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## On Cultural and Macroeconomic Contingencies of The Entrepreneurial Orientation-Performance Relationship

Saadat Saeed, Shumaila Yousafzai, Andreas Engelen

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**Abstract.** *The relationship between entrepreneurial orientation (EO) and firm performance is among the best-researched topics in entrepreneurship research. These studies have been conducted in various national contexts. While a first meta-analysis by Rauch et al. finds no significant difference between EO's effects based on the continent in which the firm is based, the present study considers how national cultural and macroeconomic drivers impact the EO-performance relationship. Building upon 177 studies with data from 41 countries, the meta-analysis consolidates this literature stream, contributing to the evidence-based entrepreneurship research.*

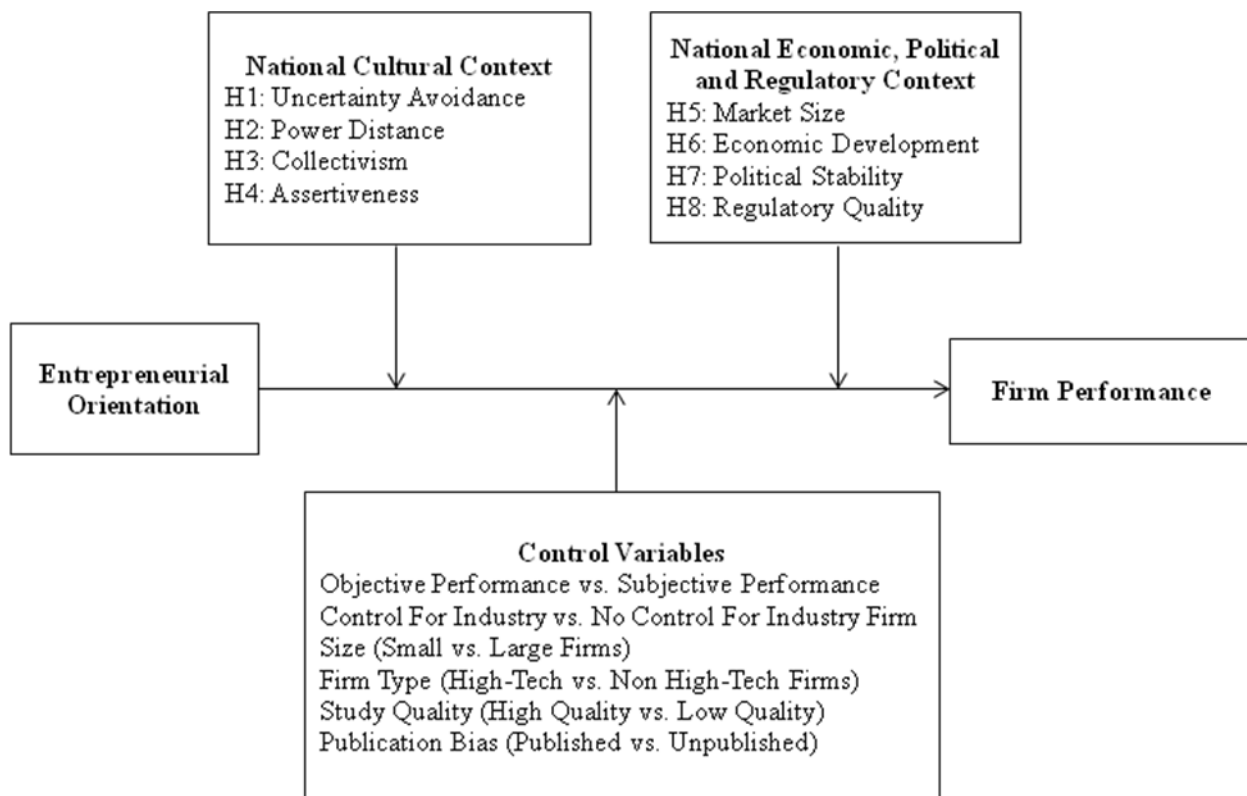
Entrepreneurial orientation (EO), typically encompassing an innovativeness, proactiveness, and risk-taking dimension, was introduced three decades ago to measure the degree of entrepreneurial behavior in strategy making (Miller, 1983). Since then, a significant number of empirical studies have examined the EO-performance relationship. While most studies find a positive performance relationship, the strength of this relationship varies significantly across various studies and contexts (Wales, Gupta, & Moussa, 2012). Based on these studies, Rauch, Wiklund, Lumpkin, and Frese (2009) conducted the first meta-analysis on the EO-performance relationship ( $k = 51$ ;  $N = 14,259$ ;  $\bar{r}_c = .242$ ) and found that firm size and industry adherence were major moderators of the EO-performance relationship. However, considerable variance across studies remained in their meta-analysis, so further examination of the possible determinants of the EO-performance relationship is warranted.

The present study complements Rauch et al. (2009), as it conducts a meta-analysis to determine whether national-level factors impact the EO-performance relationship. This determination would be a promising development in EO research since there is theoretical reasoning that institutions at the national level impact the effectiveness of strategic postures (Scott, 2001; Burgess & Steenkamp, 2006). This reasoning suggests that some of the unexplained variance in Rauch et al.'s (2009) meta-analysis might be explained by national-level factors. The first step in Rauch et al.'s (2009) meta-analysis was an examination of geographic regions—in their case, continents—as moderators of the EO-performance relationship. The authors found no moderating effect, perhaps because there is a need for a more detailed analysis since there are multiple, possibly independent national-level institutional factors that impact EO's effectiveness. An aggregation of countries, with all their divergent characteristics, may hide their differences.

More concretely, institutional theory argues that informal institutions like national culture, and formal institutions like economic, political, and regulatory environments determine the context in which strategic postures are implemented (Hoskisson, Eden, Lau, & Wight, 2000; Bruton, Ahlstrom, & Li, 2010).

To address this research gap the present study conducts a meta-analysis that extends Rauch et al.'s (2009) database from 51 studies linking EO and performance from 14 countries to 177 studies from 41 countries. The increased number of countries is a result of recent quantitative studies on EO's performance consequences that have been conducted in additional national contexts. In particular, our meta-analysis includes more studies from outside the US and Europe than Rauch et al.'s (2009) study does, increasing the cross-national heterogeneity of our database. To get a comprehensive picture of which national-level contextual factors impact the EO-performance relationship, we investigate how four major national cultural dimensions from cross-cultural psychology literature (House, Javidan, & Dorfman, 2001)—uncertainty avoidance, power distance, collectivism, and assertiveness—as informal elements of national institutions, impact the EO-performance relationship. Our study also examines the economic, political, and regulatory environments as formal factors in order to clarify their influence on the EO-performance relationship. Figure 1 depicts the research framework of our meta-analysis.

Figure 1. Research Model for meta-regression analysis



This study contributes to EO research in several ways. First, it consolidates the existing research on EO's performance consequences that has been conducted in various countries (Wales et al., 2012). To date, it has been possible to compare the strength of coefficients across studies in various countries only by "visual inspection," rather than through statistical inferences to determine whether significant differences exist.

Second, the present study shows which national-level factors moderate the EO-performance relationship, taking national cultural dimensions and economic, political, and regulatory factors into account. Comparing geographic entities like countries or continents may not be detailed enough since there are multiple relevant nation-level characteristics that should be taken into account (Tsui, Nifadkar, & Ou, 2007).

Third, this meta-analysis contributes to the evidence-based approach in empirical entrepreneurship research. Good evidence is given when empirical relationships are based on several studies and several observations, rather than on just one study and one observation (Frese, Bausch, Schmidt, Rauch, & Kabst, 2012). Such evidence-based research may be particularly important for EO research since existing empirical studies on EO's performance consequences tend to be heterogeneous, especially in terms of the national settings in which the EO-performance relationship has been examined (Wales et al., 2012). Our meta-analysis provides decision makers with recommendations on the aggregate strength of the EO-performance relationship and on the national-level contingency factors of this relationship.

The paper is organized as follows. First, we lay out the theoretical foundations and derive the moderating hypotheses. Next, we describe our methodology. Then we present the results of the meta-analysis. Finally, we discuss our findings, the implications of our study and identify gaps that can be addressed in future research.

## **THEORETICAL BACKGROUND AND HYPOTHESES**

### **EO, Firm Performance, and National Dependency of the Performance Effects**

Since EO's origins in strategic-choice theory (Child, 1972), a large body of research has contributed to the development of the EO posture such that it is now understood to comprise all "processes, practices, and decision-making activities that lead to new entry" (Lumpkin & Dess, 1996; p. 136). In most cases, in line with Miller's (1983) seminal work on the topic, EO has been conceptualized along three sub-dimensions: innovativeness, proactiveness, and risk-taking. A unidimensional view of these sub-dimensions dominates since extant research has shown that they tend to correlate positively and strongly (Wales et al., 2012). Innovativeness refers to a willingness to depart from proven practices, while proactiveness means "taking initiative by anticipating and pursuing new opportunities" (Lumpkin & Dess, 1996; p. 146). Risk-taking is associated with significant debt and commitments of resources (Lumpkin & Dess, 1996). In 1996, Lumpkin and Dess added two sub-dimensions, autonomy and aggressiveness. Aggressiveness refers to a firm's endeavors to outperform industry rivals, while they define autonomy as "independent action (...) aimed at bringing forth a business concept or vision and carrying it out to completion" (Lumpkin & Dess, 2001; p. 431).

A large body of research in EO literature has been dedicated to the question concerning how EO improves firm performance. Entrepreneurial organizations have the ability to be the first to market a new product that matches changed customer preferences and to use this first-mover advantage to translate their actions into superior performance (Lumpkin & Dess, 1996). Building

upon these conceptual arguments, most of the studies in a large body of quantitative research conducted in various industry and national contexts have confirmed the positive performance consequences of EO (e.g., Wiklund & Shepherd, 2005). However, extant research also indicates that the strength of the EO-performance relationship depends on contextual moderators. In an effort to clarify the EO-performance relationship, we seek to determine the extent to which this relationship depends on moderators at the national level.

The national level appears to be particularly promising as a determinant of the EO-performance relationship. Extant research has almost exclusively examined the performance consequences individually in single-country settings, such as in the US (e.g., Covin, Green, & Slevin, 2006), in European countries (e.g., Wiklund & Shepherd, 2005) or in Asian countries (e.g., Tang, Tang, Marino, Zhang, & Li, 2008). Some of these studies are even motivated by their assumption that the EO-performance relationship is special in a particular context (e.g., EO study from Tang et al., 2008 in China). Another reason that the national level appears to be promising as a determinant of this important relationship is that the meta-analysis from Rauch et al. (2009) finds no significant differences in the EO-performance relationship among four continents (the US, Europe, Asia and Australia). The aggregation of countries into these groups may have hidden differences between countries since research in the international business area has shown that various factors at the nation level which are important to understand the EO-performance relationship fully (Burgess & Steenkamp, 2006). Therefore, a deeper examination of the national-level factors that may drive the EO-performance relationship is called for.

To detect the relevant national-level factors, we take an institutional perspective, which has often been employed to investigate the prevalence and effectiveness of various types of strategies across national contexts (e.g., Hoskisson, Eden, Lau, & Wight, 2000; Bruton, Ahlstrom, & Li, 2010). The institutional perspective assumes that there are informal institutions (national cultural dimensions) and formal institutions (the economic, regulatory, and political environment) at the national level that determine the “rules of the game” in strategy implementation (North, 1991; Peng, Wang, & Jiang, 2008). While the institutional theory is our umbrella perspective which informs us about relevant drivers at the national level, we integrate insights from cross-cultural psychology to investigate the informal institutions. We follow Roberts and Greenwood (1997) and Brouthers (2002) in arguing that the performance impact of a strategic orientation like EO is strongest when strategic choices fit well with institutional variables. In the following, we explain how the informal and formal institutional factors impact the EO-performance relationship.

## **Contextual Moderators of the EO-Performance Relationship**

*National Cultural Context.* Culture is the “collective programming of the human mind that distinguishes the members of one group from those of another” (Hofstede, 1981; p. 24). Extant research indicates that nations typically have homogeneous cultures, whereas cultures between nations tend to be heterogeneous, making nations a suitable criteria for examining cultures (Minkov & Hofstede, 2012). Cross-cultural psychology literature provides national cultural dimensions along which differences between national cultures can be examined. National-cultural dimensions relate to problems all cultures confront, although they deal with and react to them in different ways (Lytle, Brett, Barsness, Tinsley, & Janssens, 1995).

We argue that national cultural differences impact the EO-performance relationship in two major ways. First, among others, differences in national cultural dimensions impact behavior of

buyers in markets such that buyers in national culture A could be more likely to buy products from entrepreneurial firms than are buyers in culture B, improving the performance consequences of EO in culture A over those in culture B (Cano, Carrillat, & Jaramillo, 2004). Second, differences in national cultural dimensions lead to different practices of individuals in firms, so they can influence the effectiveness with which a strategic posture like EO is implemented (Kirca, Jayachandran, & Bearden, 2005). Cross-cultural research has generally found that the strength of management levers' effects on desired outcomes increases when these levers fit with the national culture because individuals feel comfortable with the management lever and act accordingly (e.g., Lachman, Nedd, & Hinings, 1994; Newman & Nollen, 1996).

Following Rauch, Frese, Wang, and Unger (2010), we examine the cultural dimensions of uncertainty avoidance, (in-group) collectivism, power distance, and assertiveness, the first three of which stem from Hofstede's (2001) original set of dimensions, have been examined in the more recent GLOBE study (House, Javidan, & Dorfman, 2001), and have been related to entrepreneurship and innovation in extant research (e.g., Hayton, George, & Zahra, 2002; Mueller & Thomas, 2001). We also include assertiveness, a dimension uniquely examined in the GLOBE study, as it encompasses elements of aggressiveness that have been associated with strategic behavior in markets (Rauch et al., 2010).

Uncertainty avoidance refers to the ease with which people deal with situations that they perceive as ambiguous, unknown, unstructured, and unpredictable (Hofstede, 2001). According to cross-cultural psychology literature, individuals in countries characterized by high uncertainty avoidance avoid risks and prefer structure and regulations (Luque & Javidan, 2004). We expect buyers in countries with high uncertainty avoidance to be less likely than those in other countries to adopt the innovative products entrepreneurial firms are likely to offer since these buyers tend to focus on the risks associated with these products (van Everdingen & Waarts, 2003). Since such buyers stick with established products, the performance potential of innovative products brought to the marketplace by entrepreneurial firms ahead of competition is reduced. The resistance against switching among suppliers is also higher in countries characterized by high uncertainty avoidance, so an entrepreneurial firm that brings a novel product or service to the marketplace is less likely to win buyers from competitors that offer less innovative products.

Clearly, there are more obstacles to implementing an entrepreneurial strategy in countries characterized by high uncertainty avoidance than in countries characterized by low uncertainty avoidance. Firms in settings characterized by high uncertainty avoidance tend to have high levels of internal formalization and bureaucracy (Luque & Javidan, 2004), rendering flexible implementation and commercialization of EO, which often encompasses trial and error, less effective (Covin et al., 2006). Furthermore, extant research argues that individual champions (i.e., individuals who push and implement entrepreneurial ideas) are more likely and more effective in countries with low uncertainty avoidance since high uncertainty avoidance imposes strict rules and regulations on individual behavior, which inhibits EO's implementation (Shane, 1994). Further, risky ideas from individual champions are more likely in low-uncertainty-avoidant national cultures to be smoothly implemented and commercialized by top management and other employees.

Overall, both market-related and implementation-related factors suggest that the relationship between EO and firm performance is stronger when uncertainty avoidance is low than when it is high. Therefore:

*H1: The EO–performance relationship is stronger in national cultures characterized by low uncertainty avoidance than in those characterized by high uncertainty avoidance.*

The second cultural dimension we examine is power distance, which refers to the degree to which individuals in firms accept and expect that power is unequally distributed (Hofstede, 2001). High-power-distant cultures are characterized by centralization, authority, dominance of formal rules and little sharing of information between different functional departments. Van Everdingen and Waarts (2003) theoretically argue and empirically validate that these cultures have rather low rates of adopting new innovative product ideas since top management typically does not identify operational problems and will therefore rarely pursue the introduction of new innovative solutions brought proactively to the market by entrepreneurial firms. Subordinates in these high power distant cultures, on the other hand, do not take initiative to push the introduction of new innovative solutions (Hofstede, 2001). In a similar vein, Singh (2006) finds a negative relationship between power distance and innovation adoption in the consumer context. This situation reduces the performance potential of innovative product entrepreneurial firms offer ahead of competition in cultures high on power distance. In low power distance cultures, subordinates are more likely to report about and to be heard about operational problems (Carl, Gupta, & Javidan, 2004) which results in stronger adoptions of innovative products, increasing the EO-performance relationship.

While market adoption of innovative products is less strong in high power distance cultures, we also argue that the timely and effective implementation and commercialization of entrepreneurial ideas is inhibited in these cultures. In the course of EO's implementation, Covin et al. (2006) argue, the firm must have the strategic reactivity and responsiveness that is required to react to the new circumstances that often occur in uncertain entrepreneurial contexts. Since EO is a firm-wide phenomenon (Wales, Monsen, & McKelvie, 2011), pronounced reactivity and responsiveness is likely to be possible only when rank-and-file employees have at least a minimum level of flexibility in making decisions, which flexibility is likely in countries characterized by low power distance. Furthermore, the hierarchical structures in high-power-distant cultures typically inhibit the communication between functions, such as that between marketing and R&D, that is important for the effective implementation and commercialization of a given degree of EO (De Clercq, Dimov, & Thongpapanl, 2010). Overall, then, we argue that:

*H2: The EO–performance relationship is stronger in low-power-distant national cultures than in high-power-distant national cultures.*

The degree of in-group collectivism refers to the extent to which collective action, cohesiveness, and the collective distribution of resources is appreciated and to which extent individuals assume they are interdependent with the organization (Gelfand, Bhawuk, Nishii, & Bechthold, 2004; Triandis, 1995). According to cross-cultural psychology literature, cultures that are characterized by collectivism have a “we” mentality, while individualism fosters an “I” mentality (Hofstede, 2001). We argue that potential customers in individualistic cultures are more open to adopting innovative products which increases the performance potential for entrepreneurial firms (Steenkamp, Hofstede, & Wedel, 1999). For collectivistic cultures, van Everdingen and Waarts (2003) argue that innovative products are, if at all, invested in or purchased in a delayed manner due to complicated collective decision making, all of which limits

EO's performance impact. Further, in contrast to individualistic cultures, collectivists make a sharp differentiation between in-groups and out-groups (Triandis, 1994) which may lead to ignorance of or skepticism toward innovations and proactive market introductions from out-groups which entrepreneurial firms often are.

However, collectivism provides more beneficial environments for EO's effective implementation than individualism does. Collectivistic cultures support collaboration and the subordination of personal preferences in the organization (Nakata & Sivakumar, 2001), thereby facilitating the effectiveness of EO's commercialization as a strategic posture implemented by the entire firm (De Clercq et al., 2010). The coordinated timely implementation and commercialization is particularly important to reap the full performance potential from first mover advantages, entrepreneurial firms intend to achieve (Covin et al., 2006).

It follows that we have opposing arguments for whether the EO-performance relationship is stronger in individualistic or collectivistic cultures. We argue that the positive effect of collectivism on the effective and timely implementation outweighs weaker market reaction in these cultures since extant EO research shows that entrepreneurial firms, which are inherently proactive, are likely to suffer strongly when there are internal obstacles to timely implementation (De Clercq et al., 2010; Covin et al., 2006). Further, empirical evidence from related research on the innovation-performance relationship in different cultures suggests that collectivistic cultures offer beneficial settings for reaping innovation's full effects (Rauch et al., 2010; Rosenbusch, Brinckmann, & Bausch, 2011). Therefore, we state:

*H3: The EO-performance relationship is stronger in collectivist national cultures than in individualist national cultures.*

Finally, we examine the national cultural dimension of assertiveness, which the GLOBE study (Hartog, 2004) introduced to refer to the extent to which individuals are assertive, confrontational, and aggressive. In assertive cultures, business relationships are based on economic calculations, a factor that can become a problem when the economic value of new products from entrepreneurially oriented firms cannot be evaluated completely, preventing potential customers in assertive cultures from taking these products into consideration. In cultures with low levels of assertiveness, trust in business relationships plays a major role, which can increase the acceptance of novel products or services (Hartog, 2004).

Firms in assertive cultures have more internal competition and conflicts than do those in non-assertive cultures; meetings often become lengthy and end in "war games" (Hartog, 2004; p. 425), which can inhibit EO's timely implementation, thereby reducing its performance effects. Conflicts may lead to a "turf-protection" attitude that prevents entrepreneurial ideas from other functional departments from being assessed objectively. Organizations in less assertive cultures tend to value and pursue cooperation (Hartog, 2004), which strengthens EO's effect since EO is a firm-wide phenomenon that depends on collaboration between functional departments (Covin & Slevin, 1991). Further, trust, which is more pronounced in cultures with low levels of assertiveness than in those with high levels of assertiveness, making access to resources, combining resources, and open information exchanges between functions easier and facilitating the joint implementation and commercialization of EO (De Clercq et al., 2010; Mueller, Rosenbusch, & Bausch, 2013). Therefore, both market-related and implementation-related arguments suggest:



*H4: The EO–performance relationship is stronger in national cultures characterized by low levels of assertiveness than in those characterized by high levels of assertiveness.*

***The Economic, Political, and Regulatory Context.*** Beyond the national-cultural dimensions, we examine economic, political, and regulatory factors at the national level as formal institutional macroeconomic characteristics (Busenitz, Gomez, & Spencer, 2000). The four national-level factors we examine—the size of the country’s domestic market (e.g., Ellis, 2006), the country’s stage of economic development (e.g., Cano et al., 2004), and the country’s political stability, and the country’s regulatory quality (e.g., Ellis, 2006)—have been employed in previous meta-analyses that studied the effect of other types of strategies, such as market orientation, in various countries.

We argue that the effect of the EO-performance relationship depends on the size of the home market. Large home markets expose firms to more diverse types of customers, increasing the likelihood that entrepreneurial firms will find customers who are open to innovative ideas brought to the market (Ellis, 2006). In small markets, however, entrepreneurial firms may be less successful since the target group may be restricted, limiting the potential return from investments in resource-intensive entrepreneurial activities (Covin & Slevin, 1991). Further, in small home markets, entrepreneurial firms must internationalize early to be successful on a large scale. The international business literature indicates that internationalization is associated with transaction costs, such as search, negotiation, and contracting costs, which are particularly high because of the internationalizing firm’s typical lack of knowledge about conditions in the host country (Brouthers, 2002; Brouthers & Nakos, 2004). As a result, language barriers and unknown cultural properties might lengthen product or service introductions, inhibiting EO’s performance potential (Meyer, 2001). In addition, product or services from entrepreneurially oriented firms might need adaptations to meet the host country’s needs and requirements, further inhibiting timely introductions (Katsikeas, Samiee, & Theodosiou, 2006). Therefore:

*H5: The EO-performance relationship is stronger in countries with large home markets than in those with small home markets.*

Economies differ in terms of their stage of development such that developed economies typically have stable demand and intense competition, while developing economies feature uncertain demand, dynamic market trends, and rapid growth (Burgess & Steenkamp, 2006; Gu, Hung, & Tse, 2008). These dynamic environments provide ample new opportunities for entrepreneurial firms, in terms of both the number and the quality of opportunities, so the performance effect of EO is also strong (Rauch et al., 2009). Since developed nations are characterized by stable demand and certainty, fewer opportunities arise, as saturated customers tend to stay with their existing circumstances, often blocking entrepreneurial firms’ innovative and risky product ideas (Burgess & Steenkamp, 2006). Competition is also typically less intense in developing countries, so the time span in which an entrepreneurial firm can profit from its first-mover advantages tends to be longer than it is in more competitive developed environments (Burgess & Steenkamp, 2006). Entrepreneurially oriented firms face more competition in developed environments, so the opportunity for a unique or novel product or service is generally limited or at least endangered early. Therefore:

*H6: The EO-performance relationship is stronger in developing economies than in developed economies.*

Next, we examine the extent to which political stability influences the EO-performance relationship. Political stability refers to a situation in which the government is unlikely to be destabilized by unconventional means (Kaufmann, Kraay, & Mastruzzi, 2010). In countries with strong political stability, firms can be reasonably sure of minimal political turmoil. We argue that the EO-performance relationship is stronger when political stability is high, as entrepreneurially oriented firms that bring new innovations to the marketplace depend on stable political situations that minimize the risk of losing property rights on ideas or the monetary benefit generated by entrepreneurial ideas (Wright, Filatotchev, Hoskisson, & Peng, 2005). In unstable political environments, expropriation may put the returns from entrepreneurial activities at risk. In addition, firms that rely on EO, which is inherently a resource-intensive strategy, need ample resources, such as financial capital, human capital, and raw materials (Wiklund & Shepherd, 2005), to implement the EO strategy, but reliable access to such resources can be problematic in countries with political instability, where more “informal” ways of assigning resources often dominate (Peng, 2001; Tang et al., 2008). Therefore:

*H7: The EO-performance relationship is stronger when the level of political stability is high than when it is low.*

Finally, we examine the regulatory quality at the country level as a moderator of the EO-performance relationship. Regulatory quality refers to the degree to which a government promotes policies that allow smooth development of the private sector (Kaufmann, Kraay, & Mastruzzi, 2010). High regulatory quality ensures the development and maintenance of a private sector in which the benefits from entrepreneurial activities accrue to the firms that undertake them such that entrepreneurial firms receive the monetary and other benefits from their endeavors. In countries with poor regulatory quality, the government does not provide regulations that ensure that the benefits of entrepreneurial activities accrue to the firms that undertake them; for example, ideas are not protected by patents (Khanna & Palepu, 1997). Where there is low regulatory quality, it is likely that benefits from entrepreneurial activities will be “socialized” to a large extent, inhibiting the performance effect of EO and limiting the development of the private sector. Therefore:

*H8: The EO-performance relationship is stronger when the level of regulatory quality is high than when it is low.*

## METHODS

### Literature Search and Selection Strategy

We conducted a comprehensive search for studies published before May 2013 in ABI/INFORM, PsycINFO, EBSCO (Business Source Elite), EconLit, ERIC (Expanded Academic Index), JSTOR Databases, Science Direct, and Wilson Business Abstracts using variations of keywords of EO (e.g., entrepreneurial orientation, entrepreneurial behavior, strategic orientation, strategic posture, corporate entrepreneurship) and performance (e.g., performance, growth, profit, ROI, ROE, ROA, and ROS). Then we manually searched relevant journals, including *Entrepreneurship Theory and Practice*, *Journal of Business Venturing*, *Strategic Management*

*Journal, Journal of Small Business Management, Academy of Management Journal, Journal of Applied Psychology, Administrative Science Quarterly, and the Entrepreneurship and Regional Development.* Finally, we examined the reference lists from the studies identified for additional studies. We used the following selection criteria to frame the scope of our study:

- (1) Studies had to assess the performance effect of EO at the organizational level;
- (2) EO had to address the strategy-making process at the organizational level, so studies that test individual-level entrepreneurship were excluded;
- (3) We included only studies that used either the Miller (1983) or the Covin and Slevin (1989) measurement instruments to operationalize the EO construct and those that developed refined and extended alternatives to these scales, such as the two sub-dimensions of autonomy and aggressiveness from Lumpkin and Dess (1996);
- (4) We did not consider qualitative research. To be included in the meta-analysis, the study had to report the Pearson correlation coefficient for the specified relationship or provide sufficient statistical information that allowed us to compute a correlation coefficient with the formulas provided by Hunter and Schmidt (1990) (e.g.,  $r$ , univariate  $F$ ,  $t$ ,  $\chi^2$ ).

On completion of our search process in May 2013, our database consisted of 177 studies, each representing an independent sample ( $N=47,140$ ), so we had a strong empirical base for a meta-analysis (Brinckmann, Grichnik, & Kapsa, 2010; Read, Song, & Smit, 2009). Twenty-six of the studies in our sample reported two or more performance measures. In these cases we estimated the average of the effect sizes for the meta-regression and the bivariate analysis, except when we compared different performance measures in the bivariate analysis (Unger et al., 2011; Ellis, 2006; Rauch et al., 2009). We could not assign all studies country classifications since 11 studies either did not report the country origin of their data or built on a sample that included more than one country without reporting the effects individually. This issue reduced the number of studies to a maximum of 166 for our cross-national analyses.

Sample sizes range from 25 (Fairoz, Hirobumi, & Tanaka, 2010) to 3,562 (Chow, 2006), and effect sizes range from  $r = -.25$  (Soininen, Martikainen, Puumalainen, & Kylaheiko, 2012) to  $r = .53$  (Galetić & Milovanović, 2008). Table 1 provides a list of studies included in the meta-analysis indicates. A complete bibliography is available from the authors.

*Insert Table 1 Here*

## **Coding**

We prepared a coding manual that was developed and iteratively revised to incorporate details of the studies included in the analysis to reduce coding errors (Lipsey & Wilson, 2001; Stock, 1994). The first author and one non-author initially coded all the studies, resolving differences in coding by consensus. The main data items extracted from the studies were the methodological factors (e.g., sample size, EO measures, performance measures) and statistics necessary for calculating effect sizes (e.g., Pearson's correlation coefficient). An inter-rater reliability analysis using an intraclass correlation coefficient (ICC) statistic (two-way-mixed model, absolute agreement) to determine consistency among raters (McGraw & Wong, 1996; Shrout & Fleiss, 1979) revealed that  $ICC=.95$  (95% CI .91–.99), which is considered to be high (Perreault & Leigh, 1999).

***Independent variable – EO.*** Although there has been debate about the dimensionality of the EO construct (Lumpkin & Dess, 1996), the majority of studies in the EO domain have conceptualized EO as a unidimensional construct (Covin et al., 2006; Rauch et al., 2009). Moreover, the high inter-correlation among the three most commonly used sub-dimensions of

EO—innovativeness, risk-taking, and proactiveness—is consistent with Miller’s (1983) unidimensional conceptualization of firm-level entrepreneurship. In our database of 177 studies, 133 studies operationalize EO as a unidimensional construct and 35 as a multidimensional construct, while 9 studies employ both. We also noticed that EO was measured using a variety of combinations: innovativeness, risk-taking, and proactiveness (116 studies); innovativeness and risk-taking (13 studies); risk-taking and proactiveness (8 studies); innovativeness, risk-taking, proactiveness, competitive aggressiveness, and autonomy (5 studies). Several other combinations are used once (i.e., risk-taking, proactiveness and competitive aggressiveness; innovativeness and proactiveness etc). We coded an overall value of EO for each study.

***Dependent variable – performance.*** First, we differentiated between growth and profitability performance measures (“performance scope”). Further, as Rosenbusch, Rauch, and Bausch (2013) and Kirca et al. (2005) do, we added the category of “overall business performance” since some studies in the EO literature employ composite performance scores of facets of performance. Table 2 indicates the performance measures that were subsumed under the three categories; 26 studies report more than one of these performance measures. We employed these performance measures only in the bivariate analysis, since we needed to build the mean effect size per study for the meta-regression, and in these cases a clear classification into one of the three categories is no longer possible or would substantially reduce the number of studies. (See also Brinckmann, Grichnik, & Kapsa, 2010.)

*Insert Table 2 Here*

Further, we differentiated between subjective and objective performance measures as performance types (Cano, Carrillat, & Jaramillo, 2004; Brinckmann et al., 2010; Mueller et al., 2013), speaking of subjective performance (coded as 0 in the meta-regression) when respondents in the firm were asked to assess their performance relative to competition or their own plans. Objective performance measures (coded as 1) refer to reports from respondents on absolute values of performance or secondary data sources are used (Harris, 2001). Seven studies could not be classified clearly as covering either subjective or objective measures since they used both. These studies were left out of the meta-regression analysis, but they were considered twice in the bivariate analysis.

***Moderator variables.***

***National cultural context.*** While national cultural dimensions are typically empirically captured by Hofstede’s (2001) scores which have been initially employed for a consulting project, the more recent GLOBE study provides measures developed in the literature and theory-driven by a global team of researchers (Javidan et al., 2006). Moreover, the GLOBE study offers more recent classifications of 62 countries. For these reasons, we chose the GLOBE scores for measuring uncertainty avoidance, power distance, (in-group) collectivism, and assertiveness at the country level in the 166 from our 177 studies which report the sample’s national background (House, Hanges, Javidan, Dorfman, & Gupta, 2004). The GLOBE study measures cultural dimensions from two perspectives: “should be,” society members’ values regarding what should be the practices in their society, and “as is,” society members’ perceptions of current practices. We used the “as is” perspective for the bivariate and meta-regression analysis. Country classifications for each study are presented in Table 1.

Although most of the countries in our sample of EO studies match the country classification included in the GLOBE study, there are slight differences in five cases. First, the GLOBE study includes separate scores for the former East Germany and the former West Germany. When there was no information on whether a study in our sample was limited to the former East or West Germany, we estimated a single weighted average measure for Germany by taking into account the population in each subgroup. Second, the GLOBE scores for South Africa include scores derived from a “black sample” and a “white sample.” We estimated a single weighted average score by taking into account the population in each subgroup. Third, the GLOBE study includes separate measures for the French-speaking and German-speaking populations of Switzerland, while we estimated a single weighted average measure by taking the average of the subgroups, but only when the study does not provide information on the concrete setting in Switzerland. Fourth, the GLOBE study measures the culture of England but not the other countries in the United Kingdom, so we used England’s score for the other UK countries. Fifth, the GLOBE study provides no data for Bangladesh, Belgium, Sri-Lanka, Iran, Norway, Pakistan, Vietnam, Ghana, Croatia, or Oman, so we used the scores of neighboring countries as GLOBE scores for these countries.

*Macroeconomic factors.* We operationalized market size through the Global Competiveness Index, which is the sum of domestic and foreign market size. Domestic market size is constructed by adding the natural log of the sum of the gross domestic product valued at Purchasing Power Parity (PPP) to the total value (PPP estimates) of imports of goods and services, minus the total value (PPP estimates) of exports of goods and services. Data are then normalized on a 1-to-7 (small to large) scale. Foreign market size is estimated as the natural log of the total value (PPP estimates) of exports of goods and services, normalized on a 1-to-7 scale. We preferred this method to other methods of calculating market size that are based on GNI and GDP (e.g., Cano et al., 2004; Ellis, 2006) because other methods are less accurate in representing the market size. (For example, on the basis of GNI data, Hong Kong, Malaysia, and Africa would be considered small markets in comparison to Austria, Norway, and Sweden’s large markets.) Therefore, considering domestic and foreign market sizes provided a more effective measure of market size. For each country, we calculated an average of the last 25 years, the period in which the empirical research on EO was conducted, and ranked all relevant countries along these averages.

We followed Unger, Rauch, Frese, and Rosenbusch’s (2011) method for categorizing countries into developed (coded as 1 in meta-regression) and developing categories (coded as 0) based on whether a country received development assistance and aid in 2003 (Manning, 2005).

To operationalize political and regulatory stability, we used the Worldwide Governance Indicators (WGI) data developed by the World Bank (Kaufmann, Kraay, & Mastruzzi, 2010). The WGI, which are based on one of the largest compilations of cross-country data on governance, consist of six variables: voice and accountability, political stability and absence of violence, political and government effectiveness, regulatory quality, rule of law, and control of corruption. Among these six variables, we employed the two that are most closely associated with our understanding of the moderating variables. Political stability refers to “the likelihood that the government will be destabilized by unconstitutional or violent means, including terrorism” (Kaufmann et al., 2010; p. 4), while regulatory quality refers to “the government’s ability to formulate and implement sound policies and regulations that permit and promote private sector development” (Kaufmann et al., 2010; p. 4). We calculated the average of these values for each country for the relevant period of time. We checked to determine whether

countries fell into one category in one year (e.g., stable country in terms of regulations) and into another category (e.g., unstable country in terms of regulations) in another year and found that classifications were highly stable across the relevant period. Classifications of the countries in the 166 studies with information on the national background of the samples in terms of these variables are presented in Table 1.

**Control variables.** At the firm and industry level, we considered firm size, differentiating between studies with small firms (fewer than 500 employees; coded as 1 in the meta-regression analysis) and studies with large firms (more than 500 employees; coded as 0) (Rosenbusch et al., 2013). Seventy-three studies cover both small and large firms or do not report the sizes of the surveyed firms at all, nor were this data available elsewhere, so we cannot use these studies in either the bivariate or the meta-regression analyses.

We coded all 177 studies for whether they focused on high-tech firms (coded as 1 in meta-regression) or not (coded as 0). This approach is in line with Rauch et al. (2009), whose classifications for a study we adopted if it was in both our sample and theirs. We also control for whether the primary study controls for industry (coded as 1 in meta-regression) or not (coded as 0) (Brinckmann et al., 2010).

The study quality was assessed independently by two raters using 14 survey-research related statements from the quality assessment scale from Downs and Black (1998), which assesses four main areas of bias: reporting (e.g., Has data collection approach been made transparent?), external validity (e.g.: Is the sample representative?), internal validity (e.g., Are statistical methods appropriate?), and selection bias (e.g., Are there controls for possible confounds?), yielding total quality assessment scores that ranged from 0 to 42, with a higher score indicating higher study quality. There was a 77–100% agreement between the two raters on the individual quality items. An inter-rater reliability analysis using an intraclass correlation coefficient (ICC) statistic (two-way-mixed model, absolute agreement) to determine consistency among raters revealed a high ICC of .90 (95% CI 0.85–0.95) (Bliese, 1998). We preferred this study quality measure over often used citation-based quality scores for articles, since we investigate some unpublished studies and a large number of studies published only recently after the first meta-analysis in this area from Rauch et al. (2009), so citation-based measures on study level do not seem appropriate for our purpose (Stremersch, Verniers, & Verhoef, 2007).

Finally, we coded all 177 studies according to whether they were published (coded as 1 in meta-regression) or not published (coded as 0), which enabled us to control statistically for publication bias.

### **Meta-Analytic Procedures**

The Pearson product–moment correlation coefficient  $r$  is the most widely used metric in the sample studies, and we gathered correlations for the EO-performance relationship from each study. When required, we converted other statistics (e.g.,  $t$ -test,  $\chi^2$ ) to an  $r$  statistic using the Wilson effect size determination program recommended by Lipsey and Wilson (2001). The meta-analyses literature uses two methods for combining study estimates (Hedges & Olkin, 1985; Hedges & Vevea, 1998): the fixed effects model assumes no heterogeneity between study results and collected effect sizes are corrected only for sampling error to explain variability in effect sizes, while the random effects model assumes that studies estimate effect sizes that are corrected for sampling error plus a value that represents other sources of variability that are assumed to be randomly distributed (Kisamore & Brannick, 2008). Following Lipsey and Wilson (2001), we

corrected effect sizes for sampling errors, for measurement errors and plus a value ( $\hat{v}_\theta$ ) that represents other sources of variability that are assumed to be randomly distributed in the underlying studies. We calculated this value by dividing the correlation coefficient by the product of the square root of the reliabilities of the two constructs (Hunter & Schmidt, 2004). When a study did not indicate measure reliabilities, we computed the average reliability of measures across the sample and used it as the best estimate (Hunter & Schmidt, 1990). The average reliability indices, weighted by sample size, were .83 for the subjective measures of performance, .73 for the objective measures of performance, and .81 for the EO construct. On average, then, the scales used to measure the relationship between EO and performance had relatively strong internal consistency (Nunnally & Bernstein, 1994).

Further, we computed a 95% confidence interval (CI) around the estimated population correlation. We used random-effects models to calculate the mean correlations (Schmidt, Oh, & Hayes, 2009), which allows generalizations to be made for a population of studies, provides more realistic estimates of average effect sizes, and indicates the variability in true effect sizes across studies (Raudenbush, 2009). Table 3 reports the sample-size-weighted effect sizes ( $\bar{r}$ ) and the reliability corrected, random-effect effect size ( $\bar{r}_c$ ). The statistical tests of significance, heterogeneity, and moderator effects are based on the sizes of the sample size's weighted effects (Unger et al., 2011; Hunter & Schmidt, 1990).

To examine the hypothesized moderating relationships between effect sizes and contingency variables in the bivariate analysis, we dichotomized all variables and divided the studies into mutually exclusive groups on the basis of their underlying hypothesized moderators (Lipsey & Wilson, 2001). In doing so, we ranked all countries covered in the EO studies according to the moderator variables and computed the median value for each moderator (Brinckmann et al., 2010). Based on the 41 countries represented in our meta-analysis sample, we obtained a cut-off value of 4.15 for uncertainty avoidance, 5.32 for power distance, 5.07 for collectivism, and 3.7 for assertiveness. The high-uncertainty-avoidance group contained countries with scores of 4.17-5.42, and the low-uncertainty-avoidance group contained studies carried out in countries with scores of 3.52-4.15. Regarding the power distance dimension, the high-power-distance group contained countries with scores of 5.08-5.69, and the low-power-distance group contained countries with scores of 4.32-5.05. For the collectivism dimension, the higher collectivism group contained countries with scores of 5.12-5.86, and the lower collectivism group contained countries with scores of 3.46-5.07. Finally, for the assertiveness dimension, the higher assertiveness group contained countries with scores of 4.05-4.7, and the lower assertiveness group contained countries with scores of 3.41-4.01. The high-political stability group contained countries with scores of .61-1.52, and the low-political stability group contained countries with scores of -2.09-.53. The high-regulatory quality group contained countries with scores of 1.01-1.90, and the low-regulatory quality group contained countries with scores of -1.51-.92. In terms of study quality, studies with a quality score lower than 21 were considered low quality studies (scores between 8 and 20.9), while studies with a quality factor larger than 21 were considered high-quality studies (scores between 21.2 and 41.80). For all other control variables (performance measures, firm size, industry sector, high tech vs. non-high tech, publication bias), we build the subgroups according to the 0/1-variable coding outline above.

We tested the hypothesis related to the homogeneity of the population correlations using the  $Q$ -statistic [ $Q = \sum(n_i - 3)(z_i - z)^2$ ], which has a  $\chi^2$  distribution with  $k - 1$  degrees of freedom. We partitioned total variance ( $Q$ ) into within-groups ( $Q_W$ ) and between-groups ( $Q_B$ ) components.

A significant  $Q_B$  statistic suggests that size estimates at the study level do not estimate a common population effect size, so a subsequent search for the moderating effects is warranted. Since the  $Q$ -statistics rely on a traditional significance test in which Type II error rates are often high, we also considered the 75 percent rule of thumb as an additional indicator of the presence of unsuspected moderators (Hunter & Schmidt, 1990). If the error variance accounted for less than 75 percent of the uncorrected variance, we assumed systematic variations among the studies and that the results were heterogeneous, indicating the potential presence of moderator variables (Hunter & Schmidt, 2004). To determine the nature of this variability across effect sizes, we first divided the full sample into subsamples of studies based on the moderators they examined and conducted a set of subgroup bivariate meta-analyses for each moderator.

Bivariate meta-analysis is often criticized as unsuitable for assessing multivariate relationships. To address this criticism, we proceeded with the meta-regression approach, which uses the absolute exact value of each metric moderator variable (e.g., for the GLOBE scores) and 0/1-variables for the categorical variables. It simultaneously scrutinizes the significance and relative explanatory power of each contingency variable in the presence of other variables (Balkundi & Harrison, 2006; Cooper, Hedges, & Valentine, 2009; Hedges & Olkin, 1985). Meta-regressions use effect size as the dependent variable and contextual factors as independent variables to predict the inverse-coefficient-adjusted effect sizes of the individual studies. We adopted a random-effects model, in which variability in the effect size is attributed to randomly distributed sources of variance (systematic between-study differences), sampling error, and the remaining unmeasured random component (Sterne, 2009). The random-effects model permits inferences to be generalized to studies that use the same population from which the studies included in the review were sampled, and it permits a range of effect sizes likely to be seen in future studies to be predicted by explicitly including between-study variability (Borenstein, Hedges, Higgins, & Rothstein, 2009; Hedges & Olkin, 1985; Lipsey & Wilson, 2000).

In the meta-analytic regression models, the EO-performance correlation was treated as the dependent variable, and the proposed moderators were treated as independent variables. We employed three indicators for testing the overall heterogeneity: (i) adjusted  $R^2$ , the proportion of between-study variance that is explained by the covariates or the moderators; and (ii)  $\tau^2$ , the remaining between-study variance after all included covariates are taken into account. (iii)  $I^2_{\text{res}}$ , a measure of the percentage of the residual variation that is attributable to between-study heterogeneity (Higgins et al. 2003). Before conducting the meta-regression, we ensured that all assumptions (e.g., no multicollinearity, independence of the errors, and normality of the error distribution) were satisfied.

## RESULTS

Table 3 summarizes the bivariate correlations and other statistics for the EO-performance relationship. We obtained a significant random-effects effect size for the relationship between EO and overall performance ( $\bar{r}_c = .268$ ). The significant  $Q$ -statistic (1575.77,  $df=176$ ;  $p < .001$ ) reveals variability across the effect sizes, which suggests the presence of theoretically relevant moderators and confirms our conjecture that contextual factors influence the EO-performance relationship (Hunter & Schmidt, 1990).

*Insert Table 3 Here*



## Bivariate Moderator Analysis

As a first step, we carried out a bivariate analysis (Table 3). We find that the EO–performance relationship has statistically significant Q-between group statistics. We find significantly larger effect sizes for cultures characterized by low uncertainty avoidance ( $\bar{r}_c = .276, k = 86$ ) than for those characterized by high uncertainty avoidance ( $\bar{r}_c = .253, k = 80$ ), low-power-distant cultures ( $\bar{r}_c = .278, k = 115$ ) than for high-power-distant cultures ( $\bar{r}_c = .230, k = 51$ ), and collectivist cultures ( $\bar{r}_c = .290, k = 69$ ) than for individualist cultures ( $\bar{r}_c = .235, k = 97$ ). However, we also find that effect sizes are not significantly different in cultures characterized by low levels of assertiveness ( $\bar{r}_c = .288, k = 74$ ) from those in cultures characterized by high levels of assertiveness ( $\bar{r}_c = .261, k = 92$ ).

In terms of the moderating effect of national economic, political, and regulatory contexts, the bivariate results indicate that the EO–performance relationship has statistically significant Q-between group statistics, revealing larger effect sizes for developing countries ( $\bar{r}_c = .280, k = 55$ ) than for developed countries ( $\bar{r}_c = .240, k = 111$ ) and for high levels of political stability ( $\bar{r}_c = .298, k = 50$ ) than for low levels ( $\bar{r}_c = .242, k = 116$ ). On other hand, we find that EO–performance relationship in large markets ( $\bar{r}_c = .272, k = 127$ ) does not differ from that in small markets ( $\bar{r}_c = .265, k = 39$ ) and that the relationship in nations with high regulatory quality ( $\bar{r}_c = .258, k = 109$ ) does not differ from that in nations with low regulatory quality ( $\bar{r}_c = .255, k = 57$ ).

*Control variables:* The bivariate results indicate that the EO–performance relationship has significant moderator effects and larger effect sizes for firm growth ( $\bar{r}_c = .235, k = 49$ ) than for firm profitability ( $\bar{r}_c = .184, k = 45$ ), for subjective performance measures ( $\bar{r}_c = .310, k = 134$ ) than for objective performance measures ( $\bar{r}_c = .224, k = 50$ ), for small firms ( $\bar{r}_c = .318, k = 64$ ) than for large firms ( $\bar{r}_c = .264, k = 40$ ), and for high-tech focus ( $\bar{r}_c = .321, k = 30$ ) than for non-high-tech focus ( $\bar{r}_c = .271, k = 147$ ). The effect sizes we find for large and small firms and for high-tech and non-high-tech firms are in line with the findings from Rauch et al.’s (2009) meta-analysis. We find non-significant moderator effects for high study quality ( $\bar{r}_c = .238, k = 89$ ) and low study quality ( $\bar{r}_c = .242, k = 88$ ) and for published studies ( $\bar{r}_c = .248, k = 159$ ) and unpublished studies ( $\bar{r}_c = .255, k = 18$ ). The moderator effect for published and unpublished studies indicates that publication bias is not a significant issue in our data.

## Meta-Regression Results

Next, we proceeded with the meta-regression approach, which allows the relative explanatory power of each contingency variable to be investigated in the presence of other variables. The meta-regression is first run with the 102 studies that report all necessary control variables and moderators (model 2 in Table 4). Country background, firm size, and/or a focus on subjective or objective performance is missing in the remaining 75 studies.

*Insert Table 4 Here*

The results of the multivariate meta-regression analysis for the national cultural context moderators demonstrate that the proposed model is significant and that the eight hypothesized national moderators account for 25 percent ( $p < .001$ ) of the between-study variance in EO–performance correlations. When the eight nation-level factors are introduced, the remaining

between-study variance ( $\tau^2$ ) declines significantly, from .018 to .005 which is considered small (Luo, Huang, & Wang, 2011).  $I^2_{\text{res}}$  declines from 85.27 percent to 66.68 percent when eight national-level factors are introduced, showing that less remaining residual variation is attributable to between-study heterogeneity in model 2. According to Higgins et al. (2003), a value below 75 percent is considered a moderate remaining residual variation. The  $Q_{\text{res}}$ -value proposed by Lipsey and Wilson (2001) is significant, indicating that there are still more moderators. These findings indicate that our meta-analysis covers relevant moderators of the EO-performance relationship but that there is still variance that has not been explained (Luo et al., 2011).

The regression results suggest that the EO-performance relationship is stronger in cultures characterized by low uncertainty avoidance than in those characterized by high uncertainty avoidance ( $\beta = -.259, p < .05$ ). The EO-performance relationship is stronger in low-power-distant cultures than in high-power-distant cultures ( $\beta = -.195, p < .10$ ). There is no significant influence of collectivism ( $\beta = .184, n.s.$ ) and levels of assertiveness ( $\beta = -.048, n.s.$ ) on the EO-performance relationship. The regression results indicate that the strength of the EO-performance relationship does not vary between firms that operate in small home markets and those that operate in large home markets ( $\beta = .054, n.s.$ ). The EO-performance relationship is significantly stronger for firms in developing economies than for those in developed economies ( $\beta = -.690, p < .05$ ) and for firms in countries with high levels of political stability ( $\beta = .922, p < .001$ ). Differences in regulatory quality lead to no difference in the EO-performance relationship ( $\beta = .056, n.s.$ ).

**Control variables.** The regression results reveal that the EO-performance relationship is stronger for subjective versus objective performance measures ( $\beta = -.198, p < .05$ ). Finally we found that control for industry ( $\beta = .002, n.s.$ ), small vs. large firms ( $\beta = .066, n.s.$ ), high-tech vs. non-high-tech studies ( $\beta = .098, n.s.$ ), study quality ( $\beta = .011, n.s.$ ), and publication status ( $\beta = -.096, n.s.$ ) did not affect our results.

Next, we ran the meta-regression model without the control variable of firm size, which increased our primary EO study pool to 159 studies. The country background and/or a classification of a study as using only subjective or objective performance were missing from the remaining 18 studies. Findings are shown as model 3 in Table 4 and remain the same in terms of the direction and significance of regression coefficients, except that a positive moderating effect of collectivism becomes significant ( $\beta = .264, p < .01$ ).

In order to validate our hypotheses, we followed the following algorithm (Table 5): A hypothesis is confirmed when confirmation is achieved by bivariate and the two major meta-regression analyses (models 2 and 3 in Table 4). A hypothesis is further partly confirmed when confirmation is achieved by the bivariate and at least one regression analysis. H1 is confirmed since the bivariate and both meta-regression analyses find a significantly stronger relationship between EO and firm performance when uncertainty avoidance is low. The same applies to H2, since there are consistently stronger relationships between EO and firm performance when power distance is low. In line with our arguments in H3, the bivariate analysis and the meta-regression in model 3 on 159 studies find support for stronger EO-performance relationships in collectivistic cultures. However, since the model 2 in the meta-regression on 102 studies does not find a significant relationship, H3 is only partly confirmed. H4 is rejected since neither the bivariate nor any meta-regression analyses finds a significant moderating effect of assertiveness.

H5 is rejected since there is no significant moderating effect of market size, neither in the bivariate nor in the meta-regression analyses as is the case for regulatory quality, so H8 is also rejected. H6 is accepted since the bivariate and both meta-regressions reveal a significantly

stronger relationship between EO and firm performance in developing nations compared to developed nations. In the same way, H7 on the positive moderation of political stability on the EO-performance relationship is also accepted.

*Insert Table 5 Here*

## **DISCUSSION**

In an overall effort to contribute to evidence-based research in entrepreneurship, the present study complements the first meta-analysis on the EO-performance relationship from Rauch et al. (2009). The studies have some similarities in that both find similar effect sizes for the general EO-performance relationship (.268 and .242, respectively). However, the studies differ in terms of their methodological approach, in the number of studies they analyze, and in the number of countries in which the study's surveys were conducted (Rauch et al.: 51 studies from 14 countries; the present meta-analysis: 177 studies from 41 countries). The higher number of countries addressed in the present study leads to a major difference in findings: Rauch et al. (2009) can compare effect sizes only among continents, finding no significant difference among them, while the present study, based on studies from many more, especially non-Western, countries, finds more nuanced moderators at the national level to explain the EO-performance relationship.

Our theoretical arguments and empirical findings indicate that the national-level dependence of the EO-performance relationship is complex since single factors at the national level appear to play individual roles in determining the relationship. EO is related to firm performance more strongly in national cultures that are characterized by low uncertainty avoidance, low power distance, and high political stability and when the country is at a developing economic stage. These findings indicate for EO research that the trend toward examining the EO construct with its nomological net in nations other than the typical Western contexts in which the EO construct has traditionally been empirically examined (Wales et al., 2012) is important. Despite globalization and the growing similarities among national settings, there remain enough differences in national cultural and macroeconomic moderators to create differences in the EO-performance relationship.

Not all of our hypotheses were supported. Both the bivariate analysis and the meta-regressions consistently find that assertiveness, market size and regulatory quality are no relevant moderators of the EO-performance relationship, suggesting substantive reasons for the rejections. Assertiveness does not moderate the EO-performance relationship, perhaps because internal conflict strengthens the implementation of EO since conflicts can also be a source of creativity and innovation (De Dreu, 2006). Also contrary to our expectation is the finding that market size does not positively moderate the EO-performance relationship. Perhaps such is the case because today's technological advancements in communication and transportation reduce transaction costs so much that there are no longer differences between the cost of expanding in a larger home market and entering other foreign markets when a small home market is exhausted. In addition, as opposed to our expectations, the degree of regulatory quality does not facilitate the EO-performance relationship, perhaps because some entrepreneurial firms are better off when there are no or only a few regulations that limit their freedom in implementing and commercializing risky entrepreneurial endeavors.

Our hypothesis H3 which expected a stronger relationship between EO and firm performance in collectivistic cultures is partly confirmed. The bivariate analysis and the meta-regression in model 3 on 159 studies support H3 while there is no support in the meta-regression in model 2 based on 102 studies. It appears that the non-significant effect in the meta-regression analysis based on the 102 studies is due to smaller sample size, since the moderation of collectivism becomes significant when the regression is extended to 159 studies. The finding that strong collectivism rather than high individualism strengthens the EO-performance relationship is in line with some recent studies which have found a stronger relationship between innovation and firm performance (e.g., Rosenbusch et al., 2011). We learn that the collective implementation and commercialization with a subordination of individual interests plays a major role in strengthening the EO-performance relationship and outweighs more market-related obstacles which argue for delayed adoptions of innovation and entrepreneurial products from potential customers in collectivistic cultures (e.g., due to lengthy collective decision making).

The present meta-analysis explains only some of the variances in the EO-performance relationship. Beyond the 10.2 percent of the variance that our control variables can explain, 25 percent of the variance can be explained by our national-level factors (model 2 in Table 4). The  $\tau^2$  that measures the remaining between-study variance amounts to .005, a value that indicates that a small level of variance remains unexplained (Luo et al., 2011). Further, the degree of residual variation that can be attributed to between-study heterogeneity in the meta-regression (indicated by  $I^2_{res}$ ) is moderate. Overall, these numbers indicate that our study covers important moderators of the EO-performance relationship but also that there are moderators that our study did not cover. Our study has in common with Rauch et al. (2009) a clear focus on external moderators. Perhaps both meta-analyses ignore internal factors that could explain the EO-performance relationship. In their seminal work, Lumpkin and Dess (1996) argue theoretically that beyond the environment there are other firm-level factors—strategy, resources, firm structure, corporate culture, and top management characteristics—that may play a moderating role on the EO-performance relationship. These internal factors may be equally as or even more important than the environmental factors that Rauch et al.'s (2009) and our meta-analysis confirm, such that the performance effects of a given degree of EO depend more on the “home-made” internal factors a company typically impacts. This notion is in line with some recent studies that show that the EO-performance relationship depends on the tangible and intangible resources and capabilities of the entrepreneurial firm (Engelen et al., 2013; Anderson & Eshima, 2011).

## **IMPLICATIONS FOR MANAGERS AND POLICY MAKERS**

In line with the objective of evidence-based entrepreneurship, we derive some implications for managers and policy makers. Both have been confronted with a multitude of studies on the EO-performance relationship conducted in various contexts. Our findings based on a meta-analysis of 177 studies provide managers with the message that EO is generally associated with increased performance. Given that implementing EO can be a resource-intensive endeavor, this study provides solid evidence that implementing EO is worthwhile. Internationally operating managers in particular learn that entrepreneurial activities pay off differently in different national contexts, a conclusion that can hardly be derived from one or two of the single-country studies that so far dominate the EO literature. More concretely, firms that operate internationally learn the advantages of locating their entrepreneurial activities in countries characterized by low uncertainty avoidance, and low power distance, as well as in developing countries and countries

with political stability. The environment in these countries (e.g., the behavior of buyers in the marketplace) is particularly beneficial for translating EO into superior performance.

Policy makers learn that political stability is important so that entrepreneurial firms can leverage the full performance benefit from their EO. Policy makers in developing countries are advised to set up programs for firms in their countries, such as the provision of funding or easier access to credits to firms which want to pursue new business ideas. Since entrepreneurial activities are particularly beneficial in these environments, overall economic advancement could be achieved if firms in developing countries implement entrepreneurial activities.

## **LIMITATIONS AND AVENUES FOR FURTHER RESEARCH**

The present meta-analysis has some limitations that offer useful avenues for future research. First, it employs a composite score for the EO construct, which employment is in line with the seminal unidimensional understanding of EO from Miller (1983) and extant research that reports strong positive interrelationships among the three sub-dimensions. However, the conceptualization of EO from Lumpkin and Dess (1996) adds two sub-dimensions to those stipulated by Miller (1983), aggressiveness and autonomy, and states that a firm can be entrepreneurial even when it does not score high on all five sub-dimensions. As Lumpkin and Dess (1996) argue, what qualifies a firm as entrepreneurial, according to its scores on the five sub-dimensions, depends on its context. Kreiser, Marino, and Weaver (2002) argue that the performance effects of the five sub-dimensions can differ, and Kreiser, Marino, Dickson, and Weaver (2010) find that the antecedents of these five sub-dimensions can also differ. As for our findings, which are based on the unidimensional view of EO, it follows that the moderating effects of the national-level variables on the the relationships among the five sub-dimensions of firm performance could differ, putting into context our findings and presenting useful options for future research. However, as our method section explains, only a few studies have examined EO at the level of individual sub-dimensions, so more work is needed before evidence-based methods can be employed.

Further, we acknowledge that there may be confounding effects between our national-level variables. There are some high correlations between our nation-level variables, with a mean correlation of .280 of all correlations, ranging from .012 (uncertainty avoidance and market size) to .855 (political and regulatory quality), with a mean of .280 of all correlations between moderators. While we control for these confounding effects in our regression analysis, future research could elaborate on these issues by, for example, investigating various combinations of national cultural and macroeconomic variables in order to clarify their role in the EO-performance relationship. Further, there might be even more factors at the nation-level which could impact the EO-performance relationship, such as the law system, which have not been examined in this study.

Some limitations of this study are linked to the limitations of the primary studies addressed in this meta-analysis. For example, none of the EO studies included an investigation of survivor bias, perhaps because pursuing an entrepreneurial strategy is associated with extreme (positive and negative) levels of performance such that some entrepreneurial firms disappear quickly and are not part of the primary studies' samples, thereby impacting our findings in the meta-analysis.

We also observe that quantitative EO research is dominated by cross-sectional studies. However, longitudinal studies could reveal that an EO has positive long-term effects, so the

cross-sectional primary studies that dominate the present meta-analysis might have underestimated performance effects. It may also be productive to investigate whether the strength of long-term effects differs across national cultures and economic factors at the national level.

Table 1. List of Studies included in the meta-analysis

Year	Authors	Country	Sample Size	Journal	Performance Scope (Type) <sup>a</sup>	National Cultural Context <sup>b</sup>				National Economic, Political & Regulatory Context			
						UA	PD	CL	AS	Market Size	Economic Development	Political Stability <sup>†</sup>	Regulatory Quality <sup>‡</sup>
1986	Covin and Slevin*	USA	76	Frontier of Entrepreneurship Research	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1986	Miller And Toulouse*	Canada	97	Management Science	FP & FG (O)	High	Low	Low	High	Large	Developed	High	High
1988	Covin and Slevin	USA	80	Journal of Management Studies	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1989	Covin and Slevin	USA	161	Strategic Management Journal	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1989	Venkatraman*	USA	202	Management Science	FP & Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1990	Covin and Covin*	USA	143	Entrepreneurship Theory & Practice	FP (S)	Low	Low	Low	High	Large	Developed	Low	High
1990	Covin, Prescott and Slevin*	USA	113	Journal of Management Studies	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1991	Davis, Morris and Allen	USA	93	J. of the Academy of Mkt. Science	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1991	Zahra*	USA	119	Journal of Business Venturing	FP & FG (O)	Low	Low	Low	High	Large	Developed	Low	High
1993	Naman and Slevin*	USA	82	Strategic Management Journal	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1993	Zahra and Covin*	USA	103	Strategic Management Journal	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
1994	Covin, Slevin and Schultz*	USA	91	Journal of Management Studies	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1994	Smart and Jeffrey*	USA	599	Journal of Applied Business Research	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1996	Zahra*	USA	127	Academy of Management Journal	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
1997	Becherer and Maurer	USA	215	Entrepreneurship Theory & Practice	FG (S)	Low	Low	Low	High	Large	Developed	Low	High
1997	Dess, Lumpkin and Covin	USA	32	Strategic Management Journal	FP, Mix & FG (S)	Low	Low	Low	High	Large	Developed	Low	High
1997	Dickson and Weaver	Norway	433	Academy of Management	FG (O)	High	Low	Low	Low	Small	Developed	High	High
1998	Zahra and Neubaum*	USA	99	Journal of Develop. Entrepreneurship	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
1999	Barrett and Weinstein*	USA	142	Entrepreneurship Theory & Practice	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
1999	Barringer and Bluedorn	USA	169	Strategic Management Journal	FP & FG (S & O)	Low	Low	Low	High	Large	Developed	Low	High
1999	Becherer and Maurer*	USA	215	J. of Small Business Management	FG (S)	Low	Low	Low	High	Large	Developed	Low	High
1999	Chadwick, Barnett and Dwyer*	USA	535	J. Applied Mgmt. & Entrepreneurship	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
1999	Luo	China	63	J. of Small Business Management	FP (S)	High	Low	High	Low	Large	Less Developed	Low	Low
1999	Richter*	Germany	208	Unpublished	Mix (S)	High	High	Low	High	Large	Developed	High	High
2000	Haiyang, Kwaku, and Yan*	China	184	Academy of Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2000	Slater and Narver*	USA	53	Journal of Business Research	FP & FG (S & O)	Low	Low	Low	High	Large	Developed	Low	High
2000	Stetz, Howell, Stewart, Blair and Fottler*	USA	865	Frontier of Entrepreneurship Reserch	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2000	Zahra and Garvis*	USA	149	Journal of Business Venturing	FP & FG (S)	Low	Low	Low	High	Large	Developed	Low	High
2001	Atuahene-Gima and Ko*	Australia	151	Orgnization Science	FG (O)	High	Low	Low	High	Large	Developed	High	High
2001	George, Wood and Khan*	USA	70	Entrepreneurship & Regional Develop.	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2001	Hult and Ketchen	Dun & Bradstreet	181	Strategic Management Journal	FP (O)	---	---	---	---	---	---	---	---
2001	Lee, Lee, and Pennings*	Korea	137	Strategic Management Journal	FG (O)	Low	High	High	High	Large	Less Developed	Low	Low
2001	Lumpkin and Dess*	USA	124	Journal of Business Venturing	FP & FG (S)	Low	Low	Low	High	Large	Developed	Low	High
2001	Yoo*	Korea	277	Frontier of Entrepreneurship Research	Mix (S)	Low	High	High	High	Large	Less Developed	Low	Low
2002	Caruana, Ewing and Ramaseshan*	Australia	136	The Service Industries Journal	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2002	Fress, Brantjes and Hoorn	Africa	87	Journal of Develop.Entrepreneurship	FG (O)	High	Low	Low	High	Large	Less Developed	Low	Low
2002	Kemelgor*	USA	86	Entrepreneurship & Regional Develop.	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2002	Kemelgor*	Netherland	91	Entrepreneurship & Regional Develop.	FP (O)	High	Low	Low	High	Large	Developed	High	High
2002	Kreiser, Marino and Weaver*	6 countries	1067	Entrepreneurship Theory & Practice	Mix (S)	---	---	---	---	---	---	---	---
2002	Marino, Strandholm, Steensma and Weaver*	6 countries	647	Entrepreneurship Theory & Practice	Mix (S)	---	---	---	---	---	---	---	---
2002	Yusuf	Oman	228	IJCM	Mix (S)	High	Low	Low	High	Small	Less Developed	High	Low
2003	Balabanis and Katsikea	UK	82	International Business Review	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2003	Harms and Ehrmann*	Germany	71	Babson-Kufman Foundation Conf.	FP (S)	High	High	Low	High	Large	Developed	High	High
2003	Hult, Snow and Kandemir*	Global	764	Journal of Management	Mix (S)	---	---	---	---	---	---	---	---
2003	Liu, Luo and Shi	China	304	Journal of Business Research	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2003	Morgan and Strong*	UK	149	Journal of Business Research	Mix (S)	High	High	Low	Low	Large	Developed	Low	High

2003	Sadler-Smith, Hampson, Chaston and Badger	UK	156	J. of Small Business Management	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2003	Swierczek and Ha*	Vietnam	478	Journal of Entreprec culture	FP & FG (O)	Low	High	High	Low	Small	Less Developed	Low	Low
2003	Vitale, Giglierano and Miles*	USA	89	Unpublished	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2003	Weerawardena	Australia	326	Journal Of Strategic Marketing	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2003	Wiklund and Shepherd*	Sweden	384	Strategic Management Journal	Mix (S)	High	Low	Low	Low	Small	Developed	High	High
2004	Dimitratos, Lioukas and Carter*	Greece	152	International Business Review	FG (O)	Low	High	High	High	Small	Developed	Low	Low
2004	Hult, Hurley and Knight*	Dun & Bradstreet	181	Industrial Marketing Management	Mix (S)	---	---	---	---	---	---	---	---
2004	Knight and Cavusgil	USA	203	Journal of Int'l Business Studies	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2004	Richard, Barnett, Dwyer and Chadwick*	USA	153	Academy of Management Journal	FP & FG (S & O)	Low	Low	Low	High	Large	Developed	Low	High
2004	Weerawardena and O' Cass	Australia	326	Industrial Marketing Management	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2004	Zahra, Hayton and Salvato	USA	536	Entrepreneurship Thery & Practice	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2005	Arbaugh, Cox and Camp	17 countries	1045	The Journal of Business Inquiry	FP (S)	---	---	---	---	---	---	---	---
2005	Bhuiyan, Menguc and Bell*	USA	231	Journal of Business Research	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2005	De Clercq, Sapienza and Crijns	Belgium	92	Small Business Economics	FG (S)	High	High	Low	High	Large	Developed	High	High
2005	Jantunen, Puumalainen, Saarenketo and Kylaheiko*	Finland	217	J. l of International Entrepreneurship	Mix (S)	---	---	---	---	---	---	---	---
2005	Li, Zhang and Chan	China	184	Journal of High Tech. Mgmt. Research	Mix (S)	High	Low	Low	Low	Small	Developed	High	High
2005	Luo, Sivakumar and Liu	China	233	J. of the Academy of Mkt. Science	FG (O)	High	Low	High	Low	Large	Less Developed	Low	Low
2005	Luo, Zhou, and Liu	China	218	Journal of Business Research	FG (O)	High	Low	High	Low	Large	Less Developed	Low	Low
2005	3. Monsen*	USA	1505	Unpublished	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2005	Tan and Tan*	China	104	Strategic Management Journal	FP (O)	High	Low	High	Low	Large	Less Developed	Low	Low
2005	Wiklund and Shepherd*	Sweden	419	Journal of Business Venturing	Mix (S)	High	Low	Low	Low	Small	Developed	High	High
2005	Zhou, Yim and Tse	China	350	Journal of Marketing	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2006	Antoncic	Slovenia	449	Journal of Entrepreneurial culture	FP & FG (O)	Low	High	High	Low	Small	Less Developed	High	Low
2006	Carraher, Parnell, Carraher, Carraher, & Sullivan	Italy	223	J. Applied Mgmt. & Entrepreneurship	Mix (S)	Low	High	Low	High	Large	Developed	Low	Low
2006	Carraher et al.	USA	284	J. Applied Mgmt. & Entrepreneurship	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2006	Carraher et al.	UK	239	J. Applied Mgmt. & Entrepreneurship	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2006	Carraher et al.	New Zeland	177	J. Applied Mgmt. & Entrepreneurship	Mix (S)	High	High	Low	Low	Small	Developed	High	High
2006	Carraher et al.	Hong Kong	180	J. Applied Mgmt. & Entrepreneurship	Mix (S)	High	Low	High	High	Small	Less Developed	High	High
2006	Chow	China	3562	SAM Advanced Management Journal	FP (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2006	Covin, Green and Slevin*	USA	110	Entrepreneurship Theory & Practice	FG (O)	Low	Low	Low	High	Large	Developed	Low	High
2006	Davis, Marino and Aaron	USA	141	Int'l J. of Organizational Analysis	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2006	Griffith, Noble and Chen	USA	269	Journal of Retailing	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2006	Jogaratham and Tse	4 countries	187	Int'l J. of Contemporary Hosp. Mgmt.	Mix (S)	---	---	---	---	---	---	---	---
2006	Kaya	Turkey	124	Int'l J. of Human Resource Mgmt.	Mix (S)	Low	High	High	High	Large	Less Developed	Low	Low
2006	Kropp, Lindsay and Shoham	South Africa	477	International Marketing Review	Mix (S)	High	Low	Low	High	Large	Less Developed	Low	Low
2006	Li, Liu and Zhao	China	585	Industrial Marketing Management	FG (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2006	Poon, Ainuddin and Junit*	Malaysia	96	International Small Business Journal	Mix (S)	High	High	High	Low	Small	Less Developed	Low	Low
2006	5. Rauch, Frese, Koenig, and Wang*	China, Germany	364	Babson Kaufman Foundation Conf.	Mix (S)	---	---	---	---	---	---	---	---
2006	Walter, Auer and Ritter*	Germany	149	Journal of Business Venturing	FG & FP (O)	High	High	Low	High	Large	Developed	High	High
2007	Avlonitis and Salavou	Greece	149	Journal of Business Research	Mix (S)	Low	High	High	High	Small	Developed	Low	Low
2007	Chen, Tzeng, Ou and Chang	Taiwan	104	Contemporary Management Research	Mix (S)	Low	Low	High	Low	Large	Developed	High	High
2007	De Clercq and Rius	Mexico	863	J.of Small Business Management	Mix (O)	Low	Low	High	High	Large	Less Developed	Low	Low
2007	Gabrielsson	Sweden	175	International Small Business Journal	FG (O)	High	Low	Low	Low	Small	Developed	High	High
2007	Holt, Rutherford and Clohessy	USA	151	J. of Leadership & Org. Studies	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2007	Hughes , Hughes and Morgan	UK	211	British Journal of Management	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2007	Hughes and Morgan	UK	211	Industrial Marketing Management	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2007	Keh, Nguyen and Ng	Singapore	294	Journal of Business Venturing	Mix (S)	High	Low	High	High	Small	Developed	High	High
2007	Madsen	Norway	168	Entrepreneurship & Regional Develop.	Mix (S)	High	Low	Low	Low	Small	Developed	High	High
2007	Morris, Coombes and Schindehutte	USA	145	J. of Leadership and Org. Studies	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2007	Pett and Wolff	USA	117	Unpublished	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2007	Ripollés-Meliá, Menguzzato-Boulard and Sánchez-Peinado	Spain	155	Journal of Int'l Entrepreneurship	FG (O)	---	---	---	---	---	---	---	---
						Low	High	High	High	Large	Developed	Low	High



2007	Tang, Tang, Zhang and Li	China	166	Journal of World Entrepreneurship	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2007	Zhou	Hong Kong	775	Journal of World Business	FG (S)	High	Low	High	High	Small	Less Developed	High	High
2008	Galetić And Milovanović	Croatia	150	Unpublished	FG & FP (S)	Low	High	High	Low	Small	Less Developed	Low	Low
2008	Gonzalez-Padron, Hult and Calantone	USA	200	Industrial Marketing Management	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2008	Hartsfield, Johansen and Knight	USA	195	Int'l Bus.: Research Teaching Practice	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2008	Li, Guo, Liu, and Li	China	607	J. of product Innovation Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2008	Li, Poppo and Zhou	China	280	Strategic Management Journal	FP (O)	High	Low	High	Low	Large	Less Developed	Low	Low
2008	Li, Zhao, Tan and Liu	China	213	J. of Small Business Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2008	Lin, Peng and Kao	Taiwan	333	International Journal of Manpower	Mix (S)	Low	Low	High	Low	Large	Developed	High	High
2008	Moreno and Casillas	Spain	434	Entrepreneurship Theory & Practice	FG (O)	Low	High	High	High	Large	Developed	Low	High
2008	Stam and Elfring*	Netherlands	90	Academy of Management Journal	FG & Mix (O & S)	High	Low	Low	High	Large	Developed	High	High
2008	Tang, Tang, Marino, Zhang and Li	China	185	Entrepreneurship Theory & Practice	Mix (S)	High	Low	High	Low	Large	Less Developed	High	Low
2008	Wang	UK	231	Entrepreneurship Theory & Practice	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2008	Zahra	USA	457	Journal of Strategy and Management	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2009	Awang et al.	Malaysia	210	Int'l Journal of Business and Mgmt.	FP & FG (O)	High	High	High	Low	Small	Less Developed	Low	Low
2009	Baker and Sinkula	USA	88	J. of Small Business Management	FP (S)	Low	Low	Low	High	Large	Developed	Low	High
2009	Frishammar and Andersson	Sweden	188	J. of International Entrepreneurship	FG & Mix (S)	High	Low	Low	Low	Small	Developed	High	High
2009	Guurbuz and Aykol	Turkey	221	Management Research News	FG (O)	Low	High	High	High	Large	Less Developed	Low	Low
2009	Heavey, Simsek, Roche and Kelly	Ireland	349	Journal of Management Studies	FG (S)	High	High	Low	Low	Small	Developed	High	High
2009	Hoq and Che Ha	Bangladesh	321	ANZMAC-conference paper	Mix (S)	Low	Low	High	Low	Small	Less Developed	Low	Low
2009	Kaya and Ağa	Turkey	94	Unpublished	Mix (S)	Low	High	High	High	Large	Less Developed	Low	Low
2009	Li, Huang and Tsai	Taiwan	165	Industrial Marketing Management	FG & FP (S)	Low	Low	High	Low	Large	Developed	High	High
2009	Li, Liu, Wang, Li, and Guo	China	607	Systems Research and Beh. Science	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2009	Li, Tse and Zhao	USA	104	Int'l Journal of Hospitality & Tourism	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2009	Liu, Manolova and Edelman	China	195	Frontiers of Entrepreneurship Research	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2009	Merlo and Auh	Australia	112	Market Letters	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2009	Renko, Carsrud and Brannback (2009)	3 countries	85	J. of Small Business Management	FP (O)	---	---	---	---	---	---	---	---
2009	Richard, Wu and Chadwick	USA	579	The Int'l J. of Human Resource Mgmt.	FP (O)	Low	Low	Low	High	Large	Developed	Low	High
2009	Tang and Rothenberg	China	207	Journal of Enterprising Culture	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2010	Casillas and Moreno	Spain	449	Entrepreneurship & Regional Develop.	FG (O)	Low	High	High	High	Large	Developed	Low	High
2010	Colton, Roth and Bearden	Cross country	174	Journal of International Marketing	Mix & FG (S)	---	---	---	---	---	---	---	---
2010	De Clercq, Dimov and Thongpapanl	Canada	232	Journal of Business Venturing	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2010	Fairoz, Hirobumi and Tanaka	Sri Lanka	25	Asian Social Science	FG & FP (S)	Low	High	High	Low	Small	Developed	Low	Low
2010	Ferreira, Azevedo and Ortiz	Portugal	168	Cuadernos de Gestión	FG (O)	Low	High	High	Low	Small	Developed	High	High
2010	Frank, Kessle and Fink	Austria	125	Schmalenbach Business Review	Mix (S)	High	Low	Low	High	Small	Developed	High	High
2010	Li, Wei and Liu	China	140	Journal of Management Studies	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2010	Menguc, Auh and Ozanne	New Zealand	150	Journal of Business Ethics	FG & FP (S)	High	High	Low	Low	Small	Developed	High	High
2010	Rhee, Park and Lee	Korea	333	Technovation	Mix (O & S)	Low	High	High	High	Large	Less Developed	Low	Low
2010	Simsek, Heavey and Veiga	Ireland	129	Strategic Management Journal	FG (O)	High	High	Low	Low	Small	Developed	High	High
2010	Tajeddini	Switzerland	156	Tourism Management	FP & FG (S)	High	Low	Low	High	Small	Developed	High	High
2010	Zhou, Barnes and LU	china	436	Journal of Int'l Business Studies	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2010	Andersen	Sweden	172	Int'l J. Entrepreneurial Beh. & Rsh.	FP & FG (O)	High	Low	Low	Low	Small	Developed	High	High
2011	Anderson and Eshima	Japan	230	Journal of Business Venturing	FP & FG (O & S)	Low	High	Low	Low	Large	Developed	High	High
2011	Hayat and Riaz	Pakistan	150	Unpublished	Mix (S)	Low	Low	High	Low	Small	Less Developed	Low	Low
2011	Idar and Mahmood	Malaysia	356	Conference paper	Mix (S)	High	High	High	Low	Small	Less Developed	Low	Low
2011	Islam, Khan, Obaidullah & Alam	Bangladesh	95	Int'l J. of Business and Management	Mix (S)	Low	Low	High	Low	Small	Less Developed	Low	Low
2011	Javalgi and Todd	India	150	Journal of Business Research	FG (O)	Low	High	High	Low	Large	Less Developed	Low	Low
2011	Lee and Chu	Taiwan	201	African Journal of Business Mgmt.	Mix (S)	Low	Low	High	Low	Large	Developed	High	High
2011	Li, Liu and Liu	China	225	Journal of Operations Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2011	Lisbo, Skarmas and Lages	Portugal	254	Industrial Marketing Management	Mix (S)	Low	High	High	Low	Small	Developed	High	High
2011	Lisboa, Lages and Skarmas	Portugal	263	Unpublished	FP (S)	Low	High	High	Low	Small	Developed	High	High
2011	Liu, Hou, Yang and Ding	China	119	African J. of Business Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2011	Liu, Li and Xue	China	607	Journal of World Business	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2011	Maatoofi and Tajeddini	Iran	71	Journal of Management Research	Mix (S)	Low	Low	High	Low	Large	Less Developed	Low	Low

2011	Messersmith and Wales	USA	119	International Small Business Journal	FG (O)	Low	Low	Low	High	Large	Developed	Low	High
2011	Nasution, Mavondo, Matanda and Ndubisi	Indonesia	231	Industrial Marketing Management	Mix (S)	Low	Low	High	Low	Large	Less Developed	Low	Low
2011	O'Cass and Ngo	Vietnam	259	Industrial Marketing Management	Mix (S)	Low	High	High	Low	Small	Less Developed	Low	Low
2011	O'Cass and Ngo	Australia	300	Industrial Marketing Management	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2011	Rodrigues and Raposo	Portugal	212	Canadian Journal of Adm. Sciences	Mix (S)	Low	High	High	Low	Small	Developed	High	High
2011	Su, Xie and Li	China	223	J. of Small Business Management	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2011	Tayauova	Turkey	114	Procedia - Social and Beh. Sciences	Mix (S)	Low	High	High	High	Large	Less Developed	Low	Low
2012	Boohene, Marfo-Yiadom and Yeboah	Ghana	118	Developing Country Studies	Mix (S)	High	Low	Low	High	Small	Less Developed	Low	Low
2012	Boso, Cadogan and Story	UK	212	International Business Review	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2012	Chen, Li and Evans	Taiwan	159	Industrial Marketing Management	PG & Mix (S)	Low	Low	High	Low	Large	Developed	High	High
2012	Clausen and Korneliussen	Norway	207	Technovation	FG (S)	High	Low	Low	Low	Small	Developed	High	High
2012	Dada and Watson	UK	95	International Small Business Journal	Mix (S)	High	High	Low	Low	Large	Developed	Low	High
2012	Kollmann and Stöckmann	Germany	228	Entrepreneurship Theory & Practice	Mix (S)	High	High	Low	High	Large	Developed	High	High
2012	Kraus, Rigtering, Hughes and Hosman	Netherlands	111	Review of Management Science	Mix (S)	High	Low	Low	High	Large	Developed	High	High
2012	Lechner and Gudmundsson	France	385	International Small Business Journal	Mix (S)	High	High	Low	High	Large	Developed	High	High
2012	Ma, Kim, Heo and Jang	Korea	107	Conference paper	Mix (S)	Low	High	High	High	Large	Less Developed	Low	Low
2012	Monferrer, Blesa and Ripolles	Spain	135	Economics Research International	Mix (S)	Low	High	High	High	Large	Developed	Low	High
2012	Parkman, Holloway and Sebastiao	USA	122	Unpublished	Mix (S)	Low	Low	Low	High	Large	Developed	Low	High
2012	Ripolles, Blesa and Monferrer	Spain	135	International Business Review	FG (O)	Low	High	High	High	Large	Developed	Low	High
2012	Sciascia, Mazzola and Chirico	Switzerland	199	Entrepreneurship Theory & Practice	Mix (S)	High	Low	Low	High	Small	Developed	High	High
2012	Soininen, Martikainen, Puumalainen & Kylaheiko	Finland	194	Int'l Journal of Production Economics	FP & FG (O)								
2012	Spillecke and Brettel	Germany	268	J. of Small Business Management	FP (S)	High	Low	Low	Low	Small	Developed	High	High
2012	Wong	China	244	Journal of Chinese Entrepreneurship	Mix (S)	High	High	Low	High	Large	Developed	High	High
2012	Yu	China	181	African Journal of Business Mgmt.	Mix (S)	High	Low	High	Low	Large	Less Developed	Low	Low
2013	Engelen, Gupta, Strenger and Brettel	6 countries	790	Journal of Management	Mix (S)	---	---	---	---	---	---	---	---
2013	Shirokova, Vega and Sokolova	Russia	500	Critical Perspectives on Int'l Business	FG & Mix (O & S)	Low	High	High	Low	Large	Less Developed	Low	Low

Note: \* Included in Rauch et al (2009) meta-analysis; <sup>(a)</sup>FG=Firm Growth; FP=Firm Profitability; Mix=Overall Business Performance; O=Objective type; S=Subjective type. <sup>(b)</sup>Based on the country's sample information of each study, we assigned a respective uncertainty avoidance (UA), power distance (PD), collectivism (CL) and assertiveness (AS) index (House et al., 2004).

Table 2. Coding of performance measures in three categories for bivariate analysis

Growth	Profitability	Overall business performance
<ul style="list-style-type: none"> <li>• Employment growth (e.g., Fairoz, Hirobumi &amp; Tanaka, 2010)</li> <li>• Sales growth (e.g., Messersmith &amp; Wales, 2011)</li> <li>• Firm growth (e.g., Anderson &amp; Eshima, 2011; Antoncic, 2006)</li> <li>• General business growth (e.g., Guurbuz &amp; Aykol, 2009)</li> <li>• Growth in ROS (e.g., Gabriellsson, 2007)</li> <li>• Growth in cash flow (e.g., Griffith, Noble &amp; Chen, 2006)</li> <li>• Growth in revenue (e.g., Griffith, Noble &amp; Chen, 2006)</li> <li>• Growth in net Income (e.g., Miller &amp; Toulouse, 1986)</li> <li>• Growth in profit (e.g., Zahra &amp; Garvis, 2000)</li> <li>• International sales growth (e.g., Ripolles, Blesa and Monferrer, 2012)</li> </ul>	<ul style="list-style-type: none"> <li>• ROS (e.g., Zahra, Hayton &amp; Salvato, 2004)</li> <li>• ROA (e.g., Andersen, 2010)</li> <li>• Profitability (e.g., Antoncic, 2006)</li> <li>• ROI (e.g., Miller &amp; Toulouse, 1986)</li> <li>• Cash flow (e.g., Renko, Carsrud &amp; Brannback, 2009)</li> <li>• Sale per employee (e.g., Walter, Auer &amp; Ritter, 2006)</li> </ul>	<ul style="list-style-type: none"> <li>• Overall Business performance (e.g., Barrett &amp; Weinstein, 1999; De Clercq, Dimov &amp; Thongpapanl, 2010; Covin &amp; Slevin, 1989; Wiklund &amp; Shepherd, 2003)</li> </ul>

Table 3. Correlations between EO and performance: Main effect and bivariate moderator analysis

	<i>K</i>	<i>N</i>	$\bar{r}$	$\bar{r}_c$	SE	95% <i>CI</i>	$Q_{w(k-j)}^a$	$Q_{B(l-j)}^b$
EO→Overall performance	177	47140	.250	.268	26.20	.161 to .289	1575.77(176)	
<i>National Cultural Context</i>								
<i>H1: Uncertainty avoidance</i>								
1. Low	86	19611	.269	.276	30.20	.260 to .278	852.56 (85)	9.26***
2. High	80	22044	.240	.253	43.50	.222 to .258	614.06 (79)	(1)
<i>H2: Power distance</i>								
1. Low	115	30824	.260	.278	40.25	.250 to .270	1002.43 (114)	13.50***
2. High	51	10831	.221	.230	41.47	.207 to .235	452.85 (50)	(1)
<i>H3: Collectivism</i>								
1. Low	97	20705	.231	.235	43.45	.218 to .244	576.63 (96)	
2. High	69	20950	.261	.290	39.40	.228 to .294	881.52 (68)	10.20*** (1)
<i>H4: Assertiveness</i>								
1. Low	74	21000	.279	.288	38.90	.270 to .288	738.53 (73)	1.54
2. High	92	20655	.248	.261	41.20	.218 to .278	728.23 (91)	(1)
<i>National Economic, Political and Regulatory Context</i>								
<i>H5: Market size</i>								
1. Small	39	9224	.245	.265	39.22	.215 to .275	301.08 (38)	0.95
2. Large	127	32431	.254	.272	40.73	.225 to .283	1162.14 (126)	(1)
<i>H6: Economic development</i>								
1. Developing	55	18073	.260	.280	46.76	.239 to .281	698.47 (54)	6.45**
2. Developed	111	23582	.230	.240	44.60	.220 to .240	763.22 (110)	(1)
<i>H7: Political stability</i>								
1. Low	116	30425	.231	.242	35.33	.214 to .248	1008.35 (115)	28.20*** (1)
2. High	50	11230	.288	.298	42.67	.260 to .316	429.22 (49)	
<i>H8: Regulatory quality</i>								
1. Low	57	17667	.240	.255	33.53	.225 to .255	724.24 (56)	1.50
2. High	109	23988	.241	.258	30.87	.217 to .265	741.90 (108)	(1)
<i>Controls</i>								
<i>Performance measure (scope)<sup>1</sup></i>								
1. Firm profitability	45	12711	.145	.184	55.88	.099 to .191	208.72(44)	14.530(1) *** <sup>3</sup>
2. Firm growth	49	10470	.220	.235	61.02	.195 to .245	267.93(48)	164.55(1) *** <sup>4</sup>
3. Overall performance	109	28569	.286	.304	43.08	.257 to .315	1105.01(108)	50.200(1) *** <sup>5</sup>
<i>Performance measure (type)<sup>2</sup></i>								
1. Objective performance	50	11497	.206	.224	45.60	.154 to .258	575.95(49)	213.50*** (1)
2. Subjective performance	134	37171	.290	.310	39.10	.265 to .315	1707.40(133)	
<i>Firm Size</i>								
1. Small firms	64	15044	.309	.318	41.00	.280 to .338	1040.72(63)	245.37**
2. Large firms	40	9640	.252	.264	45.76	.225 to .280	890.25(39)	(1)
<i>Firm type</i>								
1. Non high-tech focus	147	40528	.255	.271	88.90	.235 to .276	1101.56(146)	208.40*** (1)
2. High-tech focus	30	6612	.301	.321	60.60	.275 to .327	155.60(29)	
<i>Study quality</i>								
1. Low quality	88	21675	.231	.242	45.50	.211 to .251	570.25(87)	2.01
2. High quality	89	25465	.223	.238	30.25	.206 to .240	1003.45(88)	(1)
<i>Publication bias</i>								
1. Published	159	41810	.230	.248	57.25	.145 to .315	1310.60(158)	0.001(1)
2. Unpublished	18	5330	.235	.255	48.38	.151 to .319	123.28(17)	

*K* = number of effect sizes *N* = overall number of observations;  $\bar{r}$  = sample weighted correlation;  $\bar{r}_c$  = reliability corrected random-effect mean effect size; SE = sampling error (% variance);  $^a)Q_{w(k-j)}$  refers to the residual pooled within-groups share of the variance with (*k* - *j*) degrees of freedom, where *k* and *j* denote the number of effect sizes and categories respectively.  $^b)Q_{B(l-j)}$  refers to the residual variance between-groups with (*l* - *j*) degrees of freedom. All values are significant at *p* < 0.05 unless otherwise indicated.

<sup>1</sup> 151 studies report only one type of performance scope measure, so we took the mean of these relationships, resulting in one effect size per study. 26 studies report more than one different performance scope measures. In these cases, we build two or more mean effect sizes per study along the categories of growth, profitability and overall performance, leading to 203 effect sizes in total. Findings remain the same in terms of direction and significance of coefficients when only comparing the 151 studies which focus on one performance scope type.

<sup>2</sup> 170 studies report only subjective or objective performance measures, so we took the mean of these relationships between EO and the performance per study, resulting in one effect size per study. 7 studies report both subjective and objective measures. In these cases, we counted these studies twice, computing two means per study, one for the EO's relationship with the subjective measures and one with the objective measures, leading to 184 effect sizes in total. Findings remain the same in terms of direction and significance of coefficients when only comparing the 170 studies which employ either subjective or objective measures only.

<sup>3</sup>Profitability vs. Growth; <sup>4</sup>Profitability vs. Overall; <sup>5</sup>Growth vs. Overall

Table 4. Meta-analytic regression results on moderators of the EO-Performance relationship

Predictor Variables <sup>1</sup>	Model 1		Model 2		Model 3	
	$\beta(B)$	SE	$\beta(B)$	SE	$\beta(B)$	SE
<b>Control Variables</b>						
Objective vs. subjective performance measure	-.202 (-.054)*	.046	-.198 (.04)*	.066	-.183 (-.092)**	.041
Control for industry vs. no control for industry	.005 (.001)	.041	.002 (.038)	.078	.037 (.014)	.070
Small firms vs. large firms	.075 (.038)	.044	.066 (.036)	.065	-----	----
High-tech focus vs. non-high-tech focus	.124 (.071)	.059	.098 (.031)	.079	.098 (.032)	.079
Study quality	.023 (.002)	.034	.011 (.001)	.055	.023 (.0005)	.065
Published studies vs. non-published studies	-.103 (-.029)	.065	-.096 (-.027)	.063	-.084 (-.030)	.071
<b>National Cultural Context</b>						
H1: Uncertainty avoidance			-.259 (-.105)*	.053	-.162 (-.071)*	.036
H2: Power distance			-.195 (-.099) <sup>t</sup>	.058	-.339 (-.215)**	.066
H3: Collectivism			.184 (.075)	.057	.264 (.101)**	.035
H4: Assertiveness			-.048 (-.013)	.059	-.049 (.018)	.056
<b>National Economic, Political and Regulatory Context</b>						
H5: Market size			.054 (.007)	.063	.083 (.013)	.063
H6: Developed vs. developing nations			-.690 (-.190)*	.085	-.123 (-.120)*	.056
H7: Political stability			.922 (.255)**	.096	.280 (.166)**	.051
H8: Regulatory quality			.056 (.010)	.094	.079 (.009)	.049
K	102		102		159	
$\tau^2$	.018		.005		.009	
Adjusted $R^2$	.102		.352		.325	
Change in adjusted $R^2$ (compared to model 1)		.250***			.223***	
F-statistic (degrees of freedom)	5.22* (6, 95)		10.07***(14, 87)		9.68***(13, 145)	
$I^2_{res}$	85.27%		66.68%		72.31%	
Max variance inflation factor (VIF)	2.22		5.01		5.01	

Notes: <sup>t</sup>p<.10; \*p<.05; \*\*p<.01; \*\*\*p<0.001

<sup>1</sup>The categorical variables are coded as follows: objective performance measure = 1, subjective performance measure = 0; control for industry = 1, no control for industry = 0; small firms = 1, large firms = 0; high-tech focus = 1, non-high tech focus = 0; published studies = 1, non-published studies = 0; developed nations = 1, developing nations = 0. All other predictors are metric. Further, note that the individualism/collectivism dimension is coded in GLOBE so that high values indicate strong values of collectivism.

$\beta$  = Standardized beta coefficient ( $B$  = Unstandardized beta coefficient); standard error, and P-value are presented;  $K$  = number of studies (included in analysis);  $\tau^2$  = REML estimate of between-study variance; Adjusted  $R^2$  = Proportion of between-study variance explained;  $I_{res}^2 = \max[0, \{Q_{res} - (n - k)\} / Q_{res}]$ , % residual variation attributed to between-study heterogeneity

Table 5. Overview of hypotheses treatment according to bivariate and meta-regression analyses

		Confirmed in ...			Conclusion for hypothesis
		Bivariate analysis	Meta-regression (model 2) <sup>1</sup>	Meta-regression (model 3) <sup>2</sup>	
H1	The EO–performance relationship is stronger in national cultures characterized by low uncertainty avoidance than in those characterized by high uncertainty avoidance.	Yes	Yes	Yes	Accepted
H2	The EO–performance relationship is stronger in low-power-distant national cultures than in high-power-distant national cultures.	Yes	Yes	Yes	Accepted
H3	The EO–performance relationship is stronger in collectivist national cultures than in individualist national cultures.	Yes	No	Yes	Partly accepted
H4	The EO–performance relationship is stronger in national cultures characterized by low levels of assertiveness than in those characterized by high levels of assertiveness.	No	No	No	Rejected
H5	The EO-performance relationship is stronger in countries with large home markets than in those with small home markets.	No	No	No	Rejected
H6	The EO-performance relationship is stronger in developing economies than in developed economies.	Yes	Yes	Yes	Accepted
H7	The EO-performance relationship is stronger when the level of political stability is high than when it is low.	Yes	Yes	Yes	Accepted
H8	The EO-performance relationship is stronger when the level of regulatory quality is high than when it is low.	No	No	No	Rejected

<sup>1</sup> based on 102 studies, <sup>2</sup> based on 159 studies

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