Impacting Climate for Innovation: Can CEOs Make a Difference?

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Abstract

Leader influence in today's turbulent environments will occur primarily as a result of the management and successful implementation of change. The data are drawn from interviews with 57 CEOs, organizational climate surveys from 25 respondents, and interview responses from other organizational leaders. CEO discourses, derived from interviews about the organization's history, structure, environment and competitive strategy, were coded for examples of reflexivity – the extent to which the CEO reflects on organizational objectives, strategies, and processes and plans and implements changes accordingly. The data reveal that in those companies whose CEOs score highly on measures of reflexivity across the course of the two-hours interviews, employees report strong climates for innovation. Moreover, in measures taken after the interviews the extent of structural change implemented in those organizations was significantly higher than in other organizations. This study suggests that an essential component of effective leadership is the ability to reflect on objectives, strategies, and processes in a way that influences the attitudes and behavior of employees towards innovation, and then planning and implementing change.

Impacting Climate for Innovation: Can CEOs Make a Difference?

"Think like a man of action, and act like a man of thought."

- Henri L. Bergson (French Philosopher awarded the Nobel Prize for Literature in 1927)

Now more than ever, chief executive officers (CEOs) need to be able to develop a flexible and innovative workforce that can rapidly respond to the volitility of world markets. Political, economic, and technological changes are abruptly altering the demand for products and services, as well as the feasibility of their production (Adams, 2001; Cascio, 1995). Simultaneously, globalization is decreasing the likelihood of gaining competitive advantage from organizational size or strength of assets. Instead, competitive advantage is increasingly being derived from organizations' utilization of employees' knowledge and skills (Cascio, 1995; Lubit, 2001; Tidd, Bessant, & Parvitt, 1997). Given the current paradigm of a rapidly changing business environment in which success relies heavily on human capital, it is of paramount importance that CEOs create a workforce that can continually create and implement innovation. One way for CEOs to do this is through the establishment of a strong climate for innovation. The current research intends to examine CEO behaviors that will stimulate the development of a strong organizational climate for innovation.

Van de Ven (1986) suggests that in order for innovation to occur in organizations, employee attention needs to be directed toward creating new products, processes, and services crucial to the organization's survival. A strong climate for innovation may act as

a way of focusing employee attention and creating a collective mentality that is supportive of innovation. Research consistently demonstrates that climate for innovation is linked to actual innovation (Abbey & Dickson, 1983; Bain, Mann, & Pirola-Merlo, 2001; Burningham & West, 1995; Paolillo & Brown, 1978; Siegel & Kaemmerer, 1978; West & Wallace, 1991).

Research also suggests that one way of achieving a strong climate for innovation is through leader behavior (Nystrom, 1990; Scott & Bruce, 1994). Studies have shown that climate for innovation is associated with strategic leadership (Nystrom, 1990) and Leader Member Exchange Theory (Scott & Bruce, 1994). Thus, an important way to impact climate for innovation may be by manipulating leadership behaviors. Current findings, however, provide only a limited view of the relationship between leader behavior and climate for innovation, leaving many aspects of this relationship unexplored. We hope to examine the link between leader behavior and climate for innovation in greater depth by investigating the leader behaviors encompassed in the construct of reflexivity. Reflexivity is a construct in which leaders identify areas of weakness in task and social processes and create a methodical way to eliminate these weaknesses (Swift & West, 1998).

This research is theoretically important for several reasons. First, it addresses the topic of climate for innovation and suggests ways in which climate for innovation can be manipulated. Second, it looks at the role a CEO plays in the development of climate for innovation. Such research is particularly important because a relatively small percentage of the leadership literature (2-5%) has focused specifically on executive leadership (Zaccaro, 2001) even though researchers have indicated that the nature of executive

leadership is substantially different from the nature of lower level leadership (see Zaccaro & Klimoski, 2001 for review). Amabile (1988) also suggests it is the CEO who sets an organization's orientation towards innovation. Third, this study examines leadership as a conglomeration of behaviors. According to Zaccaro (2001) leadership research needs to look at executive behavior as "constellations of characteristics (p.301)" instead of isolating and examining a single leader behavior. Finally, this study is unique in that it examines reflexivity as an individual construct. Although research has been done on team-level reflexivity (Carter & West, 1998), it has not yet been researched at the individual level.

To explore the relationship between CEO reflexivity and climate for innovation, we first examine climate for innovation in more detail and consider why it is so essential to organizations. We then look at the relationship between executive leadership and climate for innovation. Finally, we discuss why the construct of reflexivity manifested at the individual CEO level may be associated with climate for innovation.

Climate for Innovation

A commonly used definition of organizational climate describes it as employees' shared perceptions about the environment in which they work, and the general sense of which behaviors will be rewarded (Schneider, 1990). In addition, organizational climate can be examined in terms of a particular referent such as innovation (Schneider & Reichers, 1983). A climate for innovation, therefore, is the perception employees hold about innovation in the organization and it consists of workers' feelings, attitudes, and behavioral tendencies measured by their perceptions (Payne & Pugh, 1976). In a strong climate for innovation, workers feel like innovation is valued and believe they will be

rewarded for innovative behaviors. In a weak climate for innovation, workers do not feel innovation is valued and fear they will be ridiculed if they suggest a new idea.

Given the importance of having a workforce that is continuously creating change and innovation, there is an advantage for companies which establish strong climates for innovation. Van de Ven (1986) proposed that an important component to the difficulty of managing innovation is the difficulty of managing attention. To create innovation, leaders must focus employees' attention on developing new products, processes, and services. Van de Ven (1986) argues that workers tend to establish routines in which they become less aware of things that need to be changed. To combat this tendency toward stability, continual instigators are needed to motivate employees toward action. Several researchers have indicated that a climate for innovation may act as this continual instigator and redirect employees' behavior toward innovation (Amabile, 1988; Isaksen, 1987; Kanter, 1988). Thus, when a crisis hits, a company with a strong climate for innovation might excel at focusing employee attention toward the developing problem in order to quickly generate solutions. Conversely, when an organization with a weak climate for innovation faces a crisis, it may take longer to focus employee attention towards finding potential solutions. In sum then, a strong climate for innovation aids in directing employee attention toward innovation. Leaders seeking to create innovation in their organizations, therefore, could potentially benefit from the establishment of a strong climate for innovation.

CEOs and Climate for Innovation

Executive leadership significantly impacts the functioning of an organization in terms of performance, innovation, effectiveness, flexibility and employee satisfaction

(e.g., Anderson & King, 1993; Howell & Avolio; Podsakoff, Todor, & Skov, 1982; Smith, Carson, & Alexander, 1984; Thomas, 1988; Waldman, Ramiréz, House, & Purnam, 2001; Zaccaro, 2001). Preliminary evidence also suggests that leaders can affect climate for innovation. Nystrom (1990) presented a case study of a Swedish organization that suggested strategic or innovative leadership can impact organizational climate for innovation. According to his model, leadership can affect climate both directly and indirectly through impacting the innovative direction and innovative potential of the organization. More experimentally rigorous work by Scott and Bruce (1994) demonstrated that leader behaviors put forth by Leader Member Exchange Theory (LMX) predict climate for innovation. Specifically, the higher the level of relationship between the leader and the follower, (i.e. the more support, trust, and autonomy), the more innovative subordinates perceived the climate for innovation to be. This research suggests that leader behaviors that strengthen relationships with subordinates are associated with a stronger climate for innovation.

These models begin to explore the relationship between executive behaviors and climate for innovation. The aim of our research is to further explain the link between these two constructs by looking at different executive behaviors than have previously been examined. We propose that there may be additional leader behaviors that are associated with strong organizational climates for innovation. Specifically, we intend to explore associations between the behaviors encompassed in the construct of reflexivity and their impact on climate for innovation.

Reflexivity

Reflexivity encompasses a conglomeration of executive behaviors and is a process that identifies goals and finds ways to obtain them. Reflexivity requires individuals or teams to "reflect upon their objective, strategies, processes, and their organizational and wider environments, plan to adapt these aspects into their task functional worlds, and make changes accordingly (West, 2000, p. 2)." This definition implies a continual process involving taking an objective view of individual and organizational functioning, and using this view to take directed action (West, 2000). This process can be broken down into three stages which do not necessarily occur in a certain order, but typically move from reflection, to planning, to action.

Reflection.

This component of reflexivity involves the conscious attention and self monitoring of approaches to work factors as well as the evaluation of these thoughts with the goal of identifying areas where the current reality falls short of the desired one. Reflection requires an individual to gather and examine information both internal and external to the company and assess both task and social processes to evaluate organizational functioning. These appraisals should then be compared to an ideal with the intent of identifying areas that can be improved (Swift & West, 1998). Reflection occurs at shallow, moderate, and deep levels. Shallow reflection involves scanning events and situations; moderate reflection involves evaluating and critically examining tasks, objectives, strategies and processes; and deep reflection involves comprehensively examining how knowledge is acquired and utilized. Good reflection requires an individual to reflect at all of these levels (Swift & West, 1998).

Planning.

Planning is the translation of cognitive appraisal into action. To successfully use reflection to enact change, the individual or team creates plans that target the desired areas of change (Swift & West, 1998). Planning is essential to the reflexivity process because it links critical appraisals to quantifiable change. Swift & West (1998) derive important components of successful planning from Frese & Zapf's (1994) Action theory. According to Frese & Zapf (1994), a good plan must be detailed, it must be extensive and include contingencies, it must take into account a priori hierarchical ordering, and it must have an established timetable within which to work.

Action.

Action is the extent to which plans are carried out and effects are achieved (Swift & West, 1998). It is ultimately the ability to produce results that is important for organizational success. West and Anderson (1996) developed four dimensions by which action can be assessed. These include the magnitude, novelty, radicalness, and effectiveness of an action.

CEO Reflexivity and Climate for Innovation

Although research on reflexivity has the potential to yield important insights into organizational innovation, identification of this concept is relatively new and has gained little empirical attention. An exception is research by Carter and West (1998) which focused primarily on applications of reflexivity to teams. They found that in TV production teams, team reflexivity did enhance team performance. The authors suggest that teams higher in reflexivity are more effective.

There are several reasons why reflexive CEO's may have a greater impact on the organizational climate for innovation than non-reflexive CEO's. First, reflexive CEOs may act as a model for subordinates. According to Bandura's (1977) Social Learning Theory, learning occurs by watching people who model certain behaviors. Further research on this topic has established that subordinates can learn behaviors from observing their leaders (Decker, 1986; Sims & Manz, 1981; Weiss, 1977). When reflexive CEOs scan the environment and utilize information they obtain to make changes, they demonstrate to employees how to be innovative and adapt to change. If a CEO is emphasizing change and the importance of it, employees may be more likely to imitate those behaviors and thus learn constructive ways to adapt to change.

Second, reflexive CEOs will be able to establish a clear vision, thus giving employees direction on what they should be doing. A CEO high in reflexivity constantly reviews internal and external information and compares it to an ideal vision. In order to articulate an "ideal vision" and make these comparisons a CEO must develop a firm conceptualization of the organizational vision. Research has shown that having a clear vision helps leaders to demonstrate the behaviors they expect from their employees and set a direction for the organization (Conger & Kanungo, 1987). Additionally, a clear vision has been established as one of the four key elements of team innovation (West, 1990).

Finally, a reflexive CEO acts to maximally engage subordinates in the organization. A reflexive CEO sees the workforce as a resource and seeks to utilize the knowledge employees have. In order to obtain information internal and external to the company, the CEO must acquire information from individual employees. A successful

CEO therefore, might seek the participation of employees and reward them for innovations and suggestions they offer. Participative safety is another of the four major factors of team climate suggesting that when employees feel comfortable participating they are more likely to be innovative (West, 1990).

Through modeling, setting a vision, and engaging and rewarding subordinates, reflexive CEOs may impact the organizational climate for innovation. Thus, we predict that:

Hypothesis: CEO reflexivity will be related to climate for innovation.

Method

Sample

The data used in this study were collected as part of the Corporate Performance Programme of the Centre for Economic Performance at the London School of Economics. The Programme is working to identify determinants of manufacturing company effectiveness through a ten year longitudinal study (1990-2000) examining market environment, organizational characteristics, and managerial practices in over 100 UK manufacturing companies. The data from the Programme used in this study include interviews with the CEO of each company, measures taken from a survey of employee attitudes, a measure of past company performance, company size and industry data, and data from interviews with top management.

The organizations sampled in the study are manufacturing companies in the UK (including Northern Ireland, Wales, Scotland, and England) which were identified from sector databases and by local Chambers of Commerce and Trade Associations.

Companies in the sample were mostly single site and single product operations. Most of the companies also had fewer than 1000 employees. The average company size was 238 employees. Companies were sampled from four manufacturing sectors: engineering, plastics and rubber, electronics and electrical engineering, and food and drink. Additionally, a small number of companies from other sectors were included in a miscellaneous category.

CEO interviews.

This study uses a 1-2 day on-site interviews with CEOs of each organization conducted by trained industrial and organizational psychologists. The interviews were conducted over a 1 year period from 1993-1994. The interviewers asked questions on organizational structure, market environment, competitive strategies, production technology, work design, quality emphasis, Just-In-Time practices, human resource management, and research and development (R&D).

Measures of climate for innovation.

Three measures were used to assess climate for innovation. The first two measures, perceived climate for innovation and non-traditionalism, were collected as part of an employee attitude survey measured on average eight months after the CEO interviews. The survey was distributed to all of the employees of companies with 500 or fewer employees and to a sixty percent random sample of the employees in companies with 500 or more employees. The first measure, perceived climate for innovation, used six items to assess what the employees felt the climate for innovation was like in the organization. A sample statement was "people are always searching for new ways for looking at problems." Questions were measured on a 4 point scale anchored by 1

(Definitely false) and 4 (Definitely true). The second measure of climate for innovation derived from the employee survey used four items to assess how non-traditional employees felt the organization was. A sample item was "Changes in the way things are done occur very slowly," and was measured on a four point scale anchored by 1 (Few would think that) and 4 (Most would think that).

In our sample, 25 companies had both CEO interview data as well as climate for innovation data and 30 companies had CEO interview data and traditionalism data. A correlation analysis revealed that non-traditionalism and climate for innovation were highly correlated ($\underline{r}$ = - 0.78, $\underline{p}$ = 0.0001).

The third measure of climate for innovation was a single item measuring the extent of change in the organization. This item was taken from interview responses of the CEO as well as other important company leaders (i.e., the managing director, financial director, sales director, marketing director, personnel director, product director, quality director, tech/engineering director, plant manager, and any other directors the organization had). Fifty-two companies with interview data also had data on extent of change. Scores were averaged over the multiple responses. The extent of change item asked "What is the extent of change in organizational structure?" This question was measured on a 4 point scale ranging from 0 (No change) to 3 (Major change). The extent of change variable was not significantly correlated with either of the employee response measures (traditionalism, $\underline{r}$ = -0.19, $\underline{p}$ >.05; climate for innovation, $\underline{r}$ = -0.02, $\underline{p}$ < .05).

Procedure

The taped interviews of CEOs of 66 companies were coded for the level of reflexivity each CEO exhibited. The companies were divided into two equal subgroups.

One subgroup was then coded by three raters and the other subgroup was coded by four additional raters. The raters' listened to each interview and completed a 39 item questionnaire after each interview. Of the 39 items in the questionnaire, 34 pertained to reflexivity while the other five questions measured how difficult a CEO was for the rater to evaluate (e.g., because of tape quality issues). The reflexivity questions were developed by the authors based on the work of West (1998). West identified three elements pivotal to the concept of reflexivity: reflection, planning, and action. Questions were generated on the basis of these three elements.

Reflection questions were aimed at assessing the extent to which a CEO was involved in conscious attention and self monitoring in his approaches to work factors, as well as the extent to which he evaluated these thoughts and focused them on creating change. These items measured how critical and goal oriented a CEO was in his approach to work factors and how focused the CEO was on moving the company from a current to a desired reality. Sample questions include, "This person has a willingness to explore new techniques, tools, processes, and strategies," and "This person has a clear vision for the organization."

Planning questions were aimed at assessing how successful a CEO was at transforming thoughts to action. CEO's were rated on the level of detail, extensiveness and novelty of their plans. Sample questions include, "This person creates detailed plans," and "This person has broken planning into stages for implementation."

Action was evaluated by the degree to which plans were carried out and effects were achieved. Sample questions include, "The plans for this organization are effective, "

and "This organization has made significant recent changes." All questions were rated on a 5 point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Intraclass correlations were performed on the evaluations of the coders to determine rater consistency. Raters were determined to be unreliable on 9 companies and 7 questions[1]. These companies and questions were removed from the data. Ratings of the remaining 27 questions were determined to be reliable at a level of 0.6 or greater. Scores on these questions were aggregated across rater.

A factor analysis was performed on the aggregated reflexivity scores. Our scale was not sensitive enough to produce three distinct factors related to the three components of reflexivity. We therefore felt that reflexivity was best conceptualized as a single factor and forced the factor analysis to generate a single factor solution. All but one of the questions loaded onto this general factor of reflexivity. When this question was excluded from the general factor, the Chronbach's alpha for the general factor was .95 with factor loadings ranging from 0.86 to 0.32.

Results

The climate for innovation variables were regressed onto the aggregated reflexivity scores, controlling for past company profitability, company size measured by number of employees, and manufacturing sector that the company belonged to controlled for. When reflexivity was regressed onto climate for innovation, reflexivity did emerge as a significant predictor ($\underline{b} = .28$, $\underline{t}\,(24) = 4.24$, $\underline{p} = 0.001$) (see Figure 1). Together, size, sector, past profitability, and reflexivity accounted for 58% of the variance. The R^2

[1] Four of the questions that were removed were reverse coded items, suggesting that coders had difficulty correctly scoring negatively worded items.

change when reflexivity was added to the controlled variables was .32, suggesting that reflexivity accounts for 32% of the variance.

As predicted, reflexivity also emerged as a significant predictor of traditionalism ($\underline{b}$ = -.36, $\underline{t}$ (29) = -2.99, $\underline{p}$ = 0.006) (see Figure 2). The R^2 change for reflexivity was .26, indicating that reflexivity accounted for 26% of the variance.

Extent of change was dichotomized into high and low change. Therefore, a logistic regression was performed on the extent of change variable. Reflexivity was found to be a significant predictor of the extent of change in the company $(X)^2$ (4, $\underline{N}$ = 52) = 10.18, $\underline{p}$ = 0.037).

Discussion

The current study shows that CEO behaviors are related to organizational climate for innovation. This research confirms past research by Nystrom (1990) and Scott and Bruce (1994) showing that the actions of leaders do have implications for the climate for innovation. Given the previous literature, indicating that climate for innovation is related to innovation (Abbey & Dickson, 1983; Bain, Mann, & Pirola-Merlo, 2001; Burningham & West, 1995; Paolillo & Brown, 1978; Siegel & Kaemmerer, 1978; West & Wallace, 1991), an important way CEOs may affect innovation is through climate for innovation.

The current research also suggests that individual reflexivity is a useful construct for examining individual behavior. Confirming our hypothesis, the more reflexive a CEO was rated, the higher the employee rated climate of innovation scores, the more non-traditional the organizational practices, and the greater the extent of change in the organization. These results suggest that executives who take time to reflect, make

specific, strategic plans based on those reflections, and take action to implement plans are associated with organizations that are more open to innovation.

Limitations

There are a few limitations to the current research. First, the measure of reflexivity we used was a preliminary measure that we devised from the team construct. Follow-up studies that assess the scale properties of the individual reflexivity measure might be useful, although our findings do indicate that our initial scale was able to detect differences. Second, our scale did not reveal the three subscales that we anticipated. Rather, we used a single factor upon which two items did not load. As a result, more items were of a reflection nature than of a planning or action nature. Although reflection alone did not produce the results, a future attempt to isolate the extent to which each subscale influences climate for innovation uniquely would be helpful.

Third, there were a low number of complete sets of data. Although we managed to obtain a large number of CEO interviews, only 25 of those companies had completed the employee survey on climate for innovation despite the fact that we had interview data on 57 companies. This greatly decreased our number of participants and limited our power. However, these data are still interesting given that it comes from a sample of actual CEOs. Such a sample is difficult to obtain and only rarely examined.

Fourth, the sample population of CEOs came from UK companies and generalizability to other countries may be limited. Further research is needed to explore cross-cultural relationships between reflexivity and climate for innovation.

Future Directions

Future research needs to more fully explore the construct of reflexivity. Important questions that remain unanswered include the trainability of reflexivity. Is reflexivity an innate or learned trait, and if it is learned how does this occur? Further research examining how reflexivity is developed in individuals is needed. The individual components of reflexivity also need to be more fully parsed out. Specifically, the possibility of one of the components of reflexivity driving the relationship with climate for innovation needs to be explored. A standardized measure of individual reflexivity would greatly aid in a closer investigation.

Finally, relationships between other organizational variables and leader reflexivity should be considered. It would be interesting to identify other areas of organizational functioning that are impacted either positively or negatively by leader reflexivity. One example of this would be looking at the relationship between leader reflexivity and team reflexivity

In sum, our results indicate that the specific characteristics that comprise reflexive leadership are associated with the successful management of important elements of innovation. Leaders high in reflexivity tend to lead organizations with stronger organizational climates for innovation. The identification of a relationship between CEO leadership and climate for innovation becomes increasingly valuable as climate for innovation gains importance in organizations. Additionally, these results suggest reflexivity is a meaningful way of examining individual leadership behavior.

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Figure Caption

Figure 1. Mean climate for innovation as a function of the standardized residual for reflexivity when size, sector, and past profitability are controlled.

Figure 2. Mean traditionalism as a function of the standardized residual for reflexivity when size, sector, and past profitability are controlled.

Figure 1

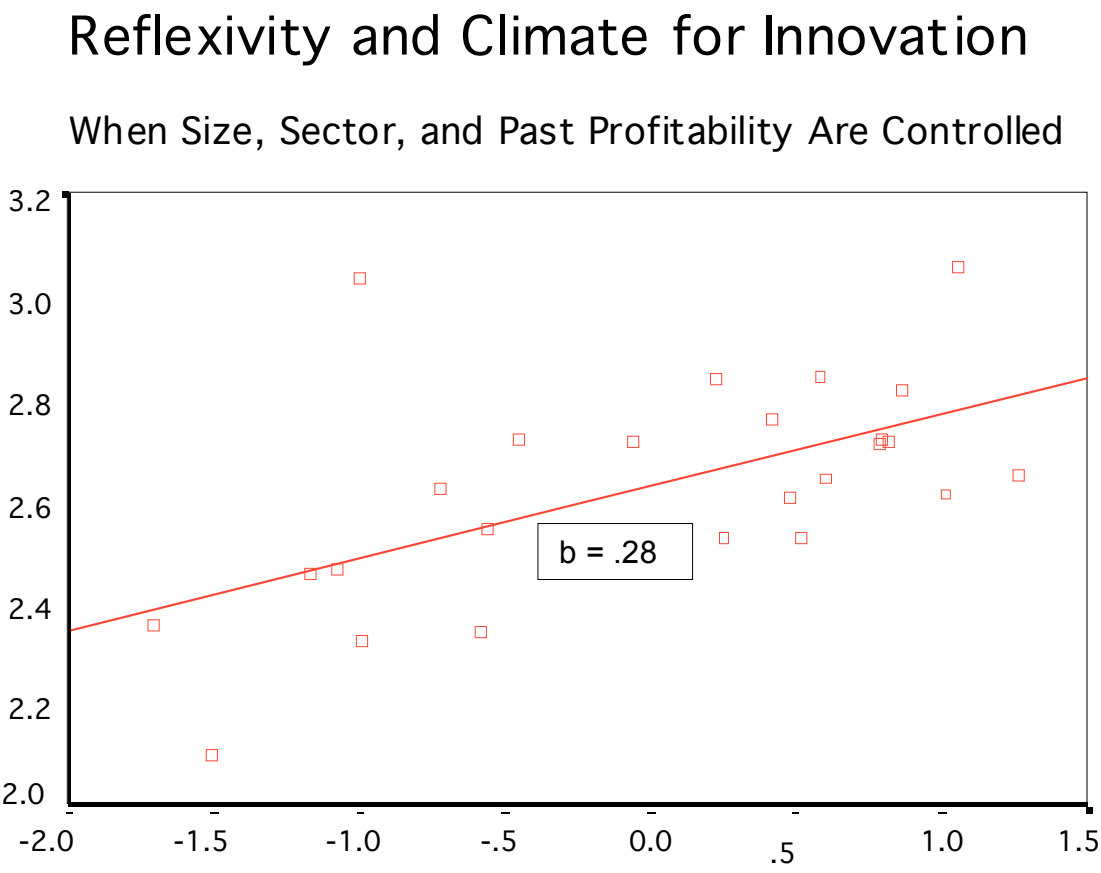
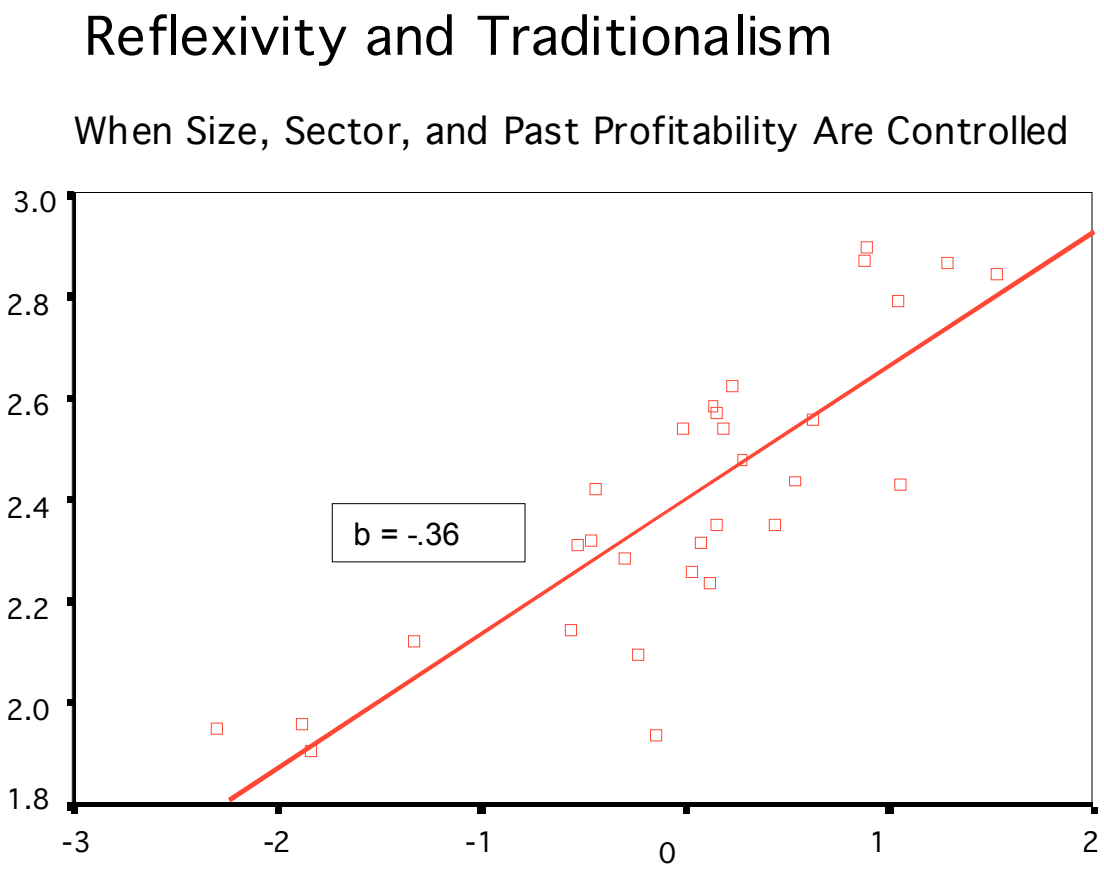

Reflexivity and Climate for Innovation
When Size, Sector, and Past Profitability Are Controlled
3.2
3.0
2.8
2.6
2.4
2.2
2.0
b = .28
-2.0
-1.5
-1.0
-.5
0.0
.5
1.0
1.5

Figure 2


Reflexivity and Traditionalism
When Size, Sector, and Past Profitability Are Controlled
b = -.36
3.0
2.8
2.6
2.4
2.2
2.0
1.8
-3
-2
-1
0
1
2