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Exploring an Inverted U-Shape Relationship between Entrepreneurial Orientation and Performance in Chinese Ventures

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The critical role of entrepreneurial orientation (EO) in firm performance has been widely studied in the U.S. context. However, the examination of this key construct in emerging regions such as China has been very limited. In this article, we hypothesize that the relationship between EO and firm performance is best represented as curvilinear, as opposed to linear, in China. We use a two-study approach to test the link between EO and performance, as expressed in both *perceptual* and *objective* performance. Findings of both studies demonstrate an inverted U-shape relationship. Implications for future research on EO are discussed.

Introduction

Entrepreneurial orientation (EO) has emerged as a major construct within the strategic management and entrepreneurship literatures over the past 2 decades. A firm with high EO is defined as one that engages in technological innovation (i.e., innovativeness), undertakes risky ventures (i.e., risk taking), and pursues opportunities proactively (i.e., proactiveness) (Miller, 1983). Further, a firm must be concurrently risk taking, innovative, and proactive in order to be labeled “entrepreneurial” (Miller, 1983). Studies have suggested a positive linear relationship between EO and firm performance (e.g., Keh, Nguyen, & Ng, 2007; Lee, Lee, & Pennings, 2001; Lumpkin & Dess, 1996; Zahra & Covin, 1995). Nevertheless, findings regarding the extent to which such an entrepreneurial strategic posture is associated with improved performance have been inconsistent. The first

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possible explanation for these inconsistent findings may be due to the fact that current studies have neglected the market context in which the businesses run their operations, which is problematic as Lumpkin and Dess suggest that factors internal and external to the firm may moderate the EO–performance relationship. The second explanation may rest on the assumption that the relationship between EO and performance is linear.

In response to the first explanation, of particular interest to us is the nature of the EO–performance relationship within the Chinese context, as both the internal organizational structures and institutional environment in China represent strikingly different characteristics from those in the United States and other mature economies. Internally speaking, a significant lack of *guanxi* network, experienced management teams, and role formalization may impede high EO from benefiting organizations. Institutionally speaking, as China is transitioning from planned economy to market economy, the coexistence of socialist and market-based capitalist systems, along with the fact that government controls resources, financing, and materials distribution, may all promote a unique relationship between EO and performance. Thus, although previous studies have highlighted the importance of a contingent approach, we believe that greater insight into the role of EO on performance may be gained through investigating the relationship in an emerging economy rather than in a highly developed market.

To better address the second explanation for the inconsistent findings of the EO–performance link, we focus on a curvilinear relationship based on the current situation in China. The documented positive relationship between EO and performance implies utility in firms' efforts to innovate, take risks, and proactively pursue market opportunities, as doing so is likely to enhance firm performance. However, given that firms operating in an emerging region such as China are *not* equivalent to their counterparts in developed economies, we suggest that the relationship between EO and performance may be best represented as curvilinear within the Chinese context. Specifically, low-EO firms may not perform well because they do not strive to compete aggressively. However, high-EO firms may not obtain a competitive advantage either because of the lack of institutional support and organizational formalization, both of which are required for firms to engage in high-risk and innovative projects. Instead, it is the middle-level EO that is significantly related to highest firm performance.

Thus, the purpose of the present research was to examine the nature of the relationship between EO and firm performance in the Chinese context to determine if the best representation was linear or curvilinear. Data from two samples in Northern China were collected to provide evidence for the proposed curvilinear relationship between EO and performance.

Theoretical Background and Hypothesis

EO in China

EO refers to a firm's strategic orientation, capturing specific entrepreneurial aspects of innovativeness, proactiveness, and risk taking (e.g., Covin & Slevin, 1989; Lumpkin & Dess, 1996; Miller & Friesen, 1982). Prior theory and research acknowledge EO as an important constituent for various dimensions of organizational success (Lee et al., 2001; Lumpkin & Dess, 1996; Zahra & Covin, 1995).

However, to date, key knowledge voids remain within the realm of EO research (Covin, Green, & Slevin, 2006). Lumpkin and Dess note the complexity of EO–performance relationship and suggest that the performance implications of EO are context specific. That is, the magnitude of the relationship between EO and firm performance is

contingent upon the external environment as well as internal organizational processes. As far as external environment is concerned, EO has been widely studied in the U.S. context or other developed economies, while much less examination has been conducted in emerging economies (e.g., Luo, 1999; Luo, Zhou, & Liu, 2005; Zhou & Li, 2007). However, the concept of EO in China requires further research because China's institutional environment provides a compelling context to examine and refine our understanding of how institutions impact firms' entrepreneurial postures (Bruton, Lan, & Lu, 2000; Bruton & Ahlstrom, 2003). The nation's socialist tradition and strong culture create a distinct social and economic background (Scarborough, 1998). Therefore, we cannot assume that Western practices are universal in emerging regions such as China.

As far as internal organizational characteristic is concerned, the success of EO may be affected by the firm's network capabilities (Walter, Auer, & Ritter, 2006), strategic processes (Covin et al., 2006), and access to capital (Wiklund & Shepherd, 2005) among others. In contrast to market economies, which are predominantly shaped by privately owned businesses, China, as an emerging economy, is characterized by diverse organizational structures with state-owned and privately owned enterprises making up the majority. Therefore, it should not be assumed that firms operating in the Chinese context are equivalent to their counterparts in the West. As all these idiosyncratic characteristics may influence the extent to which firms benefit from EO, we call upon them and draw on related theories to explicate why EO only improves firm performance to a saturation point, above which EO may negatively influence the performance of entrepreneurial firms in China.

EO and Firm Performance

Although researchers have proposed and documented a positive relationship between EO and firm performance (e.g., Keh et al., 2007; Lee et al., 2001), what has not been specifically examined is whether this linear positive relationship exists infinitely. As a matter of fact, there may be a saturation point above which an increase in EO does not add to the firms' capability to perform well. In other words, too much EO may not always translate into improved performance. Based on the current emerging situation of China, we focus on institutional and organizational contexts of the firm to present a few possible reasons why we believe that the relationship may no longer be linear for firms with high EO, but instead curvilinear.

There are at least two institutional rationales supporting the possibility that too much EO may be an impediment to firm survival and growth. Institutional theory has been widely utilized to explain organizational behavior and top management teams' decision making in emerging economies (e.g., Bruton & Ahlstrom, 2003; Hoskisson, Eden, Lau, & Wright, 2000; Luo, 2003; Peng, 2003). Institutional theory emphasizes the influences of the systems that shape organizations' strategic posture and processes (Scott, 1995). In the past 3 decades, the Chinese government has shifted its focus from administrative control toward market coordination. Such a transition is characterized by the coexistence and counteraction of two systems: the socialist and capitalist systems (Tan & Tan, 2004, 2005). The contradictions of the two antagonistic ideologies may create stress and confusion for entrepreneurial firms operating within such an environment. The upshot of stress and confusion may be an inability to capitalize on new business opportunities efficiently, i.e., when firms with too much EO focus too much of their attention on engaging themselves in high-risk and innovative projects, they may ignore or discount the constraining functions of the two opposing systems (Bruton & Ahlstrom, 2003; Peng, 2003). As a result, for firms at the high end of the EO continuum, EO may impact

performance negatively by inhibiting firms' capability to immediately adapt to the complications of their institutional environment.

Another constraining institutional factor rests on the fact that the central government still controls resource, financing, and material distribution, investment size, industry structure, bank loans, business formation, and so on (Park & Luo, 2001). For most entrepreneurial firms without government connections, availability of capital is one of their major challenges. The commercial banks in China have much higher levels of regulations of lending loans to entrepreneurial firms than do banks in other countries (Cooper & Yin, 2006). Venture capital is only emerging in China and does not provide adequate funding to entrepreneurial firms (Liao & Sohmen, 2001). This situation is exacerbated by the practice of the government that has continued to behave unpredictably (Peng, 2001). However, the pursuit of entrepreneurial strategies requires resources as EO is a resource-consuming strategic orientation (Covin & Slevin, 1991). The risk taking, innovativeness, and proactiveness of entrepreneurial firms all involve making large resource commitments to risky projects, untried technologies, new products or services to the market. Only with access to financial resources can entrepreneurial firms build competitive capabilities and compete with their high-quality and innovative products and services (Greene & Brown, 1997; Wiklund & Shepherd, 2005). If this is the case, without considerable resources, the implementation of EO will most likely go awry, and the benefits of EO will be leveraged.

Additionally, three organization-level attributes of firms in China also help explain why high EO may be associated with deficient performance. Previous studies have extensively documented the critical role of the practice of networking, or *guanxi*, for firm success in China (e.g., Luo, 2003; Park & Luo, 2001; Peng, 2003; Xin & Pearce, 1996). Under structural turbulence, entrepreneurial firms encounter problems and uncertainty with which they are not capable of coping alone (Tan & Tan, 2004). Thus, they need to rapidly build ties with larger and more powerful players in order to establish legitimacy (Pfeffer & Salancik, 1978). Firms in China have to cultivate two sets of networks: professional networks with suppliers, buyers, major clients, or customers, and political networking with governmental officials and regulators, given the extensive involvement of the government (Peng, 2003). However, literature on Chinese entrepreneurial firms have suggested that a primary concern of top management teams is how to expand and nurture *guanxi* networks to build trust and exchange favors (e.g., Park & Luo, 2001). Most entrepreneurial firms are still struggling to establish the essential networks to fulfill their goals. Particularly when firms engage in innovative and risky projects or pursue market opportunities proactively, various substantial support from a large and reliable network is required. Otherwise, such projects, especially conducted under structural uncertainty, are more likely to become fatal, resulting in deficient performance.

Second, a transitional economy may pose challenges for managerial practices at the same time it creates opportunities for entrepreneurial firms. When operating in a dynamic and transitioning market, it is imperative that organizations make quick responses to the changing competitive landscape (Tan & Tan, 2005). Top management teams are propelled to accurately identify the strategic implications of competing in an emerging environment in order to survive and succeed (Slevin & Covin, 1997). Unfortunately, few managers in China have rich experience in competing in a market-based economy (Bjorkman & Lu, 1999; Li & Atuahene-Gima, 2001). Human capital theory maintains that knowledge and experience provide individuals with increases in their cognitive abilities, leading to a more productive and efficient potential activity (Becker, 1964; Schultz, 1959). Therefore, if profitable opportunities for a new economic activity exist, top management teams with higher quality human capital will be able to capitalize on them before "market windows

close” (Covin et al., 2006). More importantly, as firms with higher EO are constantly involved with risky and innovative projects, experienced and knowledgeable managers are required to guide and lead such projects. Without such crucial human capital within firms, the highly entrepreneurial projects will not be adequately defended and protected, again resulting in deficient performance.

The third interfering factor lies in the internal organizational structures, i.e., role formalization. Role formalization refers to the identification and designation of particular functional roles and their assignment to specific individuals (Sine, Mitsubishi, & Kirsch, 2006). Recent studies have suggested and indicated that role formalization is beneficial for firm performance (e.g., Sine et al., 2006), particularly for entrepreneurial firms in the transitional economy of China (e.g., Lin & Germain, 2003). For firms operating under environmental turbulence, higher degree of formalization is essential because it delineates what top management team members can and cannot do. Additionally, it allows top management team members to concentrate on the assigned tasks and to accumulate task-related knowledge, thus reducing role ambiguity. Role formalization can also increase a new venture’s legitimacy, credibility, and acceptance from important external constituents (Sine et al., 2006). However, entrepreneurial firms are initially characterized by relatively little role formalization (Aldrich, 1999). In particular, most Chinese firms have an overall low formalization and the case for formal control has become more and more convincing (Lin & Germain, 2003). Some Chinese firms have strived to develop structured procedures and role functions to enhance employee productivity and boost growth (Lin & Germain, 2003). If this is the case, although firms with high EO are proactively pursuing opportunities before their competitors do, they will not be quick and effective enough to respond to new market opportunities because the low formalization is constraining firms’ decision making process. Hence, the value of EO may be diminished. Therefore, we suggest a curvilinear relationship between EO and firm performance, as expressed by the following hypothesis:

Hypothesis: The relationship between EO and firm performance is curvilinear (inverse U-shaped), with the best performance occurring at an intermediate level of EO.

Methods

Study 1

The first study was conducted to test the hypothesized inverted U-shaped relationship between EO and *perceived* firm performance.

Sample and Data Collection Procedures. 1,100 enterprises (located in Shandong, Inner Mongolia, Hebei, and Tianjin) were randomly chosen from the database of a large state university in Northern China. Data collection included three steps and lasted from August to October 2005. First, on-site interviews with members of top management teams were conducted to assess the face validity of the measures. Second, we contacted all the firms by telephone, text message, and/or e-mail, asking for permission to distribute surveys to their firms. Third, surveys were e-mailed or mailed, at firms’ preference, to members of top management teams. Surveys were developed in English and subjected to a double back-translation process consistent with the framework established by Brislin (1980) for translating international surveys. By the end of October 2005, 205 surveys were returned and the response rate was 18.64% (205/1,100). Twenty cases were deleted for missing

Table 1

Sample 1 Characteristics

	N
Location	
Tianjin	82
Shandong	16
Hebei	44
Inner Mongolia	21
Others	22
Employee number	
Less than 100	84
101–500	32
501–1,000	18
1,001–2,000	12
More than 2,000	39
Industry	
Manufacturing	115
Public service	53
Wholesale and retail	7
Finance	5
Real estate	5
Total	185

values. Thus, 185 firms were retained and used for analysis. ANOVA (Analysis of Variance) tests found no non-response bias or missing-value bias. Table 1 summarizes the sample characteristics.

Measures. Drawing on Covin and Slevin (1989) and Kreiser, Marino, and Weaver (2002), the 8-item *EO* scale was utilized.¹ All items were anchored on a 5-point Likert scale

1. Drawing on Miller (1986), Miller and Friesen (1982), Khandwalla (1976/1977), and Covin and Slevin (1989) developed a nine-item scale for *EO*. This scale is the most widely utilized measure of *EO* in entrepreneurship and strategic management literature (e.g., Atuahene-Gima & Ko, 2001; Covin et al., 2006; Li & Atuahene-Gima, 2001; Tan & Litschert, 1994). Following the original proposition by Miller (1983), Covin and Slevin (1989) theorized and operationalized *EO* as a unidimensional construct, i.e., the three dimensions of innovativeness, proactiveness, and risk taking should be aggregated together when conducting research on *EO*.

Covin and Slevin's (1989) original *EO* scale had three items for each of the three dimensions. Kreiser et al. (2002) utilized a six-country sample (i.e., Australian, Finnish, Mexican, Dutch, Norwegian, and Swedish) with an extensive sample size of 1,067 firms to determine whether the psychometric properties of the *EO* scale exhibit adequate levels of reliability and validity in a cross-cultural setting. When Kreiser et al. pretested the scale, a significant cross-loading was found between the item measuring the organizational adoption of a bold and aggressive posture and another item measuring organizational willingness to engage in bold, wide-ranging acts. In order to maintain model parsimony, the item measuring bold posture (i.e., "When confronted with decision-making situations involving uncertainty, my firm typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities") was dropped from the scale. As a result, the eight-item scale was utilized throughout the sample in Kreiser et al. To the knowledge of the current authors, there is no modified *EO* scale for utilization in emerging markets. Thus, in this research, we adopted the eight-item scale from Kreiser et al. because these eight items have been subject to psychometric tests in a non-U.S. setting.

We conducted CFA to test the unidimensional solution of *EO*. To evaluate the overall fitness of the measurement model, the following guidelines were used: (1) the ratio of Chi-square to degrees of freedom

ranging from “strongly disagree” (1) to “strongly agree” (5). The items were reverse coded and the mean ratings of these eight items were used as the EO measure so that the higher the score, the more entrepreneurial the strategic posture ($\alpha = .86$). The Appendix presents the detailed EO scale along with its sources and reliability.

Firm performance was measured with four items that asked CEOs to evaluate their firms’ performance relative to their principal competitors for the past 3 years on (1) sales growth rate; (2) market share; (3) pretax profit growth rate; and (4) overall performance (McDougall, Covin, Robinson, & Herron, 1994). All items were anchored on a 5-point Likert scale ranging from “very low” (1) to “very high” (5). The average of these four items was used as the performance measure. We performed CFA to evaluate the factor structure of the performance measure. Results indicated good model fit (ratio of Chi-square to $df = 1.64/1 = 1.64$; GFI = 1.00; AGFI = .96; NFI = 1.00; NNFI = .99; CFI = 1.00; SRMR = .01; RMSEA = .06). The Appendix presents the detailed items for this subjective firm performance scale ($\alpha = .89$).

Three *controls* were entered when we tested the hypothesized relationships. These three control variables were widely believed to influence the relationship between EO and firm performance. The first control was the *location* of the firms investigated: “Tianjin,” “Shandong,” “Inner Mongolia,” “Hebei,” and “Others.” Anecdotally, firms in Tianjin are more entrepreneurial than firms in other regions as Tianjin is one of the four centrally administered municipalities and the largest industrial and port city in Northern China. The second control was *firm size*, which was measured by the number of employees (Keats & Hitt, 1988; McKinley, 1987). Respondents were asked to check one of the five categories: “less than 100 employees,” “101 to 500 employees,” “501 to 1,000 employees,” “1,001 to 2,000 employees,” and “more than 2,001 employees.” Previous literature has documented firm size as an organizational attribute that significantly impacts firms’ strategic orientation and performance (e.g., Luo et al., 2005; Park & Luo, 2001; Peng & Luo, 2000). The third control was *industry*. We asked CEOs to specify the industry where their main product lines fell under: manufacturing, public service, finance, real estate, and wholesale and retail.

Analyses. We conducted hierarchical regression analyses to assess the form and magnitude of the relationship between EO and firm performance. In the first step, the control

(df) should be less than 5; (2) the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), non-normed fit index (NNFI), and comparative fit index (CFI) should be near or higher than .90; (3) the standardized root mean square residual (SRMR) should be less than .05; and (4) the root mean square error of approximation (RMSEA) should be less than .08 (Baum & Wally, 2003; Joreskog & Sorbom, 1993; Medsker, Williams, & Holohan, 1994). Results revealed that the unidimensional model represented good fit indices (ratio of Chi-square to $df = 18.06/13 = 1.39$; GFI = .98; AGFI = .93; NFI = .98; NNFI = .99; CFI = .99; SRMR = .03; and RMSEA = .05). All standardized factor loadings were greater than .59, indicating good convergent validity.

In order to establish the discriminant validity of the EO measure, we ran two more analyses. First, we conducted another CFA on both EO and performance measures. Results showed good fit indices (ratio of Chi-square to $df = 69.32/48 = 1.44$; GFI = 0.94; AGFI = 0.90; NFI = 0.96; NNFI = 0.98; CFI = 0.99; SRMR = 0.05; and RMSEA = 0.05). All eight EO items loaded on one factor with standardized values no less than 0.53. Similarly, all performance items loaded on one factor with standardized values equal to or higher than .67. These indices confirm that EO and performance factors are distinct from each other and have good discriminant validity. Second, we calculated the average variance extracted of the eight EO items, which was .45. This value was far greater than the PHI variance shared between EO and performance, which was .32, indicating good discriminant validity. Furthermore, the eight-item EO scale showed robust reliability (composite reliability = .88; and $\alpha = .86$).

variables were entered. We entered the linear EO term on the second step and the curvilinear EO term on the third step. In order to control for the possible correlation between EO and its square term, we mean centered both variables (Cohen, Cohen, West, & Aiken, 2003).

Results. Means, standard deviations (SDs), and correlations are provided in Table 2. Firms in Tianjin demonstrated higher levels of entrepreneurial strategic posture than firms in other regions ($r = .27$; $p < .001$), and firms in Inner Mongolia had the lowest levels of EO ($r = -.25$; $p < .001$). Table 2 also showed that in general, manufacturing firms were more entrepreneurially oriented than nonmanufacturing firms ($r = .25$; $p < .05$). Overall, these results justified the inclusion of these control variables.

Results from the hierarchical regression analyses are summarized in Table 3. Among the control variables, Hebei was negatively related to firm performance ($\beta = -.23$; $p < .05$); firms with less than 100 employees were also negatively associated with performance ($\beta = -.29$; $p < .01$). The linear EO term was significantly and positively related to firm performance ($\beta = .27$; $p < .001$). The linear EO term explained an additional 6% of the variance beyond that explained by the control variables.

In model 3, we entered the squared EO term and found that this term was negatively and significantly related to firm performance ($\beta = -.13$; $p < .1$). The squared EO term explained an additional 1% of the variance beyond that explained by the first two steps. This result provided support for our hypothesis. Although small in magnitude, the percentages of variance explained are in line with organizational research investigating relationships other than linear, direct effects (Champoux & Peters, 1987; Evans, 1985).

Study 2

In designing Study 2, our goal was to build off of the results of Study 1 by replicating the key findings from that study. In addition, objective performance measure was used.

Sample and Data Collection Procedures. In Study 2, data were collected from two sources in China: (1) a field survey that collected data on EO and objective firm performance (i.e., log sales); and (2) archival industry data (i.e., Chinese stock market report) provided by Shenzhen Securities Information Co., Ltd. (SSIC). Powered by Shenzhen Stock Exchange (SZSE), SSIC is the oldest professional provider of securities information in China and the sole agent of *Securities Times*. Following Palmer and Wiseman (1999), we employed the stock market data to approximate the industrial environmental effects. By doing so, we expect to minimize the potential impact of common methods bias and offer additional insight into the EO–performance relationship.

A national consulting company headquartered in Beijing administered the field survey to collect firm-level variables. Five hundred firms, with a wide range of firm sizes and across a variety of industries, were randomly chosen from the client list of this consulting company. Surveys were sent to members of top management teams because they were most likely the key decision makers and knowledgeable of the firms' operations, strategy, and performance. The same double-back translation procedure employed in Study 1 was adopted in Study 2. Then, the survey was uploaded online and subjected to a pretest. All respondents were asked to complete and submit the survey online.

From December 2005 to February 2006, 207 firms submitted the surveys and the response rate was 41.4%. The firms came from 17 different industries and the firm size ranged from 5 to 791 employees. Five firms who considered themselves as "other" industry were excluded. Twelve cases were excluded due to inconsistent responses. An

Table 2
Correlations, Means, and Standard Deviations (SD)—Study 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Mean	3.33	3.46	.44	.24	.11	.09	.45	.17	.10	.06	.62	.29	.03	.03
SD	.96	.80	.50	.43	.32	.28	.50	.38	.30	.25	.49	.45	.16	.16
1. Performance														
2. Entrepreneurial orientation	.27***													
3. Tianjin	-.02	.27***												
4. Hebei	-.07	-.10	-.50***											
5. Inner Mongolia	-.07	-.25***	-.32***	-.20**										
6. Shandong	.16*	.01	-.28***	-.17*	-.11									
7. Firm size (<100)	-.24***	.14†	.54***	-.48***	.08	-.20**								
8. Firm size (101–500)	.06	-.04	-.06	.11	-.07	-.04	-.42***							
9. Firm size (501–1,000)	.16*	-.09	-.18*	.07	.11	-.04	-.30***	-.15*						
10. Firm size (1,001–2,000)	.07	-.13†	-.24*	.06	-.03	.31***	-.24***	-.12	-.09					
11. Manufacturing	.25***	.18*	-.11	.15*	-.07	.12†	-.36***	.12†	.18*	-.02				
12. Public service	-.18*	-.06	.18*	-.10	-.08	-.20**	.34***	-.10	-.13†	.03	-.81***			
13. Finance	-.11	-.14†	-.02	-.09	-.06	.19*	.05	-.08	-.06	.09	-.21**	-.11		
14. Real estate	-.16*	-.14†	-.08	-.09	.36***	-.05	.12	.01	-.06	-.04	-.21***	-.11	-.03	

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed test.

Table 3

Regression Results of the Effect of Entrepreneurial Orientation on Subjective Firm Performance—Study 1

	Model 1	Model 2	Model 3
Control—location			
Tianjin	.04 (.23)	.01 (.23)	.02 (.23)
Hebei	-.23* (.25)	-.21* (.24)	-.21† (.24)
Inner Mongolia	-.06 (.30)	-.00 (.29)	-.02 (.29)
Shandong	.06 (.32)	.04 (.31)	.04 (.31)
Control—firm size			
<100	-.27* (.24)	-.29* (.23)	-.27* (.23)
101–500	-.04 (.23)	-.02 (.22)	-.03 (.22)
501–1,000	.07 (.27)	.09 (.26)	.09 (.26)
1,001–2,000	.02 (.23)	.05 (.30)	.05 (.30)
Control—industry			
Manufacturing	-.02 (.36)	-.10 (.35)	-.11 (.35)
Public service	-.16 (.38)	-.19 (.37)	-.19 (.36)
Finance	-.16† (.54)	-.13 (.53)	-.13 (.52)
Real estate	-.15 (.55)	-.14 (.53)	-.16† (.53)
Independent variable			
Entrepreneurial orientation		.27*** (.09)	.23** (.09)
Independent variable—square term			
Entrepreneurial orientation ²			-.13† (.09)
Fitness indices			
R ²	.17	.23	.24
Adj. R ²	.11	.17	.18
F	2.84***	3.82***	3.79***
df	(12, 172)	(13, 171)	(14, 170)
ΔR ²		.06	.01
ΔF		13.08***	2.90†
Δdf		1	1

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed test.

Note: The entries in the table are standardized coefficients (βs). The numbers in brackets are standard errors.

additional 26 cases were deleted because of missing values, reducing the final sample size to 164. One ANOVA test was employed to compare the final sample and the cases deleted for potential nonresponse bias. No significant difference was found in terms of industry type, firm size, EO, and sales.

Table 4

Correlations, Means, and Standard Deviations (SD)—Study 2

	Mean	SD	1	2	3	4	5	6
1. Lgsales	2.80	.73						
2. Entrepreneurial orientation	3.27	.42	-.10					
3. Munificence	.06	.17	.24**	-.02				
4. Instability	.18	.31	.00	-.02	.61***			
5. Competitors	70.97	52.74	.18*	-.07	.19*	-.22**		
6. Concentration ratio	.49	.18	-.05	-.01	-.07	.23**	-.74***	
7. Firm size	49.38	80.95	.58***	-.43***	.18*	.04	.04	.08

* $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed test.

Measures. We employed the same *EO* measure used in Study 1, yet the items were arranged in a different order to reduce any potential bias due to the order of the items ($\alpha = .75$). We conducted CFA to verify the unidimensionality of the *EO* measure. As expected, the hypothesized one-factor model fitted the data well (ratio of Chi-square to $df = 14.15/11 = 1.29$; GFI = .98; AGFI = .93; NFI = .97; NNFI = .98; CFI = .99; SRMR = .05; and RMSEA = .04).

Firm performance was measured by self-reported sales volumes. As the raw sales data were right-skewed (skewness = 12.80), the logged sales volumes were used (skewness = 1.24).

Two *control variables* were included in our analysis. *Industry effects* (i.e., munificence, instability, and complexity) were calculated following Boyd (1990), Dess and Beard (1984), and Palmer and Wiseman (1999). *Firm size* was measured by the actual number of employees in each firm (Keats & Hitt, 1988; McKinley, 1987).

Analysis and Result. Means, SDs, and correlations were included in Table 4. Following the same procedure in Study 1, we analyzed three models and the results were summarized in Table 5. In model 1, *lgsales* was regressed on control variables. In model 2, the linear term of *EO* was added. *EO* had a significant and negative relationship with *lgsales* ($\beta = -.19$; $p < .01$). The linear *EO* term explained an additional 3% of the variance beyond that explained by the control variables in model 1. In model 3, we entered the squared *EO* term and found that this term was negatively and significantly related to *lgsales* ($\beta = -.17$; $p < .05$). The squared *EO* term explained an additional 2% of the variance beyond that explained by the first two steps. This result confirmed the finding in Study 1 that *EO* was beneficial to firm performance up to a certain level and harmful after that point.

The curvilinear relationships between *EO* and firm performance are illustrated in Figure 1 for sample 1 and Figure 2 for sample 2. The rate at which the regression slope went down after the optimal point was faster in Figure 2 than in Figure 1. These graphs confirmed our findings that the magnitude of the relationship between the squared term of *EO* and performance was stronger in Study 2 ($p < .05$) than in Study 1 ($p < .1$).

Table 5

Regression Results of the Effect of Entrepreneurial Orientation on Firm Lgsales—Study 2

	Model 1	Model 2	Model 3
Control—industrial effects			
Munificence	.18* (.38)	.15 [†] (.37)	.12 (.38)
Instability	-.11 (.21)	-.09 (.21)	-.08 (.21)
Competitors	.14 (.00)	.17 [†] (.00)	.20* (.00)
Concentration ratio	.05 (.38)	.06 (.38)	.07 (.37)
Control—firm size (number of employees)	.54*** (.00)	.62*** (.00)	.71*** (.00)
Independent variable			
Entrepreneurial orientation		-.19** (.12)	-.14 [†] (.13)
Independent variable—square term			
Entrepreneurial orientation ²			-.17* (.13)
Fitness indices			
R ²	.38	.41	.42
Adj. R ²	.36	.38	.41
F	29.28***	17.88***	16.24***
df	(5, 158)	(6, 157)	(7, 156)
ΔR ²		.03	.02
ΔF		7.17***	4.21*
Δdf		1	1

[†] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed test.

Note: The entries in the table are standardized coefficients (βs). The numbers in brackets are standard errors.

Discussion

EO is an area of growing interest among managers, entrepreneurs, and scholars. Most studies on EO have been executed in market economies such as the United States (e.g., Covin et al., 2006; Green, Covin, & Slevin, in press) and findings have suggested a positive linear relationship between EO and firm performance (e.g., Lee et al., 2001; Lumpkin & Dess, 1996; Zahra & Covin, 1995). However, to date, little empirical research has been conducted on the entrepreneurial strategic posture of Chinese firms operating in an emerging and transitioning economy. In the current study, we explore a curvilinear relationship between EO and firm performance, as expressed in both perceptual and objective performance, in Chinese firms. We employ two samples collected from Northern China to test our hypothesis. The results from both samples illustrate that the relationship between EO and firm performance is not necessarily linear but may be curvilinear.

Figure 1

Graph of Entrepreneurial Orientation (EO) and Subjective Firm Performance (Sample 1)

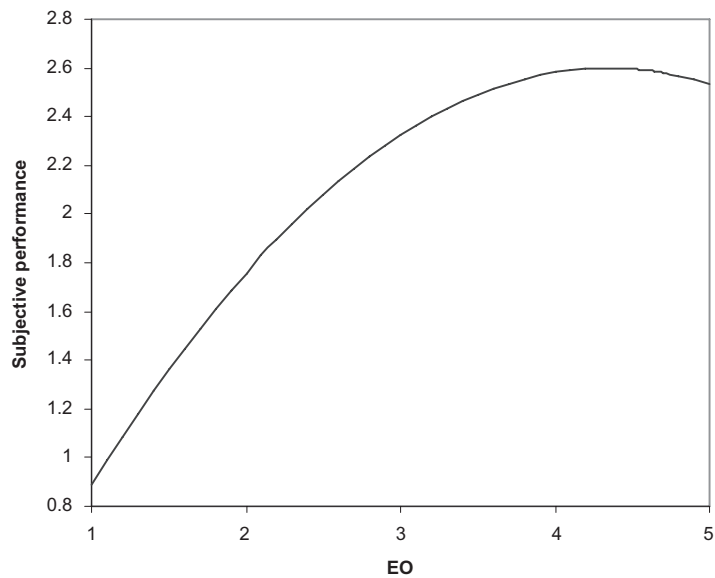
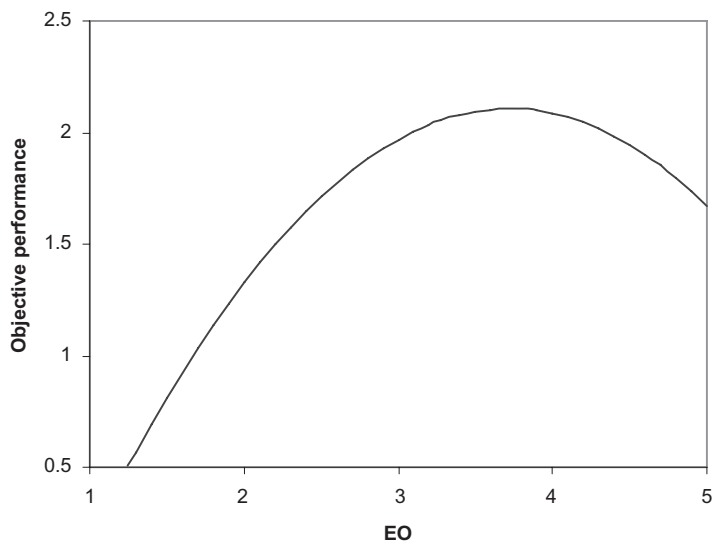


Figure 2

Graph of Entrepreneurial Orientation (EO) and Objective Firm Performance (Sample 2)



This finding is important as it may be the first study to investigate the potential that firms may be blindly striving to pursue EO. The idea that negative consequences may result provides a different look at the relationship and may lead future researchers to examine other potentially adverse outcomes resulting from too much EO. These results raise two interesting questions: (1) what is the optimal level of EO that firms should reach in order to maximize its benefits; and (2) whether this inverse-U relationship also exists in other transitioning economies, given that our research endeavor was specifically centered on China. Obviously, any answers to these questions would be more speculative than definitive. Our goal was to determine the most accurate representation of the EO–performance relationship in an emerging market of China. Although our two studies provided evidence of a curvilinear relationship between EO and firm performance, they were not designed to answer the “why” question. The next logic step for future research would be to determine if Western-generated theories may be fully proper to explain such a unique relationship and if the U.S.-based EO scale is universally applicable. We discuss these issues in greater length in the following sections.

Strengths and Limitations of the Present Study

We offer four strengths of the present study. First, we found a constructive replication of a curvilinear relationship. This research contributes to the literature by demonstrating the power of two independent studies addressing the same research question using different data sets. Second, we found support for our hypothesis while controlling for firm size and industry, which provided a more conservative estimate of the relationship between EO and firm performance. By controlling for these variables, we were able to eliminate some potentially spurious relationships and plausible alternative explanations for the findings in this study. The inclusion of archival industry data also helped to eliminate common method variance in Study 2. The use of different sources and measures provided evidence that our findings were not solely a function of one particular scale or same-source variance.

Third, we used different measures of performance: subjective and objective performance indices. Although previous studies have relied on either subjective or objective performance measures, few have employed both in the same study. While each of these measures has advantages and drawbacks, the convergence of findings from both studies suggests that our results may be more reliable than those obtained from either measure. Fourth, we employed two samples of entrepreneurial firms representing a large variety of industries. Although most previous research on Chinese firms has focused on high-technology firms, the majority of entrepreneurial firms have emerged from industries that do not require the adoption of high technology. Therefore, our findings extended the utility of EO to non-high-technology ventures that represent a large proportion of firms operating in emerging markets.

Despite the noted strengths, there are limitations that need to be acknowledged to accurately interpret the results of this study. First, the correlations between EO and performance found in this study do not necessarily confirm causality. Due to the constraints of cross-sectional studies, our results only suggest that EO may have a curvilinear relationship with firm performance, while no evidence of causality can be provided. For example, one can argue that moderate level of performance is optimal for the implementation of EO. There is also a potential for an S-shape or a series of inverse-U relationships between EO and performance. As a matter of fact, we have

probed other possibilities of the EO–performance link by entering a cubed EO term after the inclusion of the linear and squared terms of EO. However, the addition of the cubed EO term was not significant, indicating only one bend in the curve. Thus, additional longitudinal or lagged data will be needed to test these alternatives and to explore the long-term effects of EO on firm performance to determine if and when EO leads to the highest level of performance.

Second, the lack of other financial (e.g., profits, market share, or sales growth rate) measures for performance limits us to use the sales volume as performance measure in Study 2. Future researchers need to confirm the validity of our results by utilizing more solid financial performance indices.

Additional Findings and Implications for Future Research

At this point, some additional findings are worth mentioning. First, our results showed different industry effects in China from the ones in the United States reported by Palmer and Wiseman (1999). For example, the industrial munificence index was .06 in our study while it was 16.7 in Palmer and Wiseman's study. On the other hand, the industrial instability index was .18 in our study while it was .12 in Palmer and Wiseman's study. These results are in line with prior literature proposing that the current environment in China is more turbulent yet less munificent than that in the United States. The different environments in which Chinese firms compete warrant the study of firms' EO in China. Further, as we argued earlier, we believe that the industrial environmental effects may have accounted for the different forms of relationship found (i.e., inverted U-shape) between EO and firm performance in the Chinese context.

The second additional finding concerns the dimensionality and validity of the EO scale to be applied in China. Studies have found that the performance advantage of EO is derived from three dimensions: innovativeness, proactiveness, and risk taking (Covin & Slevin, 1989; Lumpkin & Dess, 1996; Miller, 1983). In this paper, we followed prior research and treated EO as a unidimensional construct and our CFA results provided support for the one-factor solution. Even though the dimensionality of EO is not a key research question in this paper, it is worth noting that EFA results in both samples demonstrated a two-factor structure—innovativeness and risk taking—when the eigenvalue was set to be equal to or greater than 1. The items of proactiveness fell under the innovativeness or risk-taking factor. As a result, both factors had acceptable internal reliabilities (equal to or greater than .70) and factor structures (all factor loadings were greater than .50). These results suggest that the definition of EO, both theoretically and empirically, may be modified to better adapt to the context of emerging markets.

Our answer to the two-factor solution of the EO scale found in our study lies, first and foremost, in the unique context where our research was conducted. As mentioned earlier, EO was theoretically proposed and empirically developed in the U.S. context. Although Covin and Slevin's (1989) EO scale was probably the most widely utilized, most studies have tested EO in the United States or other developed economies. The literature unfortunately lacks systematic and rigorous investigations of the validity of the EO scale in a transition economy like China. However, the idiosyncratic contexts in China and other emerging economies permit and justify the development of a new or modified EO concept and operationalization.

Interestingly, a closer examination of the EO scale reveals other possible explanations for the emerged two-factor structure as opposed to the three-dimensional construct proposed in prior research. The first EO item (See Appendix), i.e., "In general, the top

managers of my company favor a strong emphasis on the marketing of tried and true products or services instead of on R&D, technological leadership, and innovations,” was intended to measure *innovativeness* by Covin and Slevin (1989) and numerous other studies on EO. However, the same item was used to measure *proactiveness* by Miller (1987, p. 32). Confirming this problematic item, in one of the few papers that reported the CFA results of the EO scale (Kreiser et al., 2002), the path loading of this item (.36) appeared to be significantly lower than the other innovation items (.75 and .78). This observation may not provide much added value if we conceptualize and operationalize EO as a unidimensional construct. However, the scholarly credibility of the study of EO will be strengthened and the validity of the scale of EO will be enhanced if we assign the most proper items to their intended dimensions, particularly since EO is revealed through an organization’s exhibition of three characteristics: innovativeness, risk taking, and proactiveness. A rigorous examination of the dimensionality and validity of the EO scale is also warranted when we apply it to emerging markets.

Another interesting observation of the EO scale pertains to the overall focus of what EO intends to measure. By definition, EO refers to a firm’s strategic posture, reflecting *how* firms explicitly or implicitly choose to compete (Covin, 1991), rather than the *outcomes* of their strategic posture. Seven out of the nine items were indeed measuring such entrepreneurial behavior or tendency or belief, e.g., “the top managers of my firm favor a strong emphasis on R&D (tendency) . . .,” “my firm typically initiates actions (behavior) . . .,” or “the top managers of my firm believe that wide-range acts are necessary (belief) . . .” However, the other two innovation items, e.g., “How many new lines of products or services has your firm marketed in the past five years?” and “Changes in product or service lines have usually been quite dramatic” appear to measure the end products or services that have already been developed and marketed. In other words, they focus more on the consequences or outcomes of being entrepreneurially oriented rather than on the strategic posture per se. Hence, these two items do not seem to belong to the scale that measures firms’ orientation by face validity. We hope these observed inconsistencies will stimulate further validation of the EO scale.

The last potential area for future research is additional replication. Although China, as the largest emerging market, has attracted significant research attention (Hoskisson et al., 2000), future research is needed to explore the generalizability of our findings by conducting studies in different institutional environments. Even within China, our findings probably only captured a snapshot of entrepreneurial firms in northern China. The economic development in southern China, for example, represents a different pattern and pace, influencing how firms behave, perform, and succeed. Such studies would greatly help develop and test theories of the determinants of the survival and success of entrepreneurial firms operating under the idiosyncratic environment of China.

Appendix: Survey Items

Anchored on a five-point Likert Scale: 1 = strongly disagree; 5 = strongly agree
 $\alpha = .86$ for Study 1 and $.75$ for Study 2.

EO (used in Study 1 and Study 2) Source: Covin and Slevin (1989), Kreiser et al. (2002)

Variable	Items
Innovativeness	<ol style="list-style-type: none"> 1. In general, the top managers of my company favor a strong emphasis on the marketing of tried and true products or services instead of on R&D, technological leadership, and innovations. 2. My company has marketed no new lines of products or services in the past three years. 3. Changes in product or service lines in my company have been mostly a minor nature in the past three years.
Proactiveness	<ol style="list-style-type: none"> 4. In dealing with its competitors, my company typically responds to actions which competitors initiate. 5. In dealing with its competitors, my company is very seldom the first business to introduce new products or services, administrative techniques, operating technologies, etc. 6. In dealing with its competitors, my company typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture.
Risk-taking	<ol style="list-style-type: none"> 7. In general, the top managers of my company have a strong proclivity for low risk projects (with normal and certain rates of return). 8. In general, the top managers of my company believe that owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior.

Performance (used in Study 1) Source: McDougall et al. (1994)

Relative to your principal competitors, rate your firm's performance over the last three years on:
 (1 = very low; 5 = very high)
 $\alpha = .89$

1. sales growth rate;
2. market share;
3. profit growth rate before tax; and
4. overall performance.

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