Kogut & Singh, *JIBS* (1988)
(4) Tihanyi et al., *JoM* (2000)
(5) Herrmann & Datta, *JIBS* (2002)
(6) George et al., *JoM* (2005)
(7) Herrmann & Datta, *JMS* (2006)
(8) Acedo & Jones, *JWB* (2007)
(9) Buckley et al., *JIBS* (2007)
(10) Johanson & Vahlne, *JIBS* (2009)
(11) Musteen et al., *JIBS* (2009)
(12) Jandik & Kali, *JIBS* (2009)
(13) Lin& Cheng, *MD* (2013)
(14) Casillas & Moreno-Menéndez, *JIBS* 2014
(15) Buckley et al., *JIBS* (2018)
(16) Kumar et al., *JIBS* (2020)
(17) Arikan et al., *SMJ* (2020)

Online Appendix for

"TAKING CHANCES? THE EFFECT OF CEO RISK PROPENSITY ON FIRMS' RISKY INTERNATIONALIZATION DECISIONS"

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This Online Appendix provides supplementary information and statistics as well as the results of additional empirical analysis and robustness checks. Specifically, we first provide a literature review table where we include relevant studies in IB literature together with their setup, dependent variable, independent variables, and most importantly their assumptions about managerial or entrepreneurial risk-taking propensity. In the next section, Data and Methods, we describe our data and sample in more details and provide further statistics and the correlation matrix. We also show how potential measurement errors in our main independent variable, CEO risk propensity, should affect the main results we document in the paper. In addition, we report the results of several diagnostic tests we conduct to make sure that the choice of our methodology and specifications are appropriate. In the third section, we present a battery of additional analyses (exploiting CEO turnovers, propensity score matching, IV) to address endogeneity concerns. In the final section, we present the robustness checks.

LITERATURE REVIEW

Table IA *1* provides details of relevant studies in the IB literature that aim to predict risky internationalization decisions. For each study, we indicate the theoretical framework, methodological approach, the implicit or explicit assumption about risk-taking propensity (of the manager or entrepreneur), as well as the dependent and independent variables used in the study.

DATA AND METHOD

Further statistics about the sample and variables

In this section, we provide further details about our sample characteristics. Our empirical context is based on the population of all Norwegian limited liabilities firms, private and public, that engaged in at least one M&A or alliance (either domestic or international) over a fourteen-year period from 2000 through 2013 (of our final sample of 932 firms, 304 had at least one international M&A or alliance). Subsidiaries are excluded from the sample.

We have 3927 M&As and alliances (hereafter: deals) in our sample, out of which 692 (or 18%) are international and the rest (3235) are domestic. The number of foreign deals in our sample is broadly consistent with that observed in previous published studies focusing on Europe as their empirical setting. For example, in a recent paper, Siganos and Tabner (2020) look at cross-border acquisitions in countries participating in Eurovision (40 countries) for the period 1999 to 2013. The sample has 13 344 deals in total, over 15 years and 40 countries. While they do not give the statistics broken down by country, this gives roughly an estimated number of 22 deals per country/yearly. We have 692 international deals, which gives us and average of 49 deals per year. Other examples are Alimov (2015) and Wiklund and Shepherd (2009) that study OECD countries and Sweden, respectively, and the statistics are in line with our study.

If we collapse the sample to firm level data, we observe that each firm has, on average, 4.2 deals, and the number of deals varies across firms from 1 to 85. Each firm has, on average, done 0.74 international deals, and the number of such deals varies across firms from 0 to 29. We can also provide descriptives in terms of firm-year observations, where we have 539 internationalization events, i.e., one or more internationalization decisions per firm-year observation. Given 6323 total firm-year observations, the probability of observing an internationalization event in our final firm-year dataset is 539/6323 or 8.5%, which is essentially the unconditional probability of observing an internationalization event for a firm in a specific year. This probability for the group of CEOs with high risk propensity (above median) is 15.4%, which is almost twice as the baseline probability.

Table IA *2* reports the correlation matrix for our variables.

Implications of potential errors in measuring *CEO risk propensity*

While our theoretical model posits an effect of CEO risk propensity on internationalization, we acknowledge that our empirical analysis does not allow us to observe the true CEO risk propensity. This is an issue facing almost any study that looks at not directly observable individual characteristics such as ability, overconfidence, risk preferences, experience, et al. or firm characteristics such as financial constraints, complexity, diversity, culture and so on. In fact, this issue of not observing the true value of independent

variables is so common that is referred to as classical errors-in-variables. In our case, we do not observe the true risk propensities, and instead we are using a measure that is theoretically justifiable, based on individuals' revealed preferences in financial decision making in the real world, and previously and extensively used in has been used in the financial economics literature. Despite these positive features of our measure, there is undeniably measurement error relative to true risk propensities, and it would be important to know the implications of this measurement errors on our results.

To show the effect of measurement error in our risk taking propensity, we start with a simple general population model:

$$y = \beta x + \epsilon \qquad (1)$$

Unfortunately we do not observe x and instead we measure it with an error. Specifically, we only have data on $\tilde{x}$ which is:

$$\tilde{x} = x + u \qquad (2)$$

If the measurement error has mean zero, is uncorrelated with the dependent variable, other independent variables and with the population equation error term (which are reasonable assumptions at least in our case), substitution (2) into (1):

$$y = \beta(\tilde{x} - u) + \epsilon = \beta\tilde{x} + (\epsilon - \beta u)$$

This means that the measurement error in our explanatory variable becomes part of the error term in the regression. This creates an endogeneity bias. We know from (2) that x and u are positively correlated, OLS estimation will lead to a negative bias in estimated beta $(\hat{\beta})$ if the true β is positive and a positive bias if β is negative. In other words, we underestimate the true value.

In fact, using OLS estimator and its plim, we have:

$$plim\ \hat{\beta} = \frac{\beta\sigma_x^2}{\sigma_x^2 + \sigma_u^2} = \omega\beta$$

where

$$\omega = \frac{\sigma_x^2}{\sigma_x^2 + \sigma_u^2}$$

where ω is called signal to total variance or reliability ratio and as is seen, it is between 0 and 1 and hence the estimated coefficient will be biased towards zero. We can write the bias as:

$$plim\ \hat{\beta} - \beta = \omega\beta - \beta = -(1 - \omega)\beta$$

To summarize, measurement errors in our independent variable essentially works against us and pushes our coefficients towards zero. In other words, using the true values of risk propensity should have led to stronger effects, if anything.

Another important point is the effect on estimated standard errors. We first write the residual term from the regression:

$$\hat{\epsilon} = y - \hat{\beta}\tilde{x} = y - \hat{\beta}(x + u)$$

If we add and subtract the true error $\epsilon = y - \beta x$ from the above equation, we will have:

$$\hat{\epsilon} = \epsilon - (y - \beta x) + y - \hat{\beta}x - \hat{\beta}u = \epsilon + \left(\beta - \hat{\beta}\right)x - \hat{\beta}u$$

As shown above, there are two additional terms (or sourced of variation) in the residual, compared to the true error term. The first term is due to the downward bias in the estimated coefficient (that we discussed before) and the second term is due to the measurement error in our independent variable.

The estimated variance of the residual from regression is:

$$plim\ \widehat{\sigma_\epsilon^2} = \sigma_\epsilon^2 + (1 - \omega)^2\beta^2\sigma_x^2 + \omega^2\beta^2\sigma_u^2$$

Let $\hat{s} = \sqrt{n}\left(\hat{\beta} - \beta\right)$. Then, the estimate of the variance will be:

$$\boldsymbol{plim\ \hat{s}} = plim\ \frac{\widehat{\sigma_\epsilon^2}}{\widehat{\sigma_{\tilde{x}}^2}} = \frac{\sigma_\epsilon^2+(1-\omega)^2\beta^2\sigma_x^2+\omega^2\beta^2\sigma_u^2}{\sigma_x^2+\sigma_u^2} = \frac{\sigma_x^2}{\sigma_x^2+\sigma_u^2} \times \frac{\sigma_\epsilon^2}{\sigma_x^2} + \frac{\sigma_x^2}{\sigma_x^2+\sigma_u^2}(1-\omega)^2\beta^2 + \frac{\sigma_x^2}{\sigma_x^2+\sigma_u^2}\omega^2\beta^2$$

$$= \omega\frac{\sigma_\epsilon^2}{\sigma_x^2} + \omega(1-\omega)^2\beta^2 + \omega^2(1-\omega)\beta^2 = \boldsymbol{\omega s + \omega(1-\omega)\beta^2}$$

The first term shows that the true standard error is underestimated in proportion to ω. The second term is positive and therefore we cannot determine the sign of the overall bias in the estimated standard error. Having said that, the t-statistic will be bias downwards since the t-statistics converges to:

$$\frac{plim\ t}{\sqrt{n}} = \frac{plim\ \hat{\beta}}{plim\ \sqrt{\hat{s}}} = \frac{\omega\beta}{\sqrt{\omega s + \omega(1-\omega)\beta^2}} = \sqrt{\omega}\frac{\beta}{\sqrt{s+(1-\omega)\beta^2}} < \frac{\beta}{\sqrt{s}}$$

To summarize, the true risk propensity is unobserved and any attempt to quantify it (including ours) is accompanied by measurement errors. We have shown here that, given some reasonable assumptions, this measurement error works against us. Specifically, this measurement error leads to underestimation of our coefficient of interest and the associated t-statistics.

Diagnostic empirical tests

We conduct a series of diagnostic tests to make sure that the assumptions of our empirical setup are met and our models are specified correctly. In particular, we check normality of residuals since it is required for valid hypothesis testing in multiple regression analysis. Using kernel density estimate and Shapiro-Wilk W test (p-value = 0.32), we cannot reject that the residuals are normally distributed. In addition, homoscedasticity of residuals cannot be rejected using White's test (p-value = 0.21). We also perform collinearity diagnostics using variance inflation factor (VIF). The average VIF for our model with all the controls is 3.6 and the maximum VIF is 5.3, which is well below the threshold of 10 and therefore there should be no concern related to multi-collinearity (Neter, Wasserman, and Kutner 1990). To test for specification errors, we run the link test (Pregibon 1980) and found that the prediction squared term is not statistically significant (p-value = 0.19). This means that the link test fails to reject the assumption that the

model is specified correctly. Moreover, to test for omitted variable bias, we run Ramsey RESET test and the results show that we cannot reject the null hypothesis of having no omitted variable (p-value = 0.82). In addition, Wald statistics show that all explanatory variables are jointly significant. Finally, we observe that our measure of CEO risk propensity has significant variation across CEOs but is stable through time for each of them, consistent with our theoretical arguments.

ADRESSING ENDOGENEITY

One important empirical challenge about any study that investigates the impact of CEO characteristics on firm decisions or firm outcomes is the possibility of an endogenous treatment problem. In other words, firms with specific characteristics might have preference for particular types of CEOs, suggesting (in our context) the possibility that internationalizing firms prefer hiring CEOs with higher risk propensity.

Before addressing specific additional analyses that we conducted to address this issue in greater detail, we would like to first highlight that we posited our moderator hypotheses relating to CEO power as a way to gain additional insight into the likely direction of the relationship between CEO risk propensity and firm internationalization. Specifically, when testing our hypotheses that combined individual-level dispositions and firm-level context (i.e., H4-H6), we found that CEO risk propensity exerts a much stronger effect on internationalization levels (our original H1), the choice of risky internationalization venues (our original H2), and the choice of internationalization vehicles (our original H3) when the corporate context also allows the CEO to exert more power to steer the firm in a direction consistent with his/her preferences. Indeed, when the corporate context does not offer this channel for greater realization of the CEO's preferences, the relationship between CEO risk propensity and internationalization is significantly diminished. These results add support to the underlying assumption of our theoretical framework; namely, internationalization choices are driven in part by agentic CEOs who seek to impose their preferences on firm

policies. Any alternative explanation would need to be consistent with the observation that the relation between CEO's preferences and internationalization becomes significantly stronger with CEO power.

The above-mentioned points notwithstanding, we also wish to address more thoroughly the question of endogeneity, which we have done using additional analyses and additional data collection. These analyses involve examination of CEO turnover events (planned and sudden), propensity score matching, and instrumental variable analyses. The results of these analyses, as discussed below, give us further confidence in our arguments and findings regarding the direction of the relationship between CEO risk propensity and internationalization policies.

Exploiting CEO turnovers

The interpretation of our main results documented in the paper has been that, consistent with hypotheses, CEO risk propensity affects firms' internationalization choices, and these results are obtained after controlling for differences in industry characteristics (observed or unobserved) and observable firm variables that could be correlated with internationalization. In other words, the results reported in the main text are not subject to any omitted variable at the industry level such as industries' internationalization propensity, average growth and so on. However, one could imagine that an *unobservable fixed* firm-specific factor (e.g., a firm's pursuit of a particular strategy/business model) might make some firms more inclined to internationalize and this inclination might then attract CEOs with greater risk propensity. In such a scenario, it is the firm-specific factor that affects internationalization and not the CEO, suggesting there should not be any significant difference in a firm's internationalization if there was a CEO turnover (even if the new CEO had a particular risk propensity that deviated from the predecessor CEO's risk propensity).

To address such a possibility of endogeneity of CEOs matched with firms based on fixed firm characteristics, we assessed CEO turnover events by including firm fixed effects in our regressions to estimate the effect of CEO risk propensity *within* firms. The inclusion of firm fixed effects allows us to remove the influence of all (observable or unobservable) time-invariant firm-specific factors (e.g., business strategy, firm-specific environmental situation). Specifically, we estimate the following regression:

$$\text{Internationalization}_{ijt} = \alpha + \beta\text{CEO RiskPropensity}_{j} + \text{CEO Controls}_{jt} + \text{Firm Controls}_{it} + \text{FirmFixedEffects}_{i} + \emptyset\text{YearFixedEffects}_{t} + \varepsilon_{ijt} \quad (3)$$

where $Internationalization_{ijt}$ stands for internationalization of firm i, run by CEO j, in year t.

Since *CEO Risk Propensity* is constant for each CEO, the coefficient of β in regression (3) above captures the effect of CEO turnover on internationalization decisions. In other words, β estimates how degree of internationalization for *the same firm* changes when a new CEO replaces the former one.

Table IA *3* shows the results of firm fixed effect regressions for our first three hypotheses. As shown in Columns 1, 2, and 3, the coefficient of *CEO risk propensity* is positive and statistically significant, consistent with our earlier results.

In other words, when a CEO with higher (lower) risk propensity joins a firm, there will be an increase (decrease) in all three of our internationalization outcomes (i.e., greater internationalization, more risky venues, and more risky vehicles -- for the *same* firm. We find similar consistent support (not reported) for our Hypotheses 4-6. Taken together, these within-firm results (following CEO turnover) provide strong evidence in support of the notion that it is CEOs' risk propensity – and not some firm-CEO matching based on time invariant firm characteristics or other unobservable firm-specific factors -- that affect internationalization decisions (i.e., levels, venues, and vehicles).

Exploiting exogenous CEO departures

While the results above from CEO turnovers address the issue of endogenous firm-CEO matches based on firms' fixed characteristics, there remains an additional possibility that an unobserved time-varying firm level factor (e.g. changes in firm strategy) is responsible for both replacing the CEO with low risk propensity and the following increases in internationalization. Here, we follow prior research on CEO turnover that addresses the potential endogeneity of CEO turnovers and focus only on executive deaths (Johnson et al. 1985; Hayes and Schaefer 1999; Bennedsen, Pérez-González, and Wolfenzon 2010; Fracassi

2017; Fee, Hadlock, and Pierce 2013). While selecting the new CEO remains an endogenous choice, the *need* for a CEO succession is obviously exogenous in this situation.

We have 356 CEO turnovers with 6323 firm-year observation implying an overall turnover rate of 5.6%. Among these turnovers, 8 (or 2.2%) of them are due to CEO death. While CEO deaths are not expected to be frequent, our 2.2% is consistent with other studies, e.g., the 2.9% rate shown in Fee, Hadlock, and Pierce (2013). Consequently, we use CEO deaths as an exogenous shock leading to CEO turnover and investigate the effect of *changes* in CEO risk propensity within the firm on internationalization. Specifically, we run the following regression:

$$Internationalization_{ijt} = \alpha + \beta_1 CEO\ Deaths_{it} \times \Delta RiskPropensity_i + \beta_2 CEO\ Deaths_{it} + \gamma \Delta RiskPropensity_i + CEO\ Controls_{jt} + Firm\ Controls_{it} + \emptyset YearFixedEffects_t + \varepsilon_{ijt}$$

where *CEO Death* is an indicator variable that is 1 for firm-years after the CEO death and 0 otherwise. The variable $\Delta RiskPropensity$ represents the change in CEO risk propensity within the firm (due to the arrival of the new CEO). We categorize CEOs into high and low risk propensity using the median value of our measure of risk propensity. Therefore, $\Delta RiskPropensity$ could either be 0, 1, or -1, indicating no change, increase, or decrease in risk propensity of the firm's current CEO compared to that of the former. The effect of CEO deaths events on internationalization, given that the new CEO has similar risk propensity is estimated by β_2, whereas $\beta_1$estimates the effect of differences between risk propensity of new and former CEO on internationalization. The estimated β_2 and β_1 are -0.002 (p-value = 0.76) and 0.009 (p-value = 0.06). These results show that CEO death does not have any significant effect on internationalization when the risk propensity of the new CEO is not significantly different from the previous one. However, when the new CEO's risk propensity is significantly higher (lower), internationalization tends to increase (decrease) in the direction predicted by our framework for analysis. Note that this effect is above and beyond the effect of forced or voluntary CEO turnovers that is estimated by γ in the above regression. In other words, we find even a larger effect of CEO risk propensity on internationalization when the CEO departure is exogenous.

Overall, the results on exogenous CEO departures are consistent with our earlier evidence and interpretation that CEO risk propensity affects internationalization decisions.

Propensity score matching

Our results on exogenous CEO departures, as noted above, suggest that concerns relating to endogenous selection to treatment is unlikely to explain our results. To complement that analysis, we use propensity score matching (PSM) to address the issue of non-random selection of CEOs to firms (Rosenbaum and Rubin 1983; Berger et al. 2017; Sytch, Wohlgezogen, and Zajac 2018; Imbens 2004; Abadie and Imbens 2016; Ho et al. 2007). PSM matches observations based on the probability of undergoing treatment, which in our case is the probability of having a CEO with high risk propensity. Concretely, PSM estimates the effect of CEO risk propensity on internationalization by comparing internationalization level/choices (z-score) for firms with high risk propensity CEOs (treatment group) to the internationalization of firms that have a similar probability of having a high risk propensity CEO, but for which this is not the case (control group). The matching ensures a quasi-experiment setup, where every firm with a high risk propensity CEO is matched against observationally similar firms (captured by propensity score) with a low risk propensity CEO. We estimate a firm's propensity score by estimating a probit model where the dependent variable captures whether or not the firm's CEO has a high (i.e., (above median value) risk propensity (1=yes; 0=no). The explanatory variables for the likelihood of being treated are the same as specified in our main models. The effect of risk propensity is then calculated as the average distance between the high propensity group versus the matched control group.

As King and Nielsen (2019) have recently noted, simply using PSM does not necessarily reduce imbalance, inefficiency, model dependence and/or bias, and they suggest performing diagnostics to make sure that the quality of match is good, the region of common support is high, and the bias left after applying PSM is low. The results of our matching process show that there is a high level of common support. Specifically, there are only three observations among treated group (firms with high risk propensity CEO) for which their propensity score did not align with the score of another observation in the untreated group. We

also graphically inspect the quality of match by plotting propensity score histogram by treatment status. As shown in Figure IA *1*, we see strong support for the overlap of propensity scores across treated versus control groups, consistent with our previous results that we do have a high level of common support.

In addition, we statistically analyze our match quality. Specifically, for each covariate we investigate the difference between treated and untreated group to make sure that we have found good matches for each variable in the control group. The p-values for the difference between the covariates for the two sample are all above 0.2, showing that our matching process has created a balanced sample where there are no statistical differences between covariates across treatment and control groups. Consistently, the percentage standardized bias is reduced to below 5% for each covariate after matching, which again suggests that the matching is effective in balancing the distributions of the covariates across the samples (Caliendo and Kopeinig 2008). The median and mean of the percentage bias is 1.7 and 1.1 after the matching, respectively.[1] Overall, our tests and diagnostics suggest that the use of PSM in our case is justified.

Having shown evidence supporting the quality of our matching procedure, we proceed with presenting the effect of CEOs with high risk propensity on internationalization. While the results discussed above used a one-to-one matching without replacement, we also provide the results for three other PSM methods: one-to-one matching with replacement, nearest neighbor (n=2) and nearest neighbor (n=3). Table IA *4* shows the difference between degree of internationalization of firms with high CEO risk propensity and matched firms with low CEO risk propensity. These results from PSM are consistent with our linear regressions that firms with higher risk propensity CEOs internationalize more. Overall, PSM estimations suggest that our reported results are robust to controlling for endogenous selection to treatment based on observables (i.e. the possibility that firms with particular characteristics tend to hire high risk propensity CEOs).[2]

[1] We also observe a significant *reduction* in percentage bias compared to the unmatched sample. Figure IA *2* plots the variables with largest standardized bias before the matching and the remaining bias for each variable after the match.
[2] Note also that our prior analyses on exogenous CEO departures partially address the remaining possibility of selection to treatment based on time-varying unobservable characteristics, as it is highly unlikely that some unobservable time-varying firm-level variable correlated with internationalization and the need for a high CEO risk propensity all match the timing of CEO death.

Instrumental Variable

Our fourth and final approach to addressing endogeneity involves using an instrument for CEO risk propensity to diminish concerns related to potential unobserved omitted variables that might affect both individual's risk propensity and internationalization at the same time. The ideal instrument must be correlated with CEO risk propensity but should not directly affect firm internationalization decisions. Specifically, an instrument ideally addresses three distinct criteria: (1) meeting the exclusion restriction, i.e., the instrument does not affect the dependent variable directly, but only through the independent variable of interest (CEO risk propensity); (2) the instrument is exogenous; and (3) the instrument has a logical relationship with the endogenous variable (in our study, CEO risk propensity) (Bettis et al. 2014). We use risk taking propensity of the CEO's parents or siblings (depending on data availability) as an instrument for CEO risk taking.[3] This choice is inspired by the literature documenting evidence on genetic effects in risk aversion and risk-taking behavior (Cesarini et al. 2010; Kuhnen and Chiao 2009; Dreber et al. 2009; Black et al. 2017; Barnea, Cronqvist, and Siegel 2010). For example, using twins data and actual portfolio allocations, Cesarini et al. (2010) and Barnea, Cronqvist, and Siegel (2010) find that about 25% to one-third of variation in asset allocation and portfolio risk is explained by the genetic factor.

Therefore, our instrument has a logical relationship with the CEO risk propensity and as we will show in our first stage regressions, our instrument and CEO risk propensity are in fact strongly correlated, conditional on all other covariates in the main model. Moreover, it is hard to imagine that the risk propensity of a CEO's father would be endogenous to internationalization of the CEO's firm. While there is no formal statistical test for exclusion restriction, two key points support our exclusion restriction: Conceptually we cannot think of any likely systematic scenario where the risk propensity of a CEO's father would affect the internationalization decision of the CEO's company through any other channel other than by affecting the

[3] The source and characteristics of our data and the measure of risk propensity for CEO family members are exactly the same as the one for CEOs. Depending on data availability, we look for constructing our measure with the following orders: father, mother, brother, sister. For example, if we do not have data about CEO's father in the sample, we look for the mother, then brother and then sister. For 62 CEOs we do not find any of the above data and as a result we will have fewer observations in our IV regressions compared to the main models.

CEO's risk propensity. Empirically, when we include the risk propensity of CEO family in our main model together with CEO risk propensity to explain internationalization, the estimated coefficient on risk propensity of the family is 0.03 with the p-value of 0.28. This suggests that the instrument does not have a direct effect on our outcome variable. To summarize, parental and sibling risk propensity has a logical and strong relationship with CEO risk propensity (inclusion restriction) and does not appear to directly influence firm policies (exclusion restriction), supporting the appropriateness of our choice of instrument.

Table IA *5* reports the results of first and second stage regressions. In our first stage regression (Column 1), we find that risk propensity of the CEO's family member is positively and significantly correlated with that of the CEO ($\beta = 0.61$; p-value = 0.00). The F-statistics is 21.98, which is significantly higher than the rule of thumb threshold of 10 (Stock, Wright, and Yogo 2002), and hence the instrument is unlikely to be weak. In the second stage, we find evidence supporting the OLS results that higher CEO risk propensity increases internationalization. The magnitude of the effect increases from 0.039 (OLS as reported in **Error! Reference source not found.**) to 0.076 (p-value = 0.020).[4]

Taken together, the robust results emanating from these four sets of additional analyses (encompassing CEO turnovers, CEO deaths, propensity score matching, and instrumental variable analysis), plus our originally hypothesized moderator relationships regarding CEO power, collectively give us greater confidence in asserting that CEO risk propensity is a causal antecedent of firm-level internationalization. Indeed, given all the evidence shown here, we find it very hard to imagine a likely alternative scenario that can explain all of these results.[5]

ROBUSTNESS CHECKS

Sample selection

[4] Finding a much larger coefficient estimate for IV compared to OLS is very common. See, for example, Levitt (1996) and Card (2001).

[5] Perhaps experimental researchers could improve upon our causal claims by using real firms as experimental subjects, randomly assigning them CEOs of varying risk propensity, and then observing the resulting internationalization outcomes!

Our sample is comprised of companies that have engaged in at least one domestic or international merger/acquisition or alliance (in other words, we do not include companies that never used any of these vehicles, internationally or domestically). We view this focus on firms that have been involved in mergers and alliances as sensible, since it narrows our analysis to those firms that have the potential to grow through mergers and alliances, which allows us to explain why some firms do this more domestically and some others internationally. In other words, this condition helps us compare "apples to apples," given the likelihood that unobservable firm characteristics (i.e. growth potential) across the two set of firms may be correlated with internationalization and CEO risk propensity. In particular, if firms that never engage on mergers and alliances have, on average, low (high) risk propensity CEOs, including those firms in our analysis may lead to overestimation (underestimation) the impact of CEO risk propensity on internationalization.

Note that this is an intentional choice we made in sample selection, as we do have access to the population of limited liability firms in Norway (i.e. we have no inherent sample selection bias). This access allows us to also investigate whether our selection is somehow consequential for our results. Specifically, we created a matched sample from our excluded firms based on all observable covariates in our models (e.g., assets, firm age, ROA, leverage, et al.), and find that the average CEO risk taking propensity in that matched sample is 0.37 versus 0.56 in our current sample. This suggests that including those firms in our analysis would lead to even larger estimated effect of CEO risk propensity on internationalization. Consistently, when we run a regression similar to that of **Error! Reference source not found.** but including the matched firms that never engaged in mergers and alliances, our coefficient of interest *increases* from 0.039 to 0.054. This is consistent with the idea that firms that never engage in mergers or alliances are probably on average different in important dimensions in a systematic way with those that do, and that including them would lead to an overestimation of the effect of CEO risk propensity on internationalization.

Inclusion of greenfield investments

Our measure of internationalization from SDC Platinum Database data includes M&A and alliance activity, but not subsidiaries established through greenfield investment. To provide evidence on the robustness of our main results to the inclusion/exclusion of these subsidiaries, we obtain data from LexisNexis Corporate Affiliation Database that has information about all foreign subsidiaries established through greenfield investments and acquisitions (the database does not provide a further breakdown between the two). Using this dataset, we measure degree of internationalization for each firm as the share of all foreign (acquired or greenfield) subsidiaries and joint-ventures/alliances as a share of the overall number of subsidiaries and joint-ventures/alliances yearly. Using this broader (but more aggregated) internationalization measure that encompasses all firm foreign direct investments, we investigate whether CEO risk-taking is associated positively with internationalization (H1).

The results of the estimation are shown in Table IA *6*. Consistent with the results of Table 2 in the main text, we find that higher CEO risk propensity has a positive impact on internationalization when including greenfield investments CEO ($\beta = 0.095$; p-value = 0.00). In fact, the magnitude of the CEO risk propensity effect is even larger when greenfield investment is included, consistent with traditional IB views on entry mode, in which alliances/JVs are viewed as typically less risky than wholly owned subsidiaries (Anderson and Gatignon 1986). Other IB researchers have also noted the greater risk of greenfield investment, given increased exposure to environmental uncertainties and political risk (Agarwal and Ramaswami 1992). On the other hand, alliances or joint-ventures require lower investments and consequently involve lower risk-return trade-off proportional to the equity ownership of participating firms. Greenfield investments are also thought to require the firms to develop their own knowledge base to effectively operate in the foreign environment, whereas firms using shared-control entry modes have access to partner's knowledge on markets, competitors, and governmental policies. Hence, it follows logically that if we were to change the composition of our sample to include all wholly owned subsidiaries (with greenfield investments in addition to acquisitions), the overall riskiness of the foreign portfolio would be higher. In

other words, not including greenfield investment in our main analyses most likely results in a conservative underestimation of the true effect of CEO risk propensity on internationalization.

Alternative measures of risk propensity

While we view our measure of CEOs' risk propensity as an intuitive, straightforward measure that has a strong theoretical foundation (Sharpe 1964) and has been frequently used in prior literature (Calvet and Sodini 2014; Hvide and Panos 2014; Lundborg et al. 2017; Cronqvist, Makhija, and Yonker 2012), we also sought to evaluate the robustness of our results by constructing another measure that combines several different variables related to CEO's risk propensity into a CEO risk propensity index. It includes the following four variables: (1) risky assets as a share of financial wealth (the variable discussed above), (2) risky assets as a share of income, (3) debt to wealth ratio, and (4) volatility (standard deviation) of personal investment portfolio return. The second measure allows for the possibility that a CEO may have a significant proportion of his/her total financial assets invested in risky securities while also having a small total financial asset amount relative to their income. The third measure captures differences in personal leverage, where higher leverage implies higher individual risk propensity (Cronqvist, Makhija, and Yonker 2012). Finally, the fourth measure, volatility of personal investment portfolio, allows for a refinement that reflects possible differences in the specific riskiness of a CEO's set of risky investments (e.g., a single stock versus a diversified mutual fund).

To create the index encompassing these four measures, we examined each measure for each CEO and assigned a value of 1 (versus 0) to each measure, depending on whether the value for that measure was above (versus below) the sample median value for that measure. We then summed these 1/0 values for the four individual measures noted above, creating a risk propensity index whose values ranged from 0 to 4. Thus, CEOs displaying higher risk propensity across these indicators will have a higher score on this composite index.[6] We then use this composite measure of CEO risk propensity to again test our hypotheses,

[6] We also created a similar index using continuous measures (rather than 1/0 indicators), which we then standardized and summed, and found qualitatively similar results.

and we found results similar to those reported earlier for H1, H2, and H3. Specifically, as shown in Table IA *7*, firms whose CEOs had higher risk propensity, now measured in terms of the *CEO risk propensity index*, were more likely – relative to their counterpart firms led by lower risk propensity CEOs -- to pursue riskier internationalization decisions, as evidenced by greater levels of internationalization (H1), greater emphasis on more culturally distant countries (H2), and with greater use of acquisitions versus alliances (H3). In other words, these robustly strong results using a composite CEO risk propensity *index* as well as our original CEO risk propensity measure adds further confidence to our findings.

Figures

Figure IA 1: Propensity Score Histogram by Treatment Status

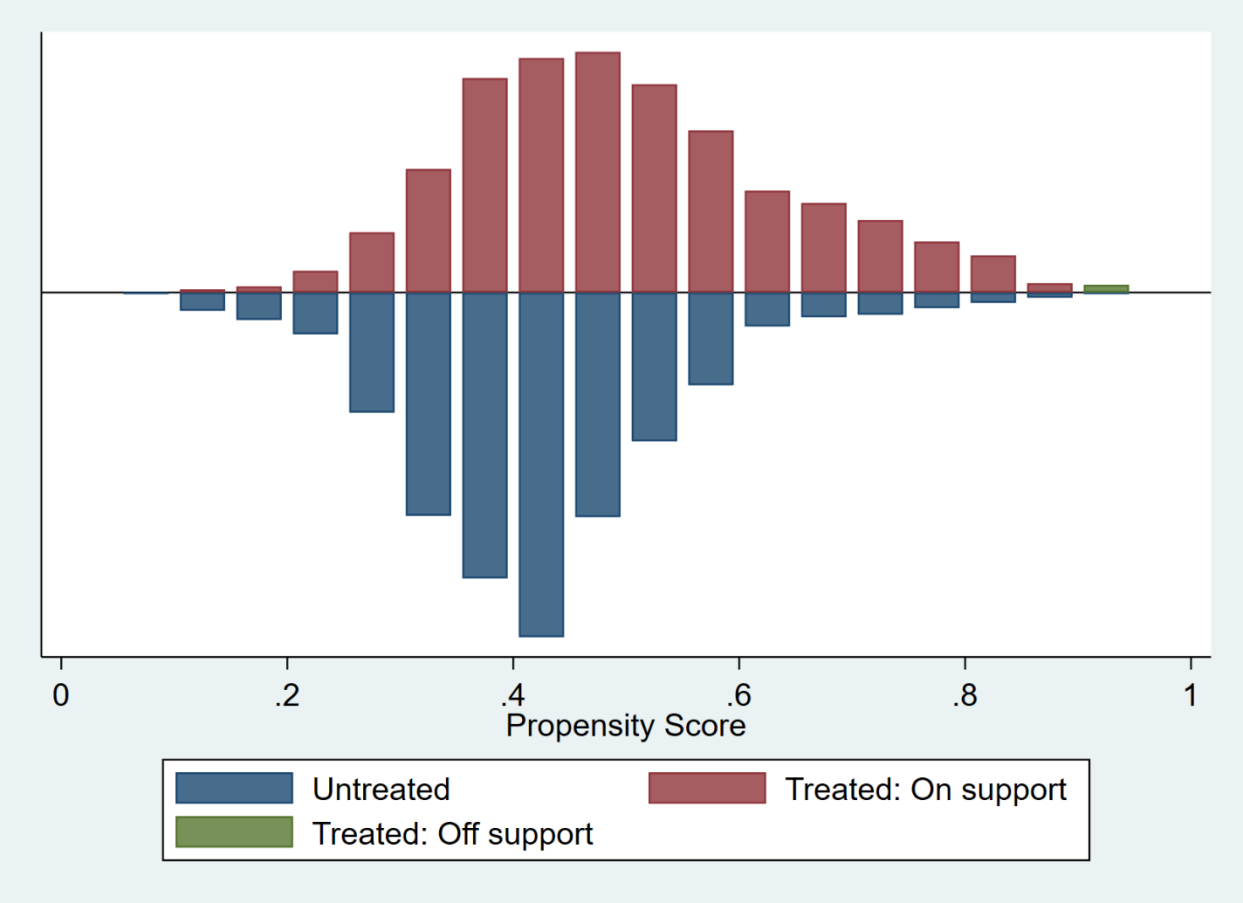
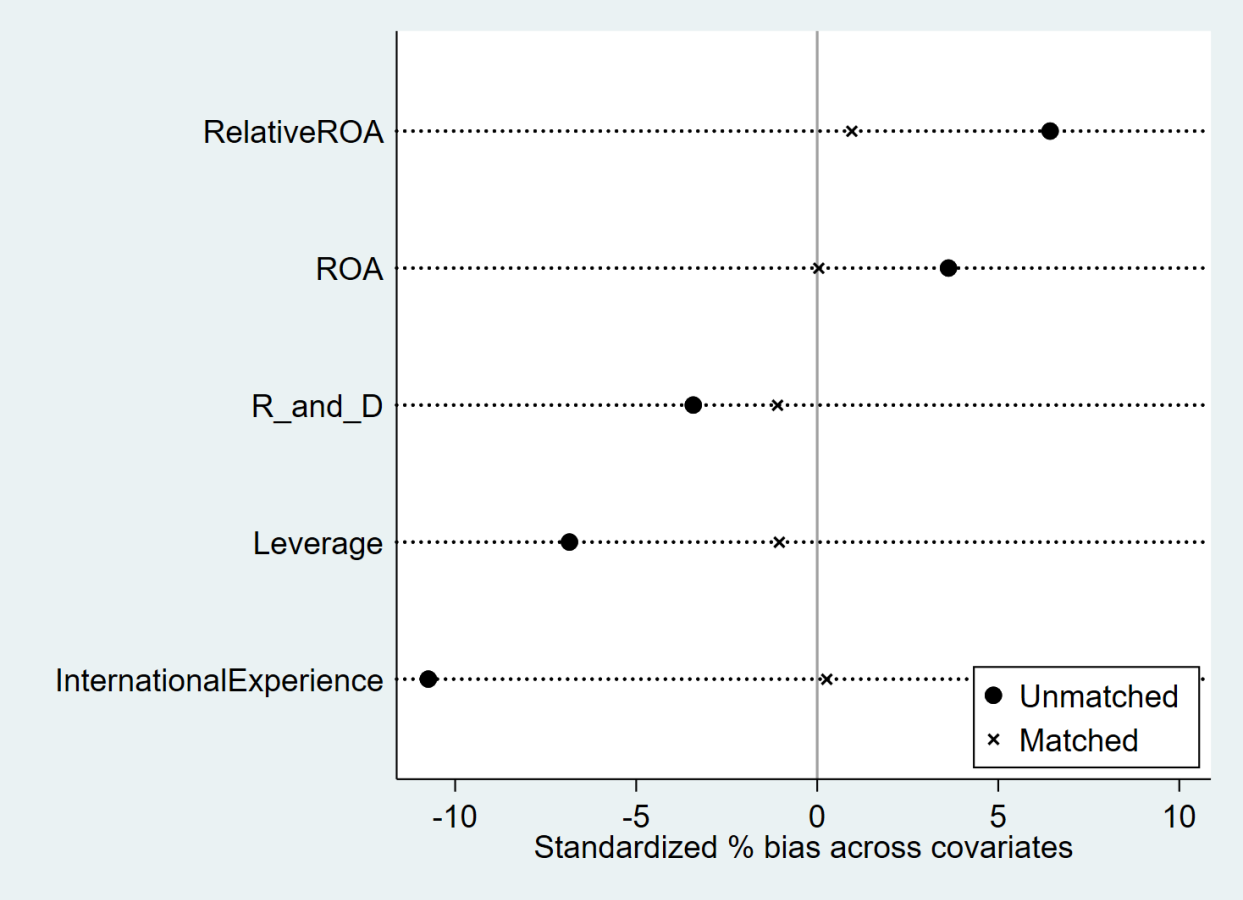


Figure IA 2: Standardize Percentage Bias Before and After Matching



Tables

Table IA 1: Predictors of firms' risky internationalization decisions: Literature review

Study	Dominant theoretical lens	Methodological approach	Assumption on risk-taking	Dependent Variable (measure)	Independent Variables (measure)
Johanson & Vahlne (JIBS 1977)	IB *macro* -Uppsala model	Qualitative (process) - Case studies	Risk averse managers No individual differences in risk aversion.	Internationalization process	Market knowledge Market commitment
Cavusgil & Naor (JIBS 1987)	IB *macro* & *micro* - Multiple theoretical perspectives	Quantitative (variance) - Regression analysis based on questionnaires	Different risk perceptions for exporting vs operating domestically	Exporting	Firm level factors, information on exporting, manager's characteristics, perceived risks and benefits of exporting
Kogut & Singh (JIBS 1988)	IB *macro* - Uppsala model	Quantitative (variance) - Regression analysis	No individual differences in risk-taking propensity	Entry mode choice (acquisitions, greenfield, joint venture)	Cultural distance between home and host country Uncertainty avoidance of the parent firm country
Hennart & Park (MS 1993)	IB *macro* - TCE - Theory of firm growth	Quantitative (variance) - Regression analysis	n/a	Entry mode choice (greenfield investment vs acquisitions)	Firm R&D intensity, international experience, diversified entry, firm diversification, investment in human resources, growth in the target market, concentration in the target industry, size of subsidiary relative to size of parent firm
McDougall & Oviatt (JBV 1994)	IE *micro* - Resource based view (RBV) of entrepreneurs	Conceptual	n/a	Firm being INV at inception	Entrepreneurs' ability to identify international opportunities
Sambharya (SMJ 1996)	IB *micro* - UET	Quantitative (variance) - Regression analysis	n/a	Foreign sales to total sales, Foreign assets to total assets	Mean number of years of international experience, share of TMT with international experience, heterogeneity in international experience
Reuber & Fischer (JIBS 1997)	IB *micro* - UET - RBV	Quantitative (variance) - Regression analysis	n/a	Use of foreign strategic partners, degree of internationalization	CEO international experience
Tihanyi et al., (JoM 2000)	Management/IB *micro* -UET	Quantitative (variance) - Regression analysis	Context dependent or derived from other individual characteristics.	International diversification; foreign sales over total sales and number of foreign countries	TMT age, tenure, elite education, international experience
Stewart & Roth (JAP 2001)	IE *micro* - Classic motivation theory	Quantitative - Meta-analysis	Managers and entrepreneurs differ within and between the two groups in their risk-taking propensity.	n/a	n/a
Herrmann & Datta (JIBS 2002)	IB *micro* - UET	Quantitative (variance) - Regression analysis	Context dependent or derived from other individual characteristics.	Full control (greenfield, acquisitions) vs shared control (JV, contractual agreements)	CEO tenure, educational level, international experience
Harzing (SMJ 2002)	IB *macro* - International strategy - Institutional theory	Quantitative (variance) - Regression analysis	n/a	Entry mode: acquisitions vs greenfield investment	Firm international strategy (global vs multi-domestic)
George et al., (JoM 2005)	IB *micro* -Internationalization theories i.e. OLI - AT	Quantitative (variance) - Regression analysis based on surveys	Risk averse managers and no individual differences in risk aversion.	Scale and scope of internationalization (export share, import share, etc.)	CEO ownership TMT ownership Institutional ownership
Herrmann& Datta (JMS 2006)	IB *micro* - UET	Quantitative (variance) - Regression analysis	Context dependent or derived from other individual characteristics.	Entry mode: greenfield vs acquisitions vs joint ventures	CEO age, firm experience, functional background, international experience

Study	Dominant theoretical lens	Methodological approach	Assumption on risk-taking	Dependent Variable (measure)	Independent Variables (measure)
Acedo & Jones (JWB 2007)	IE *micro*	Quantitative (variance) - SEM- Structural equation modeling	Context dependent and rooted within the context of firm internationalization	Speed of internationalization	Proactivity Tolerance for ambiguity International orientation
Buckley et al., (JIBS 2007)	IB *micro*	Quantitative (process) - Experimental design	No individual differences in risk-taking propensity.	-*Location* and *control* (ownership share) of the FDI	Mangers' international experience
Johanson & Vahlne (JIBS 2009)	IB *macro* -Uppsala model	Conceptual	Managers are risk averse and no individual differences in risk aversion.	Internationalization process	- Knowledge opportunities (Relationship commitment) - Network position
Musteen et al., (JIBS 2009)	IB *micro* - AT - Corporate Governance	Quantitative (variance) - Regression analysis	Managerial risk-taking as context dependent.	Entry mode choice (full control entry modes vs shared control modes)	Institutional ownership Director ownership CEO compensation
Jandik & Kali (JIBS 2009)	IB *macro* - RBV - Subjective performance evaluation model	Quantitative (variance) - US firms - Regression analysis	No individual differences in risk-taking propensity. Differences in the risks of internationalization emanating from country level characteristics.	Entry mode choice ((JV vs alliances) vs M&As)	Quality of legal system Quality of accounting system
Lin& Cheng (MD 2013)	IB *micro* - UET	Quantitative (variance) - Regression analysis	Cntext dependent or derived from other individual characteristics.	Foreign expansion pattern	Total CEO compensation Gap in compensation between CEO and TMT
Casillas & Moreno-Menéndez. (JIBS 2014)	IB *macro* - Uppsala	Quantitative (variance) Regression analysis	No individual differences in risk-taking propensity. Differences in risk taking behavior arising from firm level factors.	Speed of internationalization process	Experiential learning - Diversity & depth of experience
Kraus et al., (JBR 2015)	IB *macro* & *micro* - TCE, OLI, Uppsala model, Institutional theory	Quantitative (process) - Experiments	Managerial risk-taking as context dependent.	Risk perception	Market entry mode Cultural distance Geographic distance Economic distance Political distance
Maitland & Sammartino (JIBS 2015)	IB *micro*	Qualitative (process)	n/a	The mental model of the acquisition decision	Managers' experience *depth* in a given country, *breadth* across countries, *diversity* in the type of country contexts and prior *internationalization decision-making*
Buckley et al. (JIM 2016)	IB *macro* & *micro* - macro (OLI, institutional theory of country risk) - micro (behavioral theory)	Conceptual	Managerial risk-taking as context dependent.	FDI risk taking	Firm level factors Individual risk-taking propensity (context dependent)
Buckley et al., (JIBS 2018)	IB *micro* - Behavioral theory	Quantitative (variance) - Experimental design	Managerial risk-taking as context dependent.	Foreign location choice	Managers' satisfaction with domestic subnational experience Firm slack resource Latent class (relative) risk propensity
Kumar et al. (JIBS 2020)	IB *macro* - Springboard perspective	Quantitative (variance) - Regression analysis	No individual differences in risk-taking propensity. Differences in risk taking behavior arising from firm level factors.	Speed of first cross-border acquisition	Firm age Affiliated vs unaffiliated firms
Arikan et al., (SMJ 2020)	IB *macro* & *micro* International relations & strategic management - Institutional theory	Quantitative (variance) - Regression analysis	No individual differences in risk-taking propensity. Differences in the risks of internationalization emanating from country level characteristics.	Cross-border corporate deals: acquisitions, JV and alliances	Historical conflicts between countries, generations distance, education of the host country

Table IA 2: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Internationalization	1.00																		
(2) Cultural distance	0.02	1.00																	
	(0.72)																		
(3) Risk propensity	0.23	0.03	1.00																
	(0.00)	(0.01)																	
(4) Firm age	0.01	-0.03	0.02	1.00															
	(0.60)	(0.74)	(0.46)																
(5) Relative ROA	-0.03	0.12	0.05	0.02	1.00														
	(0.14)	(0.19)	(0.00)	(0.33)															
(6) R&D	0.07	0.06	-0.02	0.02	-0.11	1.00													
	(0.00)	(0.56)	(0.28)	(0.46)	(0.00)														
(7) ROA	-0.04	0.11	0.04	0.00	0.96	-0.14	1.00												
	(0.02)	(0.22)	(0.01)	(0.81)	(0.00)	(0.00)													
(8) Leverage	-0.13	-0.24	-0.04	-0.10	0.08	-0.10	0.12	1.00											
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)												
(9) PPE	0.17	0.06	-0.01	0.30	-0.10	0.28	-0.16	-0.37	1.00										
	(0.00)	(0.54)	(0.61)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)											
(10) CEO age	-0.01	-0.12	0.01	0.17	-0.02	-0.04	0.00	-0.07	0.20	1.00									
	(0.65)	(0.19)	(0.57)	(0.00)	(0.16)	(0.02)	(0.95)	(0.00)	(0.00)										
(11) Gender	-0.02	0.03	0.05	0.02	-0.03	-0.02	-0.02	-0.01	0.02	0.07	1.00								
	(0.38)	(0.79)	(0.01)	(0.31)	(0.05)	(0.37)	(0.33)	(0.62)	(0.24)	(0.00)									
(12) Married	0.04	0.13	0.00	0.07	-0.04	0.04	-0.04	-0.06	0.16	0.17	0.08	1.00							
	(0.02)	(0.16)	(0.96)	(0.00)	(0.02)	(0.03)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)								
(13) Education	0.03	0.00	-0.06	0.06	-0.07	0.13	-0.10	-0.19	0.29	0.09	-0.02	0.08	1.00						
	(0.08)	(0.99)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.17)	(0.00)							
(14) CEO tenure	0.01	-0.07	0.15	0.33	0.06	0.02	0.01	-0.08	0.10	0.23	0.07	0.04	-0.07	1.00					
	(0.76)	(0.44)	(0.00)	(0.00)	(0.00)	(0.25)	(0.67)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)						
(15) CEO compensation	0.16	0.11	0.20	0.17	0.03	0.12	-0.02	-0.20	0.43	0.09	0.01	0.12	0.16	0.09	1.00				
	(0.00)	(0.02)	(0.00)	(0.00)	(0.07)	(0.00)	(0.33)	(0.00)	(0.00)	(0.00)	(0.46)	(0.00)	(0.00)	(0.00)					
(16) CEO ownership	-0.08	-0.11	0.13	-0.06	0.14	-0.19	0.17	0.18	-0.29	0.05	0.05	-0.05	-0.32	0.24	-0.04	1.00			
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)	(0.00)	(0.00)	(0.02)				
(17) CEO int exp	0.30	0.04	0.51	-0.03	-0.02	0.00	-0.02	-0.02	-0.01	-0.05	0.02	0.02	0.07	-0.03	0.24	0.02	1.00		
	(0.00)	(0.08)	(0.00)	(0.17)	(0.22)	(0.81)	(0.25)	(0.23)	(0.50)	(0.00)	(0.18)	(0.20)	(0.00)	(0.09)	(0.00)	(0.31)			
(18) Firm int exp	0.14	0.01	-0.13	0.06	0.09	-0.18	0.11	0.26	0.20	0.06	0.02	-0.03	0.09	0.00	0.14	0.20	-0.09	1.00	
	(0.00)	(0.04)	(0.20)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.39)	(0.08)	(0.00)	(0.93)	(0.00)	(0.00)	(0.22)		
(19) CEO power	-0.06	-0.13	0.01	-0.06	0.06	-0.08	0.08	0.06	-0.07	0.01	-0.08	0.01	-0.17	0.08	0.01	0.30	0.08	0.27	1.00
	(0.02)	(0.22)	(0.73)	(0.02)	(0.02)	(0.00)	(0.00)	(0.01)	(0.00)	(0.73)	(0.00)	(0.65)	(0.00)	(0.00)	(0.81)	(0.00)	(0.00)	(0.00)	

Number of observations are 6323, except for data on firm international experience which is based on 5412 observations. Numbers in parentheses report the p-values.

Table IA 3 : Changes in internationalization within a firm following CEO turnovers

	(1)	(2)	(3)
Dependent variable:	Internationalization (H1)	Internationalization Vehicle: acquisition versus alliance (H2)	Internationalization Venue: cultural distant countries (H3)
CEO risk propensity	**0.048**	**0.735**	**0.126**
	(0.005)	**(0.041)**	**(0.008)**
Control variables	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Observations	6323	6323	6323

P-values are reported in parentheses.

Table IA 4: CEO risk propensity and internationalization: Propensity Score Matching

Dependent Variable: Internationalization				
Matching Method	Treated (High risk CEO)	Controls (Low risk CEO)	Difference	P-value
1:1 Maching without replacement	0.36	0.24	0.12	0.00
1:1 Maching with replacement	0.36	0.23	0.13	0.00
Nearest neighbor (n=2)	0.36	0.23	0.13	0.00
Nearest neighbor (n=3)	0.36	0.25	0.11	0.00

Table IA 5: CEO risk propensity and internationalization: Instrumental variable regressions

	(1)	(2)
	First stage	2nd stage
Dependent Var:	CEO risk propensity	Internationalization
CEO risk propensity		**0.076**
		(0.020)
Risk propensity of CEO family	**0.610**	
	(0.000)	
Log assets	0.019	0.005
	(0.075)	(0.461)
Company age	-0.007	-0.008
	(0.422)	(0.111)
Relative ROA	-0.371	-0.050
	(0.013)	(0.584)
Log R&D	0.000	0.000
	(0.983)	(0.601)
ROA	0.004	0.000
	(0.010)	(0.735)
Leverage	-0.059	-0.069
	(0.072)	(0.001)
Log PPE	-0.020	0.008
	(0.010)	(0.106)
CEO age	-0.001	-0.001
	(0.181)	(0.326)
CEO gender	0.146	-0.037
	(0.009)	(0.282)
CEO married	-0.012	0.016
	(0.502)	(0.144)
CEO education	0.002	-0.009
	(0.812)	(0.116)
CEO tenure	0.005	-0.002
	(0.012)	(0.188)
CEO compensation	0.041	0.006
	(0.000)	(0.243)
CEO ownership	0.171	-0.013
	(0.000)	(0.580)
International experience	-0.082	0.012
	(0.001)	(0.440)
Observations	5846	5846
R-squared	0.282	0.045

Table IA 6: CEO risk propensity and internationalization, including greenfield investments

Dependent Var:	Internationalization (acq., alli, and greenfield)
CEO risk propensity	**0.095**
	(0.000)
Log assets	-0.012
	(0.331)
Company age	-0.008
	(0.380)
Relative ROA	-0.740
	(0.000)
Log R&D	0.001
	(0.218)
ROA	0.008
	(0.000)
Leverage	-0.028
	(0.452)
Log PPE	0.010
	(0.267)
CEO age	0.001
	(0.380)
CEO gender	0.028
	(0.652)
CEO married	0.004
	(0.854)
CEO education	-0.009
	(0.390)
CEO tenure	0.000
	(0.916)
CEO compensation	0.015
	(0.157)
CEO ownership	-0.027
	(0.509)
CEO International experience	0.049
	(0.086)
Observations	6175
R-squared	0.07

Table IA 7 : CEO risk propensity and internationalization: A composite risk propensity index

	(1)	(2)	(3)
Dependent variable:	Internationalization (H1)	Internationalization Venue: cultural distant countries (H2)	Internationalization Vehicle: acquisition versus alliance (H3)
CEO risk propensity index	**0.014**	**0.102**	**0.231**
	(0.002)	**(0.003)**	**(0.042)**
Control variables	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	6323	6323	6323

P-values are reported in parentheses.