

## RESEARCH NOTES AND COMMENTARIES

# TOP MANAGEMENT TEAM FUNCTIONAL DIVERSITY AND ORGANIZATIONAL INNOVATION IN CHINA: THE MODERATING EFFECTS OF ENVIRONMENT

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*While conflicts (cognitive and affective) have been considered as important process variables to better understand the mixed findings on the relationship between top management team functional diversity and organizational innovation, such an input-process-outcome model is still incomplete without considering the environmental factors. This study was formulated to assess the importance of both competitive and institutional environments in moderating such upper echelon effects within a transition economy. The chief executive officers and chief technology officers of 122 Chinese firms were surveyed and both competitive uncertainty and institutional support were found to shape top management team decision making processes and their outcomes. Copyright © 2012 John Wiley & Sons, Ltd.*

## INTRODUCTION

The functional diversity of a top management team (TMT) can be defined as the degree to which TMT members differ with respect to their functional backgrounds (e.g., Cannella, Park, and Lee, 2008). Scholars have seen diversity, which is often considered a key driver of organizational innovation, as the reflection of the variety of knowledge, skills, and abilities among top managers.

**Keywords:** management team diversity; management team conflicts; organizational innovation; business environment; institutional support

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Moreover, scholars have highlighted team conflicts (cognitive and affective) as important ‘process’ variables that help better disentangle the observed correlation between team diversity and innovation. Cognitive conflict exists when group members disagree about the content of the tasks, including differences in viewpoints and ideas; affective conflict exists when there are interpersonal incompatibilities among group members, often reflected by tension and animosity (Jehn, 1995). However, the empirical evidence regarding these relationships is not altogether consistent. In fact, no explanation of these relationships could be deemed complete without considering the environmental context. Upper echelon theory recognizes the importance of environmental context (Hambrick and Mason, 1984), but empirical work of TMTs to document it

has been limited (Finkelstein, Hambrick, and Cannella, 2008).

Among the studies involving environmental context, attention has been predominantly focused on uncertainty or dynamism in the competitive environment (Cannella *et al.*, 2008; Carpenter and Fredrickson, 2001; Keck, 1997), whereas there has been little investigation of supporting factors in the institutional environment. In addition, little research on TMT diversity and organizational outcomes has focused on transitional economies in which environmental characteristics may be different from those of the heavily studied advanced Western economies. Recognizing these insufficiencies, this study was designed to investigate the influence of a firm's competitive environment and institutional environment on the linkages among TMT functional diversity, conflicts, and the organizational innovation in a transitional economy.

In doing so, the study contributes to TMT research in two major ways. First, in examining the moderating role of firm environment, we include not only the competitive uncertainty but also institutional support. Competitive environment determines the extent to which a firm is affected by its competitors, customers, and suppliers (Bluedorn *et al.*, 1994). Institutional support refers to the extent to which administrative institutions provide support for firms in order to reduce the adverse effects of an inadequate institutional infrastructure (Li and Atuahene-Gima, 2001). It is related to but different from environmental munificence, which is defined as the capacity to which an environment supports sustained growth of the firms (Dess and Beard, 1984). While environmental munificence is a very general description of sources of environmental support, institutional support focuses on a specific and highly important aspect of munificence. Second, using a sample of 122 Chinese technology firms, our study extends the TMT research to a novel context through deep contextualization (Tsui, 2007). China, as home to Confucian ethics, is a typical collectivist society emphasizing group orientation and interpersonal harmony (Hofstede, 1980). It represents an important setting to examine the applicability of prior findings in Western societies where individualism is widely accepted. China's rapid political, economic, and institutional changes accompanied by relatively underdeveloped factor and product markets yield a very suitable context for exploring the

role of environment. As fair resource distribution is not guaranteed in the market systems, firms often need the support of administrative institutions through nonmarket channels, and personal connections with governmental officials are often decisive in determining which firms receive such support (Yang, 1994).

## HYPOTHESES

### TMT functional diversity, conflicts, and organizational innovation

Organizational innovation involves generating and implementing new ideas or behaviors, including new products, services, process technologies, organizational structures, or administrative systems (Damanpour, 1996). Empirical studies correlating the functional diversity of TMT with innovation have returned mixed results (e.g., Bantel and Jackson, 1989; Wiersema and Bantel, 1992). One possible explanation may be that functional diversity is more helpful during the idea generating stage, when the team benefits from combining a variety of directly available perspectives, knowledge, and skill sets. During the idea implementing stage, functional diversity may actually be inhibiting, as it may limit flexibility and impede teamwork (Lovelace, Shapiro, and Weingart, 2001).<sup>1</sup> If so, this would make team conflicts particularly relevant to better understanding any linkage between TMT functional diversity and organizational innovation. However, research applying input-process-outcome models has also produced equivocal results regarding the impact of team functional diversity on conflicts as well as the impact of conflicts on team and organizational outcomes. Particularly, while a group led by Lovelace (Lovelace *et al.*, 2001) found that functional diversity fosters team cognitive conflict, Pelled, Eisenhardt, and Xin (1999) found that it drives cognitive conflict, but not affective conflict. Cognitive conflict is generally believed to be beneficial for teams and organizations, though studies have found both positive (e.g., Amason, 1996) and negative relationships (Lovelace *et al.*, 2001). In contrast, affective conflict is usually considered destructive, and this has been supported by a number of studies (e.g., Amason, 1996; Tjosvold,

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Law, and Sun, 2006), though one study failed to find a significant relationship (Pelled *et al.*, 1999). Priem (1990) has proposed on theoretical grounds a nonlinear relationship whereby a moderate level of TMT consensus is associated with the best firm performance. Overall, these findings illustrate the need to better contextualize such research and also examine environmental contingencies that affect how TMT functional diversity influences team conflicts and, in turn, a firm's innovation output.

### The environment and the TMT functional diversity-conflict relationship

Functionally diverse teams are usually expected to experience greater cognitive as well as affective conflict, despite the mixed empirical evidence (e.g., Lovelace *et al.*, 2001; Pelled *et al.*, 1999). But in the Chinese context, a significant association between TMT functional diversity and conflict should not be too readily assumed. The Chinese particularly value strong and long-lasting interpersonal relationships, known as *guanxi* (Yang, 1994). Individuals are educated in maintaining collective harmony, emphasizing what is shared and deemphasizing what is different, and avoiding aggressive ways of working with each other (Tjosvold, Poon, and Yu, 2005). For instance, the Chinese Doctrine of the Mean (*zhongyong* in Chinese) states that

*Feelings like joy, anger, sorrow and happiness are in the state of the mean when they are kept in heart; they are in the state of harmony when expressed in conformity with moral standards. The mean is the fundament of everything under heaven, and harmony is the universal law. With the mean and harmony, the earth moves orderly, and everything thereon grows and flourishes.* (He, 1992: 23)

Such values tend to smooth over conflicts with team members whether they are based on tasks or emotion. However, TMT functional diversity may trigger cognitive and affective conflict in certain circumstances that impel top managers to rely more on their individual backgrounds.

In a highly uncertain environment, the difficulty of predicting shifts in technology, demand, resource supplies, and competitive dynamics imposes significant demands on top managers to

collect, track, and analyze information (Hambrick, Finkelstein, and Mooney, 2005). It also makes a firm vulnerable and inhibits managers' ability to control the outcomes. Such heavy job demands and lack of control add up to significant managerial job stress (Karasek, 1979). Decision making by executives under stress is more likely to reflect their respective functional backgrounds, as they tend to draw more on their personal experiences as a result of the threat rigidity effect—the restriction of information processing and constriction of control under threat conditions (Staw, Sandelands, and Dutton, 1981). In contrast, when competitive uncertainty is lower, there is less demand for top managers to be strategically alert, and the decision outcomes become more predictable. In this case, even though team members are still likely to have varying interpretations of the firm's opportunities based on their different functional backgrounds, conflict is likely to be less acute.

When a firm receives substantial institutional support, the institutions can help reduce any negative effects of underdeveloped institutional infrastructure. The firm is thus less constrained by resources and less hampered by dysfunctional competition. As institutional support reduces executives' job demands in coping with institutional deficiencies, tension will be eased among a functionally diverse team in their exchange of opinions. Thus, the fact that top managers are couched within their own functional backgrounds will be less of a stressor to induce cognitive conflict during decision making (Karasek, 1979). In a firm lacking institutional support and confronted with various adverse effects of poor infrastructure, the top executives face greater challenges in implementing their strategies and attaining a given level of performance. The firm will be more subject to uncontrollable institutional forces. Under such stress, top managers will be tempted to rely more on their personal backgrounds and expertise in their decision making (Hambrick *et al.*, 2005), and this should increase the likelihood of task-based disagreement.

*Hypothesis 1a: Competitive uncertainty moderates the relationship between TMT functional diversity and cognitive conflict. Functional diversity is associated with more cognitive conflict when competitive uncertainty is higher.*

*Hypothesis 1b: Institutional support moderates the relationship between TMT functional diversity and cognitive conflict. Functional diversity is associated with more cognitive conflict when institutional support is weaker.*

Turning to affective conflict, in an environment characterized by great competitive uncertainty, TMT members are again likely to experience heightened job demands and perceive a lack of predictability and control in the outcome of their decisions, so their decisions are likely to become more affect laden (Dane and Pratt, 2007). The different perspectives associated with team members' different backgrounds are likely to elicit more emotional tension during decision making and result in a higher level of affective conflict. When managers face less stressful conditions and are better able to predict competitive factors and the outcomes of their decisions, the decision making process will be more rational and less emotional, alleviating interpersonal clashes resulting from functional differences.

Such reasoning also applies to the moderating role of institutional support in the relationship between TMT functional diversity and affective conflict. Lack of support from government and various administrative agencies generates pressure in dealing with hostile institutions and predicting decision outcomes, which might be expected to elicit more emotion during decision making. This is likely to amplify the impact of functional differences and promote affective conflict among managers. Conversely, institutional support provides a firm with access to resources, a situation that helps managers control the outcomes of their decisions. They should then be more likely to value harmony rather than involve their emotions in decision making. This should tend to minimize affective conflict.

*Hypothesis 2a: Competitive uncertainty moderates the relationship between TMT functional diversity and affective conflict. Functional diversity is associated with more affective conflict when competitive uncertainty is higher.*

*Hypothesis 2b: Institutional support moderates the relationship between TMT functional diversity and affective conflict. Functional diversity is associated with more affective conflict when institutional support is weaker.*

## **The environment and the TMT conflict–organizational innovation relationship**

The impact of TMT cognitive conflict on innovation is again likely to depend on the external environment. In particular, cognitive conflict may not lead to better innovation outcomes when a firm's managers have difficulty obtaining the resources they need to implement their innovative ideas. Both competitive uncertainty and poor institutional support constrain management's access to and control of such strategic inputs. Uncertain and unfavorable environments may impose more job demands on the managers, as they need to engage in more rigorous scanning, searching, interpreting, and selecting to process a large amount of information to address their firm's problems (Keck, 1997). This processing may become highly time-consuming and impede TMT members in the formation of the consensus needed to execute innovative ideas in the corporate strategy domain. As De Dreu and Weingart (2003: 747) put it, 'conflict interferes with information processing capacity and therefore impedes task performance, especially when tasks are complex and demand high levels of cognitive activity.' Under such conditions, cognitive conflict is less likely to result in concrete innovative outcomes.

In contrast, when the environment is favorable and does not demand that executives engage in heavy processing of external information, TMT members may be able to focus more on effective mechanisms to integrate their different viewpoints to smooth implementation. Cognitive conflict may then generate 'creative abrasion,' that is, 'energy generated by the conflict can be channeled into creating rather than destroying, into synthesis rather than fragmentation' (Barton, 1995: 63). Less executive job demands and more control in a friendly environment could potentially allow top managers to adopt simple rules and speed up decision making despite their multiple perspectives (Eisenhardt and Sull, 2001), and innovation may be implemented more quickly and effectively as a result.

*Hypothesis 3a: Competitive uncertainty moderates the relationship between the level of TMT cognitive conflict and organizational innovation. Cognitive conflict is associated with more organizational innovation when competitive uncertainty is lower.*

*Hypothesis 3b: Institutional support moderates the relationship between the level of TMT cognitive conflict and organizational innovation. Cognitive conflict is associated with more organizational innovation when institutional support is stronger.*

Affective conflict is generally viewed as destructive, but the impact of affective conflict on innovation may also depend on the external environment. A hostile environment is likely to foster a stronger in-group identity among TMT members (Hogg and Terry, 2000). The more challenges and pressure top managers receive from outside the firm, the more they emphasize similarities within their group and differences between their group and others, and the more readily they will smooth over affective conflict to jointly seek innovative solutions. That is, their attention will be directed away from relational frictions toward resolving the firm's problems in unity. Previous research on managing affective conflict has found that smoothing it over is more effective than addressing it directly. It prompts team members to focus on improving task performance (De Dreu and Van Vianen, 2001). This is especially true in the Chinese context (Tjosvold *et al.*, 2006) where collectivist values influence the way top managers deal with affective conflict, especially in hostile circumstances. When the TMT members together face highly adverse external conditions, '... the importance of harmony would seem to render relational (affective) conflicts especially upsetting to Chinese people compared to task conflict' (Tjosvold *et al.*, 2006: 232). Thus, in an uncertain competitive environment or when a firm lacks institutional support, top managers are less likely to resort to affective conflict and its destructive impact on innovation would then be lessened. In the same vein, when TMT members have less job stress as a result of a favorable external environment, affective conflict will be more detrimental, as managers will have more time and energy to attend to affective conflicts.

*Hypothesis 4a: Competitive uncertainty moderates the relationship between affective conflict and organizational innovation. Affective conflict is associated with more organizational innovation when competitive uncertainty is higher.*

*Hypothesis 4b: Institutional support moderates the relationship between affective conflict and*

*organizational innovation. Affective conflict is associated with more organizational innovation when institutional support is weaker.*

## METHODS

### Sample and data collection

Managers of technology firms in three high tech industrial parks in China's Shandong, Guangdong, and Sichuan provinces were surveyed. Questionnaires were hand delivered to 200 firms randomly selected from the entire population of these three parks. The firms selected were from a variety of high tech industries.<sup>2</sup> Each firm received two different questionnaires in separately sealed envelopes addressed to the chief executive officer (CEO) and the chief technology officer (CTO), respectively. The questionnaires were developed in English and translated into Chinese using back-translation procedures (Brislin, 1980). They were pretested to ensure that the questions were clear, relevant, and interpreted as expected. Complete and usable responses were obtained from 122 firms, a response rate of 61 percent. Following Kanuk and Berenson (1975), potential nonresponse bias was assessed by looking for differences between early and late respondents in terms of firm age, size, TMT conflicts, and the organization's innovation. The nonsignificant correlations indicate minimal nonresponse bias.

The CEOs were asked to report each TMT member's functional background as well as to assess the firm's innovation record and the environmental variables, as they are arguably the most knowledgeable potential respondents about the firm's strategy and environment. The extent of TMT cognitive and affective conflicts was rated by both the CEOs and the CTOs, allowing interrater reliability to be checked for these team-level variables.

### Measures

To measure *organizational innovation*, we followed Smith, Collins, and Clark (2005) and asked the CEO to indicate the number of innovations developed over the previous year, including 1)

<sup>2</sup> The industries included biotechnology, computer software, automation, electronics, telecommunications, environmental technology, specialty chemicals, testing and measuring devices, advanced materials, semiconductors, and medical equipment.

completely new products, 2) improved new products, 3) new process/production-related technologies, and 4) new programs in management/administration/human resources planning. The four numbers were summed up.<sup>3</sup>

To measure *TMT functional diversity*, the CEO was asked to first identify the members of the TMT and then classify each manager's dominant functional expertise using the following five areas: finance/accounting, marketing/sales, production/operations/supply chain management, engineering/R&D, and administration. TMT functional diversity was then quantified using Blau's heterogeneity index (Blau, 1977). A high score on this index indicates high functional diversity. Adopting methods developed by Jehn (1995), *cognitive conflict* was assessed with three items and *affective conflict* with four items. Both the CEO and the CTO were asked to indicate the extent (1–7) to which each statement described their TMT's decision making over the previous three years. The two sets of responses were averaged. Cronbach's alpha for cognitive conflict was 0.84 and for affective conflict 0.92.<sup>4</sup>

The measure of *competitive uncertainty* was adapted from Tan and Litschert (1994). The CEO was asked to indicate how predictable the firm's competitive environment had been over the previous three years in the following six aspects (1–7, 7 as 'highly unpredictable'): product and/or process technology, market demand, customer needs and buying behavior, competitors' actions, availability of needed talent, and goals and actions of alliance partners. The six ratings were averaged and had a Cronbach's alpha of 0.66. The measure of *institutional support* followed Li and Atuahene-Gima (2001). The CEO was asked to indicate the extent to which the government and its agencies

had provided support to the firm over the previous three years in the following areas: implementing policies and programs that had been beneficial to the firm's operations; providing needed technology information and technical support; playing a significant role in providing financial support; and helping the firm obtain licenses for imports of technology and/or manufacturing and other equipment. Cronbach's alpha for this scale is 0.79.<sup>5</sup>

Confirmatory factor analysis (CFA) was performed on TMT conflicts, competitive uncertainty, and institutional support. The measurement model fitted the data well ( $\chi^2 = 138.80$ ,  $p \leq 0.01$ ; comparative fit index = 0.96; non-normed fit index = 0.95; root mean square error of approximation = 0.05; standardized root mean square residual = 0.08). All the items in these variables had highly significant standardized loadings, exhibiting good validity.

#### Control variables

CEO age, gender, education, and job tenure (number of years in the CEO position) were all controls. At the TMT level, the team's size and the equity share held by its members were control variables. At the firm level, firm age, size (the logarithm of the total number of employees), growth rate in the prior year, R&D intensity (the ratio of R&D investment to sales in the previous year), and park dummies (with the Sichuan park as the reference) were also included as controls.

## RESULTS

Table 1 presents means, standard deviations, and correlations for all of the variables. Tables 2 and 3 report the moderated ordinary least squares regression results. The maximum value of the variance inflation factor (VIF) from the analyses was 2.39, substantially below the rule-of-thumb cutoff of 10 (Ryan, 1997).

In predicting TMT cognitive conflict, the interaction between TMT functional diversity and competitive uncertainty in Model 4 is not significant. Thus, Hypothesis 1a was not supported. The

<sup>3</sup> The sum correlated significantly with the number of innovations developed over the previous three years as provided by the CEOs ( $r = 0.88$ ,  $p \leq 0.001$ ). Nelson and Winter (1982) have shown that a firm's innovation follows an evolutionary trajectory, making it reasonable to project that innovation in the following few years should be highly correlated with that in the past year. Supplementary analyses using the number of innovations developed over the past three years gave results virtually identical to those shown in Table 3.

<sup>4</sup> The mean  $R_{wg(i)}$  was 0.84 for the cognitive conflict and 0.83 for affective conflict, suggesting good within-group (CEO and CTO) agreement. The intraclass correlations associated with cognitive conflict ( $ICC(1) = 0.51$ ,  $ICC(2) = 0.61$ ;  $F(121, 122) = 3.05$ ,  $p \leq 0.001$ ) and with affective conflict ( $ICC(1) = 0.61$ ,  $ICC(2) = 0.76$ ;  $F(121, 122) = 4.13$ ,  $p \leq 0.001$ ) provide further justification for aggregating the CEO and CTO ratings.

<sup>5</sup> To address concerns about single source bias we also collected responses from the CTOs about competitive uncertainty and institutional support. The CTOs' ratings correlated strongly with the CEOs'. Supplementary analyses using aggregated CEO and CTO ratings yielded virtually unchanged results.

Table 1. Descriptive statistics and zero-order correlations<sup>a</sup>

Variables <sup>b</sup>	Mean	S. D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Innovation	11.213	10.246																	
2 TMT cognitive conflict	3.011	1.104	0.179	(0.84)															
3 TMT affective conflict	2.310	1.229	-0.066	0.726	(0.92)														
4 TMT functional diversity	0.728	0.091	0.134	0.081	0.064														
5 Competitive uncertainty	3.540	0.909	-0.137	0.256	0.281	-0.183	(0.66)												
6 Institutional support	3.486	1.424	0.272	0.161	0.057	0.173	-0.177	(0.79)											
7 CEO age	40.443	6.601	0.034	-0.016	0.006	0.223	-0.224	0.188											
8 CEO gender (male = 1)	0.959	0.199	0.032	0.122	0.054	0.010	-0.021	0.091	0.197										
9 CEO education	1.405	0.586	-0.046	-0.099	-0.072	0.140	0.153	0.049	0.070	0.069									
10 CEO job tenure	4.493	2.914	0.166	0.188	0.113	0.098	-0.052	0.124	0.371	-0.180	-0.137								
11 TMT size	4.762	1.763	0.182	0.099	0.101	0.663	-0.326	0.212	0.289	0.005	0.086	0.176							
12 TMT equity share (%)	64.330	29.460	-0.131	-0.065	-0.087	-0.169	0.079	-0.026	0.047	-0.144	-0.249	0.061	-0.102						
13 Firm age	6.189	4.411	0.383	0.126	0.078	0.241	-0.119	0.167	0.259	-0.077	0.094	0.340	0.325	-0.342					
14 Firm size	4.299	1.112	0.446	0.140	0.020	0.348	-0.036	0.246	0.074	0.091	0.258	0.266	0.485	-0.385	0.595				
15 Firm past growth rate	43.113	57.136	-0.073	0.086	0.033	0.043	-0.087	-0.097	0.082	-0.031	0.003	-0.054	0.038	-0.017	-0.238	-0.163			
16 Firm R&D intensity	25.689	18.696	-0.251	0.037	0.113	-0.342	0.339	-0.084	-0.240	-0.051	0.068	-0.120	-0.224	0.189	-0.296	-0.279	0.007		
17 Park-Shandong	0.607	0.491	0.044	-0.095	-0.159	0.140	-0.164	0.079	0.137	-0.001	0.215	0.103	0.120	-0.079	0.049	-0.043	0.063	0.036	
18 Park-Guangdong	0.205	0.405	-0.274	0.148	0.117	-0.212	0.269	-0.163	-0.207	-0.003	-0.039	-0.111	-0.232	0.121	-0.147	-0.017	-0.067	0.045	-0.629

Note: <sup>a</sup> N = 122. Listwise deletion.<sup>b</sup> Correlations  $\geq |0.235|$  are significant at the  $p \leq 0.01$  level (two-tailed). Values on the diagonal line are Cronbach alphas.

Table 2. Moderated regression coefficients predicting TMT cognitive and affective conflict<sup>a</sup>

	Aggregate TMT cognitive conflict				Aggregate TMT affective conflict			
	M1	M2	M3	M4	M5	M6	M7	M8
Constant	2.186** (0.878)	2.327** (0.905)	2.871*** (0.814)	2.533** (0.831)	2.616** (0.948)	2.748** (0.974)	3.096** (1.002)	2.920** (1.037)
CEO age	-0.015 (0.020)	-0.014 (0.020)	-0.015 (0.018)	-0.009 (0.016)	-0.006 (0.020)	-0.006 (0.020)	-0.004 (0.020)	-0.007 (0.020)
CEO gender	0.568 (0.292)	0.544* (0.275)	0.483* (0.234)	0.335 (0.265)	0.132 (0.288)	0.109 (0.270)	0.096 (0.292)	0.099 (0.301)
CEO education	-0.237 (0.180)	-0.254 (0.183)	-0.353 (0.180)	-0.318 (0.177)	-0.101 (0.197)	-0.117 (0.197)	-0.238 (0.209)	-0.079 (0.198)
CEO job tenure	0.064 (0.041)	0.064 (0.041)	0.057 (0.038)	0.037 (0.036)	0.065 (0.044)	0.065 (0.045)	0.056 (0.043)	0.048 (0.041)
TMT size	0.064 (0.074)	0.028 (0.086)	0.120 (0.085)	0.153 (0.083)	0.143 (0.084)	0.109 (0.097)	0.217* (0.108)	0.244* (0.115)
TMT equity share	-0.004 (0.004)	-0.003 (0.004)	-0.005 (0.004)	-0.004 (0.004)	-0.008* (0.004)	-0.008 (0.004)	-0.009** (0.004)	-0.009* (0.004)
Firm age	0.022 (0.027)	0.023 (0.027)	0.027 (0.025)	0.022 (0.024)	0.029 (0.038)	0.030 (0.039)	0.033 (0.039)	0.028 (0.036)
Firm size	0.063 (0.125)	0.066 (0.126)	-0.054 (0.130)	-0.020 (0.126)	-0.203 (0.145)	-0.200 (0.144)	-0.308 (0.158)	-0.306 (0.163)
Firm past growth rate	0.003 (0.002)	0.003 (0.002)	0.003* (0.002)	0.003* (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)
Firm R&D intensity	0.007 (0.007)	0.008 (0.007)	0.001 (0.006)	0.004 (0.006)	0.012 (0.007)	0.013 (0.007)	0.005 (0.007)	0.009 (0.007)
Park-Shandong	0.062 (0.334)	0.057 (0.334)	0.129 (0.301)	0.024 (0.293)	-0.393 (0.347)	-0.398 (0.346)	-0.315 (0.317)	-0.414 (0.319)
Park-Guangdong	0.584 (0.360)	0.594 (0.363)	0.550 (0.349)	0.388 (0.367)	0.312 (0.422)	0.322 (0.423)	0.223 (0.391)	-0.089 (0.391)
TMT functional diversity		0.103 (0.134)	0.017 (0.117)	-0.111 (0.105)	0.312 (0.367)	0.097 (0.162)	0.002 (0.151)	-0.053 (0.142)
Competitive uncertainty			0.402** (0.134)	0.333** (0.119)		0.333 (0.109)	0.471*** (0.125)	0.129 (0.129)
Institutional support			0.243* (0.100)	0.225* (0.095)			0.158 (0.103)	0.101 (0.101)
TMT functional diversity* Competitive uncertainty				0.149 (0.119)				-0.272 (0.140)
TMT functional diversity* Institutional support				-0.217* (0.097)				-0.267** (0.102)
R <sup>2</sup>	0.139	0.143	0.261	0.306	0.123	0.126	0.234	0.288
d.f.	12,108	13,107	15,105	17,103	12,108	13,107	15,105	17,103
F(R <sup>2</sup> )	2.943***	3.180***	4.556***	4.227***	1.871*	1.875*	2.631**	2.707***
ΔR <sup>2</sup>		0.004	0.118	0.045		0.003	0.108	0.054
d.f.		1,107	2,105	2,103		1,107	2,105	2,103
F(ΔR <sup>2</sup> )		0.542	8.367***	3.341*		0.379	7.376***	3.888*

a \* Indicates significance at the 5% (\*\* 1%, \*\*\* 0.1%) level of confidence (two-tailed); unstandardized coefficients reported with robust standard errors in parentheses.



Table 3. Moderated regression coefficients predicting organizational innovation<sup>a</sup>

Dependent variable: organizational innovation	M9		M10		M11		M12	
Constant	1.817	(6.837)	5.788	(5.898)	7.649	(6.053)	9.502	(5.429)
CEO age	−0.145	(0.133)	−0.106	(0.119)	−0.134	(0.115)	−0.217*	(0.107)
CEO gender	3.661	(2.812)	1.860	(2.584)	1.446	(2.908)	0.752	(2.905)
CEO education	−2.077	(1.320)	−1.450	(1.423)	−1.270	(1.377)	−0.588	(1.157)
CEO job tenure	−0.117	(0.388)	−0.181	(0.365)	−0.160	(0.370)	−0.326	(0.337)
TMT size	−0.895	(0.461)	−0.749	(0.461)	−0.875	(0.478)	−0.483	(0.428)
TMT equity share	0.042	(0.034)	0.035	(0.035)	0.035	(0.036)	0.046	(0.032)
Firm age	0.325	(0.346)	0.320	(0.334)	0.331	(0.340)	0.524*	(0.244)
Firm size	4.570***	(1.541)	3.780**	(1.438)	3.662*	(1.471)	3.412*	(1.319)
Firm past growth rate	0.006	(0.017)	−0.001	(0.016)	0.000	(0.016)	−0.016	(0.015)
Firm R&D intensity	−0.071	(0.044)	−0.063	(0.045)	−0.056	(0.050)	−0.054	(0.050)
Park-Shandong	−2.367	(2.841)	−3.674	(2.645)	−3.672	(2.611)	−4.352*	(2.063)
Park-Guangdong	−9.775**	(3.263)	−11.145**	(3.427)	−10.596**	(3.661)	−10.600**	(3.523)
TMT cognitive conflict			4.197**	(1.576)	4.041**	(1.511)	3.691**	(1.216)
TMT affective conflict			−3.349*	(1.461)	−3.147*	(1.437)	−2.705**	(1.008)
Competitive uncertainty					−0.552	(0.946)	−0.250	(0.893)
Institutional support					0.916	(0.836)	−1.030	(0.907)
TMT cognitive conflict*							−2.495*	(1.174)
Competitive uncertainty								
TMT cognitive conflict*							1.873	(0.961)
Institutional support								
TMT affective conflict*							3.604*	(1.575)
Competitive uncertainty								
TMT affective conflict*							−6.476***	(1.054)
Institutional support								
R <sup>2</sup>	0.360		0.430		0.439		0.607	
d.f.	12,108		14,106		16,104		20,100	
F(R <sup>2</sup> )	4.281***		4.125***		3.851***		7.718***	
ΔR <sup>2</sup>			0.070		0.010		0.168	
d.f.			2,106		2,104		4,100	
F(ΔR <sup>2</sup> )			6.488**		.908		10.688***	

<sup>a</sup> \* Indicates significance at the 5% (\*\* 1%; \*\*\* 0.1%) level of confidence (two-tailed); unstandardized coefficients reported with robust standard errors in parentheses.

interaction between functional diversity and institutional support is, however, significant and negative. The plot in Figure 1<sup>6</sup> provides evidence for Hypothesis 1b. In predicting TMT affective conflict, the interaction between functional diversity and competitive uncertainty in Model 8 is not significant, thereby not supporting Hypothesis 2a. The negative and significant interaction between functional diversity and institutional support provides evidence for Hypothesis 2b.

Model 12 in Table 3 contains four interactions that predict innovation. The interaction between TMT cognitive conflict and competitive

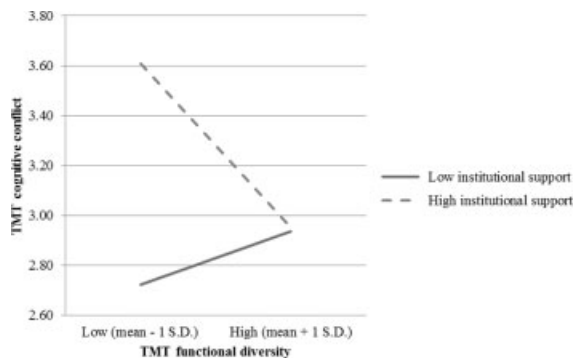


Figure 1. Interaction between TMT functional diversity and institutional support in predicting TMT cognitive conflict

<sup>6</sup> The rest of the interaction figures are not displayed due to the space limit.

uncertainty is negative and significant; yet there is no significant interaction between cognitive conflict and institutional support. These results provide support for Hypothesis 3a but not for Hypothesis 3b. Moreover, the interaction between affective conflict and competitive uncertainty is positive and significant. Also there is a negative and significant interaction between affective conflict and institutional support. These results provide evidence for both Hypothesis 4a and Hypothesis 4b.

## DISCUSSION

By contextualizing our study in Chinese high tech firms, we have developed theoretical arguments about the ways in which competitive uncertainty and institutional support moderate the relationships relating TMT functional diversity with conflicts and a firm's innovation. The results show that the impact of TMT functional diversity on conflicts depends on the beneficence of a firm's institutional environment. Managing a firm that receives good institutional support alleviates both cognitive and affective tension within a functionally diverse TMT. Interestingly, this study did not find that TMT functional diversity is associated with cognitive or affective conflict. Considering Chinese cultural characteristics, this lack of main effects is not very surprising. Where harmony is emphasized, only hostile environments that impose excessive pressure on managers will trigger them to pay attention to their different backgrounds and exacerbate the difference into explicit conflict. In a favorable environment when top managers are under less job pressure, there is more room for them to appreciate and accommodate each other's unique functional backgrounds.

This study found that a highly uncertain competitive environment is likely to make a TMT less capable of implementing any innovative ideas arising from cognitive conflict. However, heavy pressure from both the competitive and institutional environments apparently can mitigate the negative effects of affective conflict by shifting managers' limited attention and energy to collective tasks and away from interpersonal clashes. Interestingly, in extremely hostile environments, affective conflict may even generate positive outcomes. Such an intriguing reversal of effects can be understood by reference to the Chinese philosophy of the unity of opposites, which indicates that tension will

compel people get to know each other better and appreciate one another's competencies. The Chinese emphasize turning the strongest enemy into the best friend for joint action in pursuit of collective interests, overriding individual emotions when the collective entity faces severe external threat. Through such deep contextualization (Tsui, 2007), the results of this study extend prior research and provide more comprehensive insights.

This study has several limitations. First, its cross-sectional design rules out any discussion of causality, though tests based on Landis and Dunlap's (2000) approach yielded minimal concern for reverse causality. Also, researchers have pointed out that demographic measures have inherent limitations in reflecting psychological traits (Priem, Lyon, and Dess, 1999). Future research might incorporate other factors such as a TMT's power distribution to provide a more profound understanding of executive influence. In addition, future research might look at individual differences among top managers such as their locus of control to examine the extent to which the effects of a hostile environment might be mitigated. Care is, of course, called for in generalizing the findings of this study to other cultures and contexts.

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