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Social Context of the Exercising and Dating of Stock-Options:
Three Essays

By

Fiona Kun Yao

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Business Administration

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Waverly W. Ding, Co-Chair

Professor Jo-Ellen Pozner, Co-Chair

Professor James R. Lincoln

Professor Neil D. Fligstein

Fall 2013

Abstract

Social Context of the Exercising and Dating of Stock-Options: Three Essays

By

Fiona Kun Yao

Doctor of Philosophy in Business Administration

University of California, Berkeley

Professors Waverly W. Ding and Jo-Ellen Pozner, Co-Chairs

The dissertation investigates stock options–related arrangements by individual executives and firms from a sociological point of view. The first study in this dissertation explores the antecedents of stock option exercises by executives in Chinese state-owned firms, behaviors considered deviant from the institutional norms of the Chinese state bureaucracy. This study seeks to answer the following question: When individual beliefs and actions are deeply embedded in their institutional context, as in the case of Chinese executives in overseas-listed firms, who is likely to break with the institutional status quo, and what are their reasons for doing so? Contrary to the existing status-based theory of social deviance, institutional disengagement among Chinese executives often takes place in the middle of an institutional status hierarchy. Characteristics of the institutional environment and the individual biography further interact with individual positions to affect the likelihood that an executive will diverge from the institutional expectation of not exercising stock options. The second study investigates the individual consequences of stock option exercises in Chinese state-owned firms. This study seeks to answer the following questions: When institutional entrepreneurs diverge from the institutional status quo, who is most likely to be punished? Who can bypass the sanction, and for what reasons? The findings suggest that executives were more likely to be punished for divergent behaviors if (a) the executive had low levels of bottom-up power, (b) the prevalence of divergent behaviors among peers was moderate without having reached a threshold that sufficiently legitimized the practice, and (c) the broader audience was concentrated. This study promises to shed new light on the outcomes of institutional entrepreneurship by addressing why some institutional entrepreneurs fail. The third study, explores the spread of stock backdating, an unethical corporate practice about which public information was virtually unavailable until 2005. This “invisible” practice, unlike corporate practices accessible to outsiders, did not diffuse through board interlocks. Rather, stock option backdating spread because of geographic proximity: Firms were more likely to backdate stock options to the extent that other firms located geographically close to them had done so. The effect of geographical proximity was conditional on high levels of local board interlocks, a finding that lends support to the idea of the importance of localized interactions among members of the local business elite. Together these findings suggest that invisible corporate practices follow unique diffusion patterns.

Dedication

This dissertation is dedicated to my parents, Youlin Yao and Zifang Li, whose unconditional love made all of this possible.

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INTRODUCTION

Over the past 30 years, executive stock options have become an increasingly important component of executive compensation as a way to better align the interests of shareholders and managers (Jensen & Meckling, 1976). Executive stock option plans are incentive programs that give executives the right to buy a firm's common stock at a future date at a predetermined grant price. These plans give executives motivation to behave in ways that will boost the company's stock price. Coinciding with the increasing popularity of these options, a large body of academic literature has emerged that examines stock option grants and exercises (Bartov & Mohanram, 2004; Carpenter, 1998; Carpenter & Remmers, 2001; Heath, Huddart, & Lang, 1999; Huddart & Lang, 1996, 2003). By and large, the extant research has been dominated by a financial economics perspective that assumes that executives are rational and self-interested and are affected minimally by their social context. This atomized view of corporate and executives' actions related to stock options is surprising given the embedded nature of economic activities (Granovetter, 1985). The importance of social context is particularly great in emerging economies, which are characterized by a high level of uncertainty with regard to the social perceptions of stock options (Scott, 2002).

My dissertation aims to fill in this theoretical gap by investigating stock options-related arrangements by individual executives and firms from a sociological point of view. The first study in this dissertation, "To Cash In or Not: Stock Option Exercises by Executives of Chinese State-Owned Enterprises," investigates the antecedents of stock option exercises by executives in Chinese state-owned firms, behaviors considered deviant from the institutional norms of the Chinese state bureaucracy. This study seeks to answer the following question: When individual beliefs and actions are deeply embedded in their institutional context, as in the case of Chinese executives in overseas-listed firms, who is likely to break with the institutional status quo, and what are their reasons for doing so? Contrary to the existing status-based theory of social deviance, institutional disengagement among Chinese executives often takes place in the middle of an institutional status hierarchy. Characteristics of the institutional environment and the individual biography further interact with individual positions to affect the likelihood that an executive will diverge from the institutional expectation of not exercising stock options.

The second study, "Paying the Price: Executive Demotion After Stock Option Exercises in Chinese State-Owned Enterprises," investigates the individual consequences of stock option exercises in Chinese state-owned firms. This study seeks to answer the following questions: When institutional entrepreneurs diverge from the institutional status quo, who is most likely to be punished? Who can bypass the sanction, and for what reasons? The findings suggest that executives were more likely to be punished for divergent behaviors if (a) the executive had low levels of bottom-up power, (b) the prevalence of divergent behaviors among peers was moderate without having reached a threshold that sufficiently legitimized the practice, and (c) the broader audience was concentrated. This study promises to shed new light on the outcomes of institutional entrepreneurship by addressing why some institutional entrepreneurs fail.

The third study, "The Diffusion of an Invisible Corporate Practice: Evidence from Stock Backdating, 1981–2005," explores the spread of stock backdating, an unethical corporate practice about which public information was virtually unavailable until 2005. This "invisible" practice, unlike corporate practices accessible to outsiders, did not diffuse through board interlocks. Rather, stock option backdating spread because of geographic proximity: Firms

were more likely to backdate stock options to the extent that other firms located geographically close to them had done so. The effect of geographical proximity was conditional on high levels of local board interlocks, a finding that lends support to the idea of the importance of localized interactions among members of the local business elite. In addition, consistent with stock backdating's unobservability by outsiders, this practice did not diffuse through the indirect channels that often underlie the diffusion of corporate practices. Together these findings suggest that invisible corporate practices follow unique diffusion patterns.

In summary, the three studies seek to contribute to our understanding of stock options from a sociological perspective: in other words, how option decisions are affected by the institutions and peer groups surrounding an individual actor and an organization. My major data source for testing these ideas is the corporate proxy statements and announcements of overseas-listed Chinese firms. These statements contain detailed executive biographies that include information about executives' education, prior industry work experience, prior government work experience, other associations with the state and so on. The statements and announcements also report executives' exercise behaviors. Information on these firms and their executives is used as the basis for testing the theories developed in the first two studies, while the last study uses data on stock options dating practices among U.S. firms.

CHAPTER 1

TO CASH IN OR NOT: STOCK OPTION EXERCISES BY EXECUTIVES OF CHINESE STATE-OWNED ENTERPRISES

Introduction

Under what conditions can individuals, whose beliefs and actions are embedded in their institutional context, break with the institutional status quo? Institutional theory has traditionally focused more on isomorphism and stability whereby actors adopt the same approved practice (e.g., Scott, 2008; Tolbert & Zucker, 1996). Only in the past few years have such scholars begun to pay attention to institutional change or disengagement from socially accepted behaviors (e.g., Battilana, 2011; Dacin, Goldstein, & Scott, 2002; Hardy & Maguire, 2008).

Moreover, despite the conceptual importance of individuals in institutional studies (DiMaggio & Powell, 1991; Zucker, 1991), extant research has largely centered on macro-level factors that challenge existing institutional systems, such as precipitating crises and technological changes (e.g., Fligstein, 2001; Greenwood, Suddaby, & Hinings, 2002). The roles of individuals in institutional changes have yet to be fully explored (Powell & Colyvas, 2008). In the limited research that emphasizes the roles of the micro-level factors in institutional changes, individuals are only portrayed as “heroic agents” (Garfinkel, 1967; Powell & Colyvas, 2008; Strang & Sine, 2002), that is, individuals who have high levels of social capital (Coleman, 1988), distinct social skills (Fligstein, 1997), and are capable of driving dramatic institutional changes. Yet, such a “heroic agents” view is a poor representation of the human agencies who are deeply embedded in the existing institutional systems (Powell & Colyvas, 2008). For instance, research has shown that individuals’ beliefs and actions are typically shaped and constrained by the existing institutional arrangements (Greenwood & Suddaby, 2006) in which they are embedded.

This “embeddedness” notion poses a key question for institutional theorists: if, as institutional theory asserts, behavior is determined by taken-for-granted institutional prescriptions, how and why do embedded individuals begin to break with institutions? This is typically referred to “the paradox of embedded agency,” one of the most important challenges in institutional theory (Seo & Creed, 2002). This study aims to address this question by exploring individuals’ disengagement behaviors. Different from the assumption of the “heroic agents” view that treats individuals as disembodied (Cooper, Ezzamel, & Willmott, 2008; Delmestri, 2006; Meyer, 2006), this study highlights the “embeddedness” view of human agencies. I define an individual’s level of institutional embeddedness as the actor’s position in an existing institution. Acknowledging both the institutional opportunities and constraints inherent in an actor’s position in a given institution, I predict that disengagement is likely to occur neither at the top nor at the bottom but in the middle of the existing institutional hierarchy. Moreover, I hypothesize that the individual-level attributes (e.g., career stages) and the characteristics of institutional environments interact with actors’ institutional positions and jointly affect the likelihood for these actors to diverge from the institutional status quo.

Empirically, I examine the stock option exercise behaviors of executives in Chinese firms listed on the Hong Kong stock exchange market. These firms are deeply embedded in a state

socialist institution from which they originated. In the meantime, they also encounter another institutional system, a market institution where they are publically listed. Under the state socialist institution, executives work as civil servants to serve the state and increase the wealth of the people as a whole, but not for themselves (Newman, 2005). Consequently, stock option exercises, which bring fat profits to the individuals themselves, are generally considered deviant behaviors from the state socialist institution (Wen & Ming, 2008). But under the market institution, executives are assumed as free to exercise their stock options to maximize individuals' terminal wealth (Carpenter, 1998). In this regard, the exercise behaviors of stock options in the overseas-listed Chinese firms represent a fascinating opportunity for us to address the question of how individual actors at the micro level deviate from their institutional status quo.

My study promises to make the following three contributions. First, it contributes to institutional theory by addressing the central challenge for institutional theory at the micro level: examining under what circumstances embedded individuals decide to diverge from the institutional status quo. Running counter to the existing theory, I predict and find that divergence is more likely to take place in the middle of the institutional hierarchy. Second, my study promises to improve our understanding of how individual biographical attributes may influence actors' likelihood to diverge. Given the substantial interests paid to the macro-level factors, researchers have called for more attention to individual characteristics that may enable actors to deviate (e.g., Battilana, Leca, & Boxenbaum, 2009; Battilana, 2011). Third, research on stock option exercises has been traditionally approached from a financial economics perspective (Bartov & Mohanram, 2004; Carpenter & Remmers, 2001; Heath, Huddart, & Lang, 1999; Huddart & Lang, 1996, 2003). My study sheds new light on how stock exercise behaviors can be shaped by the institutional forces surrounding individuals.

The paper proceeds as follows. I first elaborate on the empirical setting. I then present my theory and hypotheses regarding how individual-level factors lead executives to exercise stock options in Chinese firms, followed by the research design and results. Last, I discuss the contributions and limitations of this study and outline directions for future research.

Background: Dilemma of Stock Option Exercises in China

The empirical setting I am going to explore is the overseas-listed, state-owned Chinese enterprises that reside at the intersection of dual institutions, namely, a state socialist institution from the home country and a market institution from the overseas stock exchange market. Because Chinese state-owned firms made their debuts in overseas markets recently, this case offers a fascinating ground for us to investigate the question of how individual actors challenge and deviate from the existing institutional system.

The particular phenomenon I am interested in studying is the stock option exercise behaviors by Chinese executives. Executive stock option grants are incentive programs originating from the market institution. With the growing number of Chinese state-owned enterprises going public in foreign exchange markets, executive option awards have become a popular practice in Chinese overseas-listed companies. For example, China Mobile, the world's largest mobile phone service provider in terms of customer base listed on both the Hong Kong and New York exchange markets, began to adopt stock option incentive programs in 1997. By 2010, the company had granted executives 900 million stock options in total. China Ocean Shipping Company (COSCO), a marine shipping business listed on the Singapore Stock Exchange,

worked out a stock option incentive plan as early as 2002. By the end of 2010, the company had awarded its board members a total of 38.8 million stock options.

However, the provision of stock options was only symbolic or nominal for these Chinese firms and was not really an incentive to executives. The options were awarded by the Chinese government, the actual owner, in an attempt to make these companies more appealing to overseas investors. Under the market institution, investors favor executive stock options because stock options could better align the interest of shareholders and management and thereby alleviate agency costs. Just as one senior executive at China Investment Corp. mentioned, “Many foreign investors viewed this [stock option program] as an important benchmark as to whether Chinese executives could be responsible for their enterprises” (my interview with this executive, dated on July 1, 2013).

Because the market ideology underlying stock option exercises is the opposite of the state socialist institution, options awarded for this symbolic reason are usually not allowed to be exercised by the implicit socialist norm. Accordingly, stock option exercises to maximize executives’ own interests pose a direct challenge to the state socialist institution. In contrast, under the market institution, executives are assumed free to exercise their stock options to maximize individuals’ terminal wealth (Carpenter, 1998). Table 1 summarizes the differences between the state socialist and market institutions.

Table 1: Two ideal types of institutional systems: state socialist versus market

	State Socialist Institution	Market Institution
Characteristics	Collective ownership of the means of the production	Private ownership of the means of the production
Principle	Equality	Individual rights
Economy	The government is the key economic agent; enterprises meet government objectives; the government determines price and production(central planning)	Individual enterprises are the key economic agents; the government sets a legal framework; the market (supply and demand) determines prices and production.
Goal of enterprises	Satisfy government goals	Maximize shareholder wealth
Assumptions of managers	Other-interested; work for the interest of the people as a whole.	Self-interested; work for the individual wealth; generate agency costs.
Incentives to managers	Equal pay; provide no economic incentive plans	Economic incentive plans are used.
Executive stock options	-----	Options are awarded to align the interests between shareholders and managers
Executive stock option exercise	-----	Executives are free to exercise options to maximize individual wealth

At Petro China, the largest oil and gas producer and distributor in China, executives were explicitly requested to sign a contract in which they promised not to exercise their option rights. The option grants were similar to the “nominal salary” in Chinese state-owned firms. Executives were not allowed to receive the full amount of their salaries indicated on the

proxy statement. Though the Chinese legal system has never formally ruled out executives' rights to exercise stock options, executives who break this implicit norm may indeed be seriously punished by the government. Jingbao Liu, the former CEO of Bank of China (Hong Kong), was sentenced to a 2-year suspended death penalty in 2005 because he received the full amount of his "nominal salary." Liu, along with three other senior managers, was alleged to have made "unauthorized distribution for personal purposes" of funds that belonged to the Bank of China.

Yet, in the past ten years, some executives have chosen to diverge from the institutional expectation of not exercising stock options. For instance, from 2004 to 2007, 354 million executive stock options of China Mobile were exercised, resulting in a profit of 11.1 billion Hong Kong dollars, and 28.9 out of 38.8 million executive stock options of COSCO granted before 2007 were exercised. But experiences vary across individuals. For instance, few executive stock options have been exercised at China National Offshore Oil Corporation (CNOOC), one of China's major oil companies. Executives were tempted by huge profits from exercises but were afraid of punishments. A former senior executive at CNOOC said, "I wanted to, but finally did not exercise stock options. Every day, I felt like I was sitting on a bomb just waiting to explode."

Theory and Hypotheses

The question then arises: what factors prompt executives, whose beliefs and actions are embedded in the socialist institution, to break with the institution, i.e., to exercise stock options? I propose that the decision is an outcome of three factors: (1) individuals' positions in the institutional system, which provide actors who occupy the positions with varying institutional opportunities (Bourdieu & Wacquant, 1992) as well as constraints; (2) the macro-level characteristics of the institutional environment, in this context, the boundary overlap between the market and the state-socialist institutions; and (3) the individual-level demographic attributes (e.g., career stage), which further shape individual susceptibility to institutional opportunities and constraints. The three factors interact in affecting the likelihood that individuals deviate from the institutional status quo.

Literature Review

An institutional field generally contains a number of positions from which actors take actions (Bourdieu, 1990; Foucault, 1972). Positions of individuals mediate the relationships between individuals' attitudes and behaviors and the environment in which they are embedded (Emirbayer, 1997; Emirbayer & Mische, 1998). Positions affect individuals' perception of the institutional opportunities and constraints in the field and, in some cases, affect individuals' access to the resources needed to exert power over the field (Bourdieu, 1986, 1988; Dorado, 2005; Lawrence, 1999).

Prior research that integrates institutional positions and institutional divergence is limited. At the micro level, research is scant on the relationship between individual positions and the likelihood of divergence (see for exception Battilana, 2011; Maguire, Hardy, & Lawrence, 2004). At the macro level, research that examines organizational positions and institutional change has generated mixed findings. For instance, some studies have found divergent change to be more likely to be initiated by low-status organizations (Garud, Jain, & Kumaraswamy, 2002; Haveman & Rao, 1997; Hirsch, 1986; Kraatz & Zajac, 1996; Leblebici,

Salancik, Copay, & King, 1991; Tushman & Anderson, 1986), which are said to be at the periphery of the field (Shils, 1975), but some recent studies have found such change initiated by high-status organizations (Greenwood & Suddaby, 2006; Greenwood et al., 2002; Sherer & Lee, 2002; Zilber, 2002), which are said to be at the center of the field (Shils, 1975).

I posit that the observed variance in these findings likely stems from three major assumptions that are implicitly made in the extant research, and all of which may invite debates. The first assumption is about the nature of the actions considered. Previous research assumes that the divergent actions are not so discrediting as to tarnish players. High-status players are secured in their social acceptance, so they are free to deviate from conventional behaviors (Hollander, 1958, 1960; Philips & Zuckerman, 2001). Yet, this assumption may be doubtful in many situations. Some divergent behaviors may indeed delegitimize players. For instance, the recent spread of stock option backdating, an illegitimate corporate practice, led to a few executive dismissals; stock price of the companies under investigation immediately dropped once the Securities and Exchange Commission (SEC) announced the probe (Wall Street Journal, 2006).

Second, prior research assumes the availability and attractiveness of alternative institutions. A failure to gain recognition in one institution usually causes actors to withdraw and to seek other available audiences (Frank, 1985; Stinchcombe, 1964). Low-status actors are especially motivated to seek a more favorable social reception in other institutions. Therefore, they are more likely to diverge (e.g., Garud et al., 2002; Haveman & Rao, 1997). But this assumption may be problematic as well. While alternative institutional fields may be available, rejected members in one institution may also be prevented from seeking a more favorable social reception elsewhere (Dittes & Kelley, 1956). This is particular true when either the entry barrier to other institutions or the exit barrier to the existing institution is high. Therefore, when there are few opportunities to enter neighboring interfaces, the lowest ranked candidates have no choice but to redouble their efforts to signal membership through greater conformity.

Finally, the assumption on two categories, center and margin, is rather arbitrary and can be refined. A well-developed theory on the relationship between position and divergence should clarify why and when there might be more or fewer categories. Indeed, depending on the context, it makes sense to distinguish between not just two categories, but among at least three: low, middle, and high (e.g., Battilana, 2011; Philips & Zuckerman, 2001).

In this study, I relax these assumptions and reexamine the relationship between position and divergence. Indeed, the assumptions in previous research are not applicable to my empirical context. First, the stock option exercise behaviors that bring high profits to government officials run counter to the socialist norm. Delegitimation of exercises may be so great that exercises not only discredit actors but also lead to jail time. Second, because of the lifetime employment practice in the Chinese bureaucracy system and the high occupational prestige associated with being government officials, once individuals enter the system, most tend to stay for the rest of their careers (Zhou, 2001). Alternative institutional systems are generally not attractive to these actors. Third, there may not be a clear dichotomy between central or periphery players in this system. Each government employee is assigned to one of the 12 ranks from office worker to the state-level officer in China (see Table 2). Detailed descriptions of the Chinese bureaucratic system will be elaborated on later.

Table 2: Chinese bureaucratic ranks

Rank	Post	Examples at central	Examples at local
12	Guo: State-Leader level	President	
11	Guo minus: Vice-State-Leader level.	Vice president	
10	Bu: Ministerial (Provincial) level.	Minister of the Ministry of Foreign Affairs	Governor of Zhejiang province
9	Bu minus: Vice-Ministerial (Provincial) level.	Vice minister of the Ministry of Foreign Affairs	Vice governor of Zhejiang province
8	Ju: Bureau-Director level.	Director-general of the Department of Asian Affairs of the Ministry of Foreign Affairs	Governor of Wenzhou City, Zhejiang province
7	Ju minus: Deputy-Bureau-Director level.	Deputy director-general of the Department of Asian Affairs of the Ministry of Foreign Affairs	Vice governor of Wenzhou City, Zhejiang province
6	Chu: Division-Head level.	Head of Division One of the Department of Asian Affairs of the Ministry of Foreign Affairs	Head of Bureau of Agriculture, Wenzhou city, Zhejiang province
5	Chu minus: Deputy-Division-Head level.	Deputy head of Division One of the Department of Asian Affairs of the Ministry of Foreign Affairs	Deputy head of Bureau of Agriculture, Wenzhou city, Zhejiang province
4	Ke: Section-Head level.		Head of section of technology of Bureau of Agriculture, Wenzhou city, Zhejiang Province
3	Ke minus: Deputy-Section-Head level.		Deputy head of section of technology of Bureau of Agriculture, Wenzhou city, Zhejiang Province
2	Section member.		
1	Office worker		

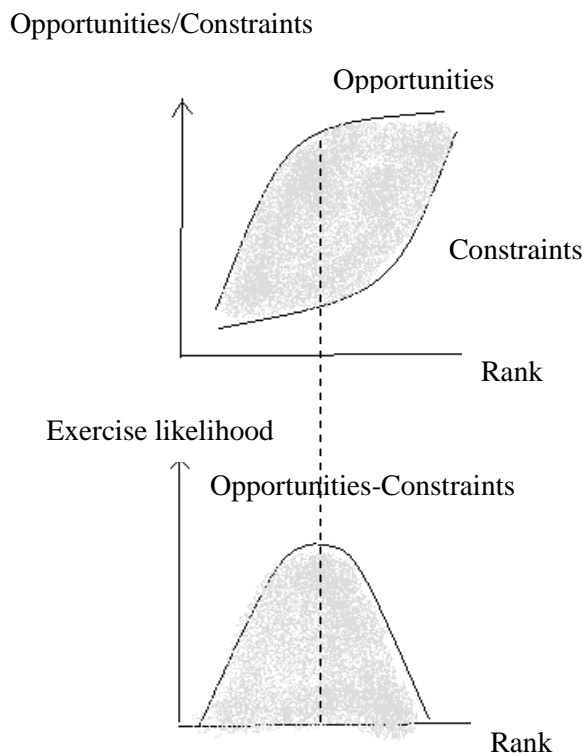
Institutional Position and Divergence

I posit that the relationship between option exercises and positions may reflect the influence of two simultaneous processes: one as opportunities and the other as constraints. Opportunity-wise, individual positions in the institution provide people with varying opportunities to identify and introduce a novel institutional combination (Bourdieu & Wacquant, 1992; Dorado, 2005). In terms of constraints, positions constrain individuals who occupy them by imposing institutional expectations and inducing different levels of opportunity costs for deviance (Lazear & Rosen, 1981). Both opportunities and constraints should be considered in accounting for deviant behaviors such as exercise decisions.

I define positions by individual ranks in the institutional system. Ranks have been shown to be closely related to formal authority, positional power, privileged access to resources, and

responsibilities (Bian & Logan, 1996; Logan & Bian, 1993; Zhou, 2000). I suggest that individual ranks increase *opportunities* to exercise at a *decreasing* rate but enhance *constraints* to exercise at an *increasing* rate. I then posit a synthesized hypothesis on option exercise decisions by combining opportunities and constraints simultaneously. Because opportunities are more likely to dominate at the low-level ranks and constraints are more salient at high-level ranks, I propose that there will be an inverted U-shaped relationship between individual ranks and the exercise likelihood. Figure 1 displays the expected relationship between rank and opportunity to exercise, rank and constraints to exercise, and finally, the inverted U-shaped relationship between rank and the likelihood of exercising. Below I will elaborate on this rationale.

Figure 1: Theoretical relationships between rank, opportunities, constraints and exercise likelihood



Opportunities. Opportunities offered to individuals who deviate from an existing institution can appear in multiple forms, such as financial gains and alternative career paths. For Chinese executives deliberating on whether to deviate from state socialist norms and exercise stock options, the opportunities that lure them should come from the new market institution. For example, the lure could be financial gains from economic transactions in the marketplace (Bian & Logan, 1996; Logan & Bian, 1993; Walder, 1996; Zhou, 2000).

The opportunities offered by the market institution to a deviating Chinese executive increase with individual ranks in the old institution. In most cases of institutional change, there is some degree of overlap between the old and new institutions. This means that the opportunity distributions scheme and its underlying mechanisms for the existing institution are more or less reflected within the new institutional systems. For example, just as firms in the state-

socialist system value executives with higher educational levels or deeper expertise, such a preference for strong human capital is likely to exist among firms in the market system as well (Bian & Logan, 1996; Walder, 1996; Zhou, 2000). If this is the case, then assuming that opportunities often increase within most institutional systems with the rank occupied by an individual within the institution, one can expect that a more highly ranked executive in the state-socialist institutional system may also enjoy greater opportunity for personal gains from the alternative market institution, if he or she indeed chooses to deviate.

However, the opportunities offered to individuals who deviate from an existing institution increase with rank, but at a *decreasing* rate. Initially, when an individual ranks low in the institution, opportunities gained by advancing a rank are substantial. However, when the individual ranks very high in the system, opportunities may increase less substantially with heightening ranks. First, the schema for evaluating skills, knowledge, and expertise accumulated by individuals often differ (although overlap) between competing institutions. This suggests that a portion of executives' expertise valued by one institution may not be fully valued by another. For example, to climb up the ranking of any particular institutional system, individuals often need to invest significantly on institution-specific human and social capital to reap the high opportunities and rewards within the institution. These institution-specific capitals may not be easily transferable to the new institutional system. In such cases, the opportunities and rewards allocated to the highly ranked individuals based on these institution-specific human and social capitals will not be proportionally reflected in the competing, new institution.

Second, even if the two institutions value the same expertise, when individuals move from one institution (or are contemplating such a move and calculating their opportunities and potential gains), the degree that their expertise can be successfully implemented will differ due to variations in the complementary elements in institutional environments that allow for successful execution of their expertise. The highly-ranked individuals are especially more susceptible to this problem because of the more complex nature of their tasks. Therefore, at the higher rank range, the increase in rewards and opportunities can slow due to the potential friction for knowledge transfer between the two institutions.

The relationship between ranks and opportunities can then be stated as follows.

$$O = f(R), f' > 0 \text{ and } f'' < 0 \quad (1)$$

Where O indicates opportunities, R indicates ranks, f' indicates the first derivative of f, and f'' indicates the second derivative of f. Figure 1 displays such a relationship.

Constraints. Acknowledging the roles of positions both as enablers and constraints on human actions, I also explore the impact of constraints associated with positions on option exercise behavior. Constraints can be regarded as the likelihood that an institutional system restrains actors from breaking with the institutional norm (Leca, Gunst, & Huffman, 2008). Constraints may arise in three ways: the opportunity costs of losing the current position, internal beliefs of actors in the institution that keep them from seeing beyond the prevailing recipes, or external normative pressures that force actors to conform. To elaborate, higher-ranked individuals first suffer from higher levels of opportunity costs of jeopardizing their current status and also other benefits related to the positions in the current institution. Second, the mindsets and beliefs of higher-rank players are often highly embedded within the institutional system (Porac & Thomas, 1990). Therefore, given that it generally takes time to acquire highly-ranked positions in an institutional system, I expect that individuals occupying

these positions have undergone a longer and more intensive internalization of institutional rules. Third, higher-ranked actors are more connected to other central actors, from whom norms are learned and shared, and thus they are more heavily exposed to the normative processes from outside (DiMaggio & Powell, 1983; Galaskiewicz & Wasserman, 1989; Greve, 1998; Kraatz, 1998; Westphal, Gulati, & Shortell, 1997). Their positions also make them more visible to external scrutiny; as such, more intensive are their pressures to conform.

I propose that increasing individual ranks leads to constraints at an *increasing* rate. When ranks are low, advancing one more rung up the ladder only slightly increases the strength of constraints. But when ranks are high, further increases in ranks exacerbate the accumulation of such constraints. First, tournament theory posits that opportunity costs of losing one's current position are increasingly higher when the individual occupies a high rank (Lazear & Rosen, 1981). The higher the rank, the larger the reward differences between this particular rank and the next-level rank. In other words, leaving the system for high-ranking individuals is increasingly painful due to the precious ranks they have already obtained as well as the right for them to continue the tournament. Second, increasing ranks may more dramatically increase actors' internal beliefs that support the existing institution. Social psychological theory (Staw, 1976) suggests that individuals are likely to escalate their commitment to the existing institution after years of dedication. Furthermore, the escalation strengthens with the level of commitment. Third, rising in rank may enhance external normative pressures more radically because of external audiences' availability bias (Tversky & Kahneman, 1973, 1974). That is, external audiences are more likely to recall and pay increasingly more attention to the behaviors of high-ranking individuals, thus amplifying the normative pressure imposed on them.

The relationship between rankings and constraints can then be stated as follows.

$$C = g(R), g' > 0 \text{ and } g'' > 0 \quad (2)$$

Where C indicates constraints, g' indicates the first derivative of g, and g'' indicates the second derivative of g. Figure 1 displays this relationship.

Combining opportunities and constraints. The likelihood of stock option exercise is positively affected by opportunities an individual possesses but negatively related to constraints an individual faces. When opportunities are larger than constraints are, individuals are likely to exercise stock options, and the larger the gap between opportunities and constraints, the higher the exercise likelihood. This can be stated as follows:

$$L = \alpha (O - C) \quad (3)$$

Where L is the likelihood to exercise and α is a function summarizing other conditions that affect the likelihood.

Assume that $f' > g'$ when R=0, (1)(2)(3) jointly imply an inverted U-shaped relationship between L and R.

$$L' \begin{cases} < 0, & \text{if } f' > g' \\ > 0, & \text{if } f' < g' \end{cases} \quad (4)$$

In Figure 1, an inverted U-shaped curve is created by deducting constraints from opportunities. This curve indicates the gap between opportunities and constraints, which then has an implication on the option exercise likelihood.

This suggests that the likelihood to exercise has a nonmonotonic relationship with ranks. Initial increases in ranks increase the likelihood to exercise, but further increases eventually depress the likelihood. At low ranks, opportunities dominate, which increases one's likelihood to exercise. But at high ranks, constraints are more prominent, which suppresses one's likelihood to exercise.

Hypothesis 1: The likelihood of stock option exercises by Chinese executives has an inverted U-shaped relationship with individual ranks in the state-socialist institution.

Institutional Boundary Overlap and Divergence

At the macro level, the degree of boundary overlap between the state socialist institution and the market institution may affect executives' likelihood to exercise stock options. Exposure to alternatives increases the likelihood that an individual disengages from the existing institution (Greenwood & Suddaby, 2006).

The institutional environment in China is not equally strong in embracing the state socialist view across the country. The level of boundary overlap between two institutions varies across different geographic locations within China. Indeed, extant research suggests that institutional logics often differ in fundamental ways over geographic locations (Lounsbury, 2007; Marquis, 2003; Marquis & Lounsbury, 2007; Saxenian, 1996). For instance, Lounsbury (2007) find competing institutional logics in two main cities in the mutual fund industry. While Boston is more dominated by trustee logic, New York is better characterized by performance logic. Likewise, geographic locations in China differ greatly in dominant institutions. For instance, two important cities in China with similar sizes, Beijing and Shanghai, diverge in many ways. While Beijing may be characterized as having a dominant state socialist institution, Shanghai may be characterized as having a high level of overlap between the state socialist and the market institution. In Beijing, with its proximity to the central government, municipal officials have been particularly inflexible and passive with economic transition efforts (Child, 2001). Given direct institutional pressures from the central government on this city's long-term municipal plans, Beijing's role as socialist China's political center has been enhanced through its political function as the nation's capital (BMG, 2004). In contrast to Beijing's central political role, Shanghai is far from China's political center. Its officials have greater latitude to formulate their own economic policies for attracting investment and developing business opportunities. With less frequent and less direct political interventions from the central government, municipal officials in Shanghai can be more independent, flexible, and proactive. For instance, as stated in an official research report (SMG, 1994), the objective of the Shanghai Municipal Government is to make Shanghai an international economic, financial, and trade center. The word "political" is not even mentioned in this local official document. Taken together, Shanghai may be less dominated by the state socialist institution than Beijing is, with a high level of overlap with the market institution.

When the state socialist institution is dominant, as in the city of Beijing, individuals are not extensively exposed to the alternative market institution. Executives' values are often embedded in the existing institution. They have intensively internalized the institutional rule

of the state socialism. As a result, they are less likely to diverge from the institutional expectation of not exercising stock options. In contrast, when the state socialist institution is highly overlapped with the market institution, as in the city of Shanghai, executives are heavily exposed to the existence of alternative institutions. Executives may begin to embrace alternative values in the market institution, leading to an increased likelihood of stock option exercises.

Hypothesis 2: The likelihood of stock option exercises by Chinese executives increases with the boundary overlap between the state socialist institution and the market institution.

While Hypothesis 2 predicts a main impact of boundary overlap at the macro level, I further posit that such a macro-level factor (Fligstein, 2001; Greenwood et al., 2002) acts as a moderator on the relationship between the individual-level ranks and exercise behaviors. The inverted U-shaped relationship between individual ranks and the exercise likelihood is less salient (i.e., the inverted U-curve is flatter) in situations with a higher degree of boundary overlap between the two institutions. On the opportunity front, if the state socialist institution highly overlaps with the market institution, the opportunity and reward distribution structures in two institutions are likely to mirror each other. This will flatten the exponentially increasing rank-opportunity shape. On the constraint front, if institutional boundaries are permeable, the rate of increase in constraints with rising ranks will be much less due to (i) reduced normative pressures from the environment and (ii) reduced opportunity costs if executives deviate. It is possible for executives to leverage their existing political positions in the state socialist institution for market gains, thus effectively offsetting the opportunity costs they incur within the state socialist system when they do choose to deviate.

Hypothesis 3: The boundary overlap between two institutions moderates the relationship between ranks and the likelihood of stock option exercises by Chinese executives. Specifically, the impact of ranks on exercise is weakened as the state socialist institution increasingly overlaps with the market institution.

Individual Career Stage and Divergence

Though all individuals experience institutional opportunities and constraints to a certain extent, there is variation in individuals' susceptibility to such opportunities and constraints. Individuals draw upon their own life experiences in forming their interpretations of an ambiguous environment (Milliken, Dutton, & Beyer, 1990). Specifically, I propose that an individual's career stage (which is also highly correlated with age in the Asian context) will influence the person's susceptibility to institutional opportunities and constraints associated with their positions. Individuals at middle stages of their careers are more likely to use the opportunities and to evade the constraints.

According to the models on individuals' careers, individuals may view themselves differently depending on their age-related career stage (Judge, Cable, Boudreau, & Bretz, 1995; Veiga, 1983). In particular, researchers have observed that, at middle stages of their careers, individuals realize that life may be more than halfway over. They tend to reflect and reassess their achievements, by carefully evaluating opportunities they may have and constraints they are subject to (Levinson, 1978). They are more likely to engage in benefit-cost calculations about their career.

However, for executives who are relatively old and at a late stage of their career, they are less motivated to engage in the same benefit-cost calculations as a middle-aged executive will be, because they are about to withdraw from their career. Similarly, for executives who are relatively young and at an early stage of their career, they still have higher aspirations within the old institution, but their opportunity costs are much smaller. Moreover, their normative exposure to the alternative institution is much higher. Hence, they are less likely to engage in the same type of trade-off considerations as the middle-aged individuals.

Applying these ideas, middle-aged executives tend to reflect more on their achievements and often experience stress if not meeting their goals. They become more aware of external opportunities and constraints given by their political ranks as compared to their counterparts who are at their relatively early or late stages of career. Hence, I propose:

Hypothesis 4: Age moderates the relationship between ranks and the likelihood of stock option exercises by Chinese executives. Specifically, the impact of ranks on exercise is the largest when executives are at their middle ages.

Methods

Sample and Data

I focus on the sample of Chinese firms that went public on the Hong Kong Stock Exchange market from 2000–2010. Within the period, more than 200 Chinese firms in total were listed on that market. I exclude from my sample firms that did not grant executives stock options. My final sample includes 81 state-owned firms that granted stock options, among which 892 Chinese executives held options and 427 exercised options during the study period. The stock options of 309 executives expired or lapsed without being exercised during this period. Figure 2 displays the number of Chinese firms listed on the Hong Kong Stock Exchange across years and the number of state-owned Chinese firms that granted options among them. Figure 3 displays the total number of Chinese executives who had exercisable options and exercised options across the years. Figure 4 displays the actual amount of exercisable options and exercised options involved in these cases across the years. A typical executive stock option grant a) has a one- to ten-year life, b) is granted with an exercise price equal to the fair market value at the date of grant (i.e., at-the-money), and c) vests in tranches within one month to one year.

The firm-individual-grant-year level is the primary unit of analysis. Eighty-one firms constitute 7,522 firm-executive-grant-year units. Information on each executive's individual option grant enables me to control for specific features of each grant (e.g., strike price, duration, vesting schedule) in analyses. I retain only vested firm-executive-grant-year observations that were in-the-money (i.e., where the options have positive intrinsic value), because options that are either unvested or have no intrinsic value are not "at risk" of being exercised.

Figure 2: Number of Chinese state-owned firms on the Hong Kong stock exchange market

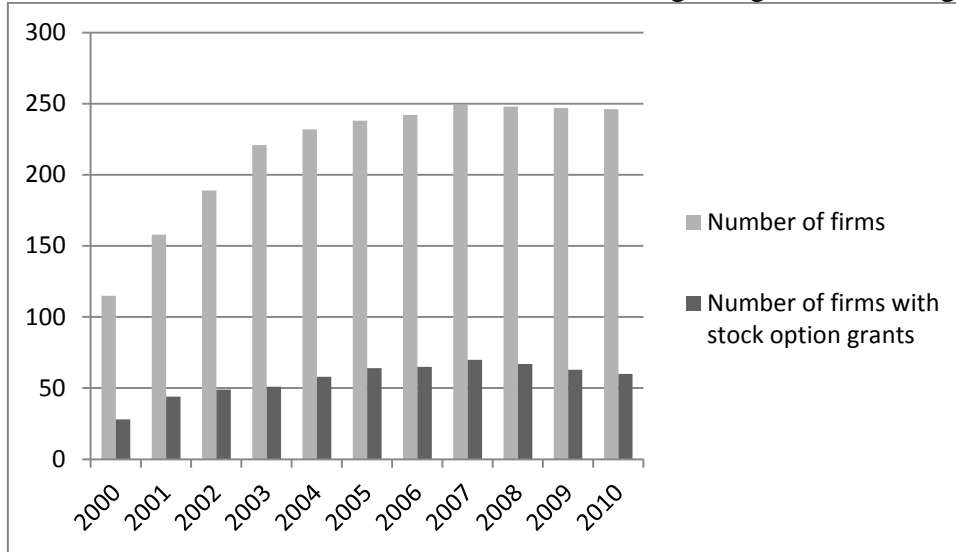


Figure 3: Number of people with stock options and those exercised options across years

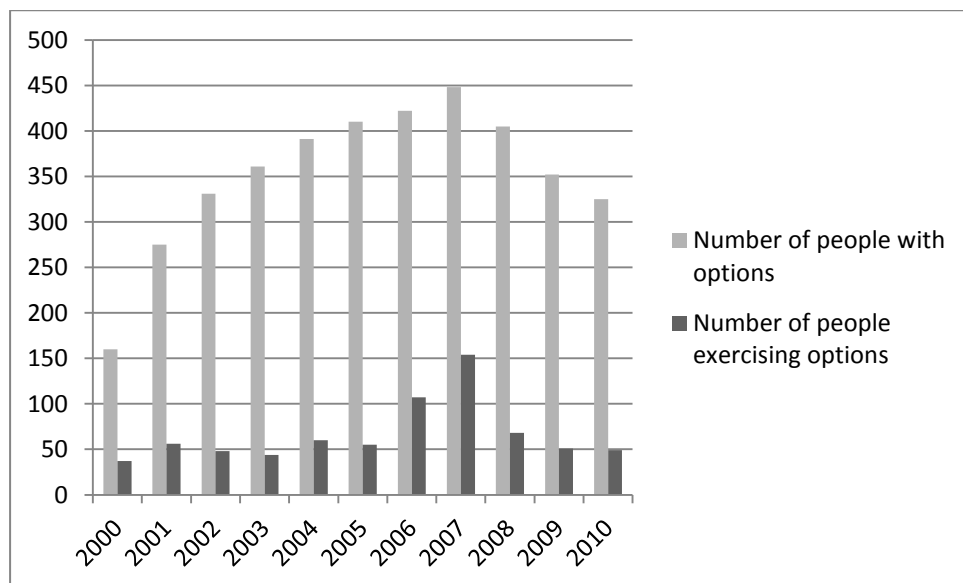
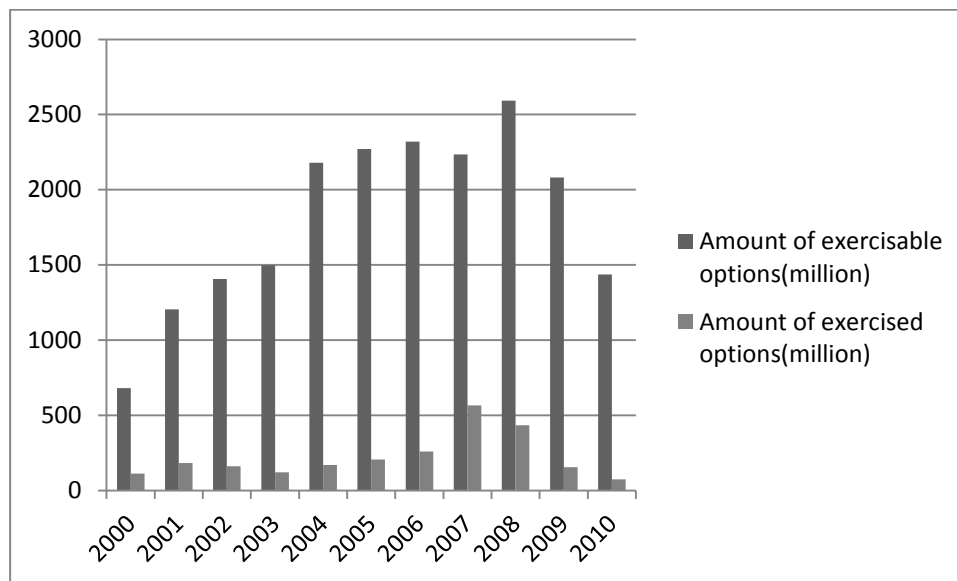


Figure 4: Amount of exercisable and exercised options across years



My major data source is corporate financial statements and announcements. I manually code each executive's biography and option exercise behaviors from this data source. My second data source is the Chinese Overseas Listed Company Research Database compiled by Guo Tai An (GTA), an economics and finance research institution in China. The database covers company profiles, balance sheets, income statements, statements of cash flow, and stock trading for all Chinese companies listed in overseas stock exchange markets. I mainly use this database to obtain the information on control variables.

Variables and Measures

Dependent variable. *Exercise* is a dummy variable indicating whether an executive exercised a specific stock option grant in a year. *Exercise* is coded as 1 if the executive exercised stock options and as 0 otherwise.

Independent variables. All independent variables and control variables, if time varying, are lagged for one year ($t-1$) for predicting exercise behaviors at the time t .

To test Hypothesis 1, I measure individual bureaucratic rank in two ways: an ordinal variable and a categorical variable. Prior research has treated a focal actor's bureaucratic rank as either an ordinal variable (Bian & Logan, 1996; Logan & Bian, 1993; Walder, 1992) or as a series of dummy variables (Zhou, 2000; Zhou, Moen, & Tuma, 1998). First, I measure *individual bureaucratic rank* as an ordinal variable representing individuals' highest bureaucratic rank in their career.

The Chinese political system features a carefully observed system of hierarchical bureaucratic ranks that identify the relative importance of people, official agencies, public institutions, state-owned corporations, and geographic units (Bian & Logan, 1996; Li & Zhou, 2005; Logan & Bian, 1993; Walder, 1992; Zhou, 1995, 2000, 2001; Zhou et al., 1998).

Virtually all party members and government employees are assigned particular bureaucratic ranks. In an ascending order, the bureaucratic ranks are office worker, section member, Ke minus (deputy section head); Ke (section head); Chu minus (deputy division head); Chu (division head); Ju (or Ting) minus (deputy bureau head); Ju (or Ting) (bureau head); Bu (or Sheng) minus (deputy minister or provincial governor); Bu (or Sheng) (minister or provincial governor); Guo minus (vice state leader); and Guo (state leader). For instance, bureaucrats holding the rank of minister are either the governor of a province, the governor of a municipality (Shanghai, Beijing, Chongqing, and Tianjin), or director-general of a ministry in the central government. Bureaucrats with the rank of bureau head are mayors of major cities in a province (excluding four municipalities), a head of a bureau in the provincial government, or a division head of a ministry of the central government. The reason for this hierarchical division is that the higher-level agencies exercise personnel power over those agencies at the lower level. Such a structure bears a strong resemblance to the various hierarchies within typical big firms. Table 2 presents the ranking system in China.

Individual bureaucratic rank takes values from 0 to 12, which indicate ranks in an ascending order just outlined: non-official, office worker, section member, deputy section head, section head, deputy division head, division head, deputy bureau head, bureau head, deputy minister or provincial governor, minister or provincial governor, vice state leader, and state leader.

To be consistent with previous research that classifies ranks into a few categories (Zhou, 2000; Zhou et al., 1998), I code rank in an alternative format with three dummy categories. Those at or above the ministerial level are classified as *high-rank* bureaucrats, those between the bureau-director and division-head levels as *middle rank*, and those at or below the section-head level as *low rank*. I include high rank and low rank in the regression analyses, leaving middle rank as the omitted category.

To test Hypothesis 2, I assess the boundary overlap between the state socialist institution and the market institution by the geographic location of the government where an individual has recently worked. I first differentiate between central (Beijing) and local provinces. I then distinguish the local provinces in China based on three areas: Shanghai, other coastal provinces (including Zhejiang province, Guangdong province, Fujian province, and Jiangsu province), and elsewhere (i.e., all other provinces). I then arrive at four final categories: Beijing, Shanghai, other coastal areas, and elsewhere. I rank all provinces and municipalities in China based on their annual foreign trade volume and foreign direct investment volume in the period 2000–2010. Shanghai and the four other coastal provinces continuously rank as the top five among all provinces. Shanghai and other coastal areas are then characterized as having a high level of overlap between the state socialist institution and the market institution. Beijing and elsewhere are considered as being dominated by the state socialist institution, thus having a low level of overlap between the two institutions. *Shanghai* is a dummy variable, coded as 1 if an individual executive has worked in a government in Shanghai. *Beijing* is a dummy variable, coded as 1 if an individual executive has worked in a government in Beijing. *Other coastal areas* is coded as 1 if individual executives have worked in coastal provinces other than Shanghai and Beijing, including Zhejiang province, Guangdong province, Fujian province, and Jiangsu province, in their career. *Elsewhere* is coded as 1 if an individual has not worked in any of the three aforementioned areas. I include *Beijing*, *Shanghai*, *Other coastal areas* in analyses, with *Elsewhere* being the omitted category.

To test Hypothesis 3, I include the interaction term between individual bureaucratic rank and geographic location. To test Hypothesis 4, I enter the interaction terms between age and individual bureaucratic rank. To test the curvilinear effect of age, I enter both the linear term and the squared term of age to interact with variables of interest.

Control variables. First, most of the prior research on option exercises falls in the camp of financial economics. I include control variables that have been examined in this line of research. I include grant-related variables to capture the fact that exercise is constrained by the schedule of the option grant. *Just vest* is a dichotomous covariate that equals to 1 if shares from the current grant vested within the prior one year and is 0 otherwise. It reflects an employee's newly obtained ability to actually exercise options to perhaps rebalance his equity portfolio. Individuals tend to exercise shortly after vesting (Huddart & Lang, 1996), so I expect a positive association between *Exercise* and *Vest*. *Time to expire* is the number of trading years remaining until the expiration of the options. If employees are aware of the opportunity cost of early exercise (i.e., the forfeiture of the remaining time value of the options), I expect to observe a negative association between *Exercise* and *Time to expire*. I also include variables related to stock prices to capture potential economic motives for the exercise behaviors. *Market to strike* is included to examine the association between the rate of option exercise and the intrinsic value inherent in the specified grant. *Market to strike* is the ratio of the current price of the underlying stock to the exercise price of the option. It provides an easy measure for the employee to gauge the appreciation in the price of the underlying stock since the date of the option grant. Individuals tend to exercise stock options if the intrinsic value of the option is high; therefore, I expect to observe a positive association between *Exercise* and *Market to strike*. *Volatility of stock return* is included to capture the riskiness of the underlying stock. *Volatility of stock return* is the standard deviation of returns of the underlying stock over the 6 months prior to (and excluding) the exercise date. For a risk-neutral investor, option value is increasing in the volatility of the returns of the underlying stock. However, many employees are risk-averse, so the value of stock options may not necessarily increase with the volatility of returns (Lambert, Larcker, & Verracchia, 1991). Indeed, individuals may tend to exercise options early if the risk imposed by volatility is sufficiently high. Therefore, I expect a positive association between *Exercise* and *Volatility of stock return*. I include *Future return* to assess the association between the rate of option exercise and employees' private information regarding future firm performance. *Future return* is the cumulative raw return (excluding dividends) of the underlying stock over the 6 months that follow the exercise date. Huddart and Lang (2003) find a positive association between option exercise and past returns and a negative association between option exercise and future returns. If employees utilize private information regarding future firm performance in their exercise decision, I expect to observe a negative association between *Exercise* and *Future return*.

Second, I include a set of variables related to corporate governance. *Board size* is suggested to indicate the monitoring strength of the board. Larger boards may be less likely to function effectively because board members could be less participative, less cohesive, and less able to reach consensus (Firstenberg & Malkiel 1994; Jensen 1993). *Board insider ratio* is measured by dividing the number of inside directors by the total number of directors. Inside directors are those who also serve as firm officers when they serve as members of the board of directors (Johnson, Hoskisson, & Hitt, 1993; Seward & Walsh, 1996). Inside directors may monitor agents less effectively than outsiders would because of their presumed lack of independence (Walsh & Seward, 1990). *CEO as board chairman* is a dummy variable indicating whether the CEO is also the chairman of the board of directors. A CEO holding

both positions is seen to have greater formal authority, often hampering board independence (Cannella & Lubatkin, 1993; Rechner & Dalton, 1991).

Finally, I include an individual characteristic variable of gender in analyses to control for possible effects at the individual level. *Male is* coded as 1 if the executive is male and female (i.e., Otherwise) as 0. Both the linear and squared terms of *age* are included to test the curvilinear effect of age.

Analysis

I use the logit analysis to model the relationship between the explanatory variables and the likelihood of individual exercise behavior. Firm and year fixed effects are included in each regression to control for any unobserved firm level or time-related heterogeneities.

Results

Table 3 presents the descriptive statistics and correlations for all variables. Executives' age ranges from 26 to 89, with a mean value of 52.

Table 4 presents the results of a logit regression analysis in predicting the likelihood of executive stock option exercise in Chinese state-owned firms. Model 1 includes control variables as a baseline model. The coefficient of *Time to expire* is negative and significant, and the coefficient of *Market to strike* is positive and significant. Consistent with previous findings in the economics research, this suggests that individuals are more likely to exercise stock options that are about to expire or have high intrinsic values. But contrary to the economic predictions, the coefficient of *Just vest* is negative and significant. Executives are least likely to exercise immediately after the options vest. It may support my aforementioned argument that stock option exercise is illegitimate under the socialist institution. Executives are concerned with potential punishments, so many of them decide to hold the option in hand, especially when the environment is uncertain in the early exercisable period. Others' exercises in the same firm have a strong positive influence on future exercises. This may again support the discrediting nature of option exercises in my context. Actors tend to follow others when there are high levels of uncertainty about the action (DiMaggio & Powell, 1983).

Model 2 includes individual bureaucratic rank and its squared term to test Hypothesis 1. The results suggest that individual bureaucratic rank is in an inverted U-shaped relationship with the likelihood of stock option exercises, supporting Hypothesis 1. Model 3 includes high rank and low rank, with middle rank as the omitted category. High-ranking individuals (ministerial level and above) are less likely to exercise stock options than are middle-ranking individuals. This further supports Hypothesis 1. But the coefficient of low rank is not significant.

Table 3: Correlations and descriptive statistics

Variable	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Exercise	0.14	0.35																	
2 Just vest	0.60	0.49	-0.15																
3 Time to expire	5.47	2.45	-0.14	0.38															
4 Market to strike price	2.00	2.38	0.28	-0.25	-0.13														
5 Volatility of stock return	4.21	9.32	-0.02	-0.06	-0.04	-0.01													
6 Future return	0.28	3.18	-0.01	-0.05	-0.01	0.01	0.87												
7 Board size	11.53	3.00	0.07	-0.02	0.02	-0.02	-0.14	-0.08											
8 Board insider ratio	0.71	0.09	0.03	0.06	0.06	-0.01	-0.05	-0.02	0.61										
9 CEO as board chairman	0.18	0.38	-0.01	-0.03	0.02	0.01	-0.07	-0.03	0.06	-0.15									
10 Other's exercise in the firm	1.91	2.78	0.53	-0.04	-0.05	0.22	-0.04	-0.01	0.28	0.15	-0.01								
11 male	0.95	0.23	0.02	0.03	0.02	0.02	-0.09	-0.08	0.10	0.08	0.06	0.04							
12 age	51.74	8.41	-0.01	-0.09	-0.10	-0.01	-0.03	-0.03	0.05	-0.04	0.02	0.00	0.07						
13 Beijing	0.11	0.32	-0.01	0.01	-0.01	-0.03	-0.02	-0.01	0.06	0.03	0.10	-0.01	0.03	0.09					
14 Shanghai	0.04	0.06	0.05	0.02	0.00	-0.01	-0.01	0.00	-0.01	0.01	-0.02	0.01	0.01	0.02	-0.02				
15 Other coastal areas	0.07	0.26	-0.01	0.01	-0.07	-0.03	-0.02	-0.01	0.01	0.02	0.01	0.04	-0.06	-0.03	-0.08	-0.02			
16 Minister and above	0.03	0.12	-0.02	0.02	-0.06	-0.01	-0.01	-0.01	0.02	-0.03	-0.05	-0.01	0.03	0.11	0.13	-0.01	0.18		
17 Bureaucratic rank	2.77	4.69	-0.02	0.03	-0.11	-0.03	-0.04	-0.03	0.06	0.00	0.15	0.00	0.04	0.17	0.49	0.10	0.40	0.25	

Table 4: Logit regression results predict the likelihood of stock option exercise in Chinese State-owned firms

	Models						
	1	2	3	4	5	6	7
<u>Control Variables</u>							
Option grant related							
Just vest	-0.63** (0.16)	-0.59** (0.17)	-0.62** (0.17)	-0.62** (0.17)	-0.62** (0.17)	-0.61** (0.16)	-0.62** (0.17)
Time to expire	-0.17** (0.04)	-0.17** (0.04)	-0.17** (0.04)	-0.18** (0.04)	-0.18** (0.04)	-0.17** (0.04)	-0.17** (0.04)
Market to strike price	0.16** (0.05)	0.17** (0.05)	0.16** (0.05)	0.17** (0.05)	0.17** (0.05)	0.17** (0.05)	0.16** (0.05)
Volatility of stock return	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)
Future return	-0.50 (0.42)	-0.51 (0.43)	-0.50 (0.43)	-0.53 (0.43)	-0.53 (0.43)	-0.52 (0.42)	-0.50 (0.43)
Corporate governance							
Board size	-0.12** (0.04)	-0.12** (0.04)	-0.12** (0.04)	-0.12** (0.04)	-0.12** (0.04)	-0.12** (0.04)	-0.12** (0.04)
Board insider ratio	-0.90 (1.22)	-1.08 (1.22)	-0.98 (1.21)	-0.98 (1.21)	-0.97 (1.21)	-1.00 (1.22)	-0.98 (1.21)
CEO as board chairman	-0.09 (0.22)	-0.09 (0.22)	-0.11 (0.22)	-0.09 (0.22)	-0.09 (0.22)	-0.06 (0.22)	-0.10 (0.22)
Other's exercise in the firm	0.55** (0.03)	0.55** (0.03)	0.55** (0.03)	0.55** (0.03)	0.55** (0.03)	0.55** (0.03)	0.55** (0.03)
Individual attributes							
Male	0.15 (0.23)	0.18 (0.23)	0.16 (0.22)	0.13 (0.22)	0.13 (0.22)	0.15 (0.22)	0.16 (0.22)
Age	-0.07 (0.06)	-0.07 (0.05)	-0.06 (0.06)	-0.06 (0.06)	-0.07 (0.06)	-0.12* (0.06)	-0.06 (0.06)
Age square	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00+ (0.00)	0.00 (0.00)
<u>Individual political ranking</u>							
Bureaucratic rank		0.10* (0.05)		0.11* (0.05)	0.12* (0.06)	0.40* (0.18)	
Bureaucratic rank square		-0.01* (0.00)		-0.01* (0.00)	-0.01* (0.00)	-0.01** (0.00)	
High rank			-0.97** (0.22)				-1.62* (0.42)
Low rank			-0.13 (0.18)				-0.22 (0.22)

Macro Institutional overlap

Beijing	-0.03 (0.22)	-0.06 (0.24)	-0.21 (0.23)	-0.15 (0.23)
Shanghai	2.31** (0.19)	2.09** (0.40)	2.32** (0.26)	2.51** (0.26)
Other coastal areas	-0.45 (0.28)	-0.44 (0.25)	-0.37 (0.24)	-0.17 (0.34)
Shanghai x bureaucratic rank		-10.73** (1.38)		
Shanghai x bureaucratic rank square		0.32** (0.04)		

Individual Career Stage

Age x bureaucratic rank						0.02** (0.01)	
Age square x bureaucratic rank						-0.01** (0.00)	
Age x high rank							3.46* (1.54)
Age square x high rank							-0.03* (0.01)
Year fixed effect	yes	yes	Yes	yes	yes	yes	yes
Firm fixed effect	yes	yes	Yes	yes	yes	yes	yes
Constant	0.87 (1.76)	0.98 (1.73)	0.75 (1.77)	0.88 (1.82)	1.00 (1.84)	2.40 (1.89)	0.56 (1.87)

Robust standard errors in parentheses,
+ significant at 10%; * significant at 5%;
** significant at 1%

Models 6 and 7 test Hypothesis 4 by entering the interaction between individual bureaucratic rank and career stage (age). In Model 6, the interaction between individual bureaucratic rank and the linear term of age is positive, and the interaction between individual bureaucratic rank and the squared term of age is negative, supporting Hypothesis 4. When individuals reach middle ages, they are more likely to grasp opportunities associated with their positions, resulting in a high likelihood of stock option exercises. In Model 7, the interaction between high rank and the linear term of age is positive, and the interaction between high rank and the squared term of age is negative, supporting Hypothesis 4. Executives at the ministerial level and above are also more likely to exercise stock options during their middle ages.

Discussion

In this study, I find that divergence (stock option exercise) is neither likely to occur at the center nor in the periphery but often takes place in the middle of the Chinese bureaucracy. Additionally, characteristics of the institutional environment and individual career stage interact with their positions in affecting their likelihood to deviate from the institutional status quo.

This study promises to improve our understanding of the individual-level of analysis in the institutional research, thereby answering numerous calls for more micro-level research in institutional theory (e.g., Chreim, Williams, & Hinings, 2007; Ocasio, 2002; Palmer & Biggart, 2002; Strang & Sine, 2002). While the individual level of analysis has been touched upon in early institutional studies, this level of analysis has received scant attention over the last two decades (Greenwood & Hinings, 1996; Powell & Colyvas, 2008; Reay, Golden-Biddle, & Germann, 2006). Specifically, this study contributes to addressing the “paradox of human agency,” the central challenge for institutional theorists. Different from the early institutional research that emphasizes the institution’s constraints on human actions (DiMaggio & Powell, 1983) and the institutional entrepreneurship research that highlights unleashed human agents who are least constrained by the institution (Garfinkel, 1967; Powell & Colyvas, 2008; Strang & Sine, 2002), this study treats individuals as both constrained and enabled by institutions. The institutional position in which the individual is embedded provides both opportunities and constraints to the individual, and this position determines who, among all human agencies, is more or less likely to diverge from the institutional status quo. In addition, micro-level factors affect the likelihood of such divergent behaviors. Finally, individuals in their middle ages are more susceptible to institutional opportunities than are their counterparts.

This study may also shed new light on the research on stock option exercises. Most of this research has been approached from a financial economics perspective, emphasizing individual wealth maximization as the driving forces of exercise decisions. This study is one of the first that examines executives’ stock options from a sociological perspective. Chinese enterprises’ going public on overseas stock exchange markets offers us a fascinating context within which to examine how executives respond to the clash between the market and socialist institutions through their stock option exercises behaviors.

Limitations and Future Research

First, this study examines the antecedents of stock option exercises. A natural extension is to explore the consequences. How do executives’ stock option exercise behaviors affect their career and organizational stock market performance? A rich area for future research is the effect of divergence on individual and organizational outcomes such as career success and survival rates. On the one hand, investors favor stock option granting and exercises because stock options send a signal that the company could better align the interest of shareholders and management and thereby alleviate agency costs. On the other

hand, executives who exercise stock options may risk displeasing the stakeholders of the firms in the government. Thus, it seems a rich area of study to explore the consequences of option exercises on organizational and individual outcomes.

Second, this study has largely focused on how executives from China deal with the clash between two institutional systems. Alternatively, it may be interesting to explore the exercise behaviors of individuals who are originated from a market economy yet promoted to executives in a Chinese firm. Is their exercise likelihood reduced because they are exposed to a socialist institution? This may be another attractive area of future research.

Third, future research should explore other individual factors that might enable different types of divergence, such as individuals' psychological mechanisms in stock option exercises. For instance, a positive self-concept and a high level of risk tolerance may influence individual attitudes toward divergence. Future research needs to examine how these micro-level attributes as well as their interactions with macro-level factors influence actors' likelihood to disengage from the institutional status quo.

CHAPTER 2

PAYING THE PRICE: EXECUTIVE DEMOTION AFTER STOCK OPTION EXERCISES IN CHINESE STATE-OWNED ENTERPRISES

Introduction

Why do some institutional entrepreneurs fail? The extant research on institutional change has largely focused on exploring the *antecedents* (sources) of institutional entrepreneurship, such as the existence of external pressures or the core characteristics that institutional entrepreneurs must possess (e.g., Greenwood & Hinings, 1996; Greenwood & Suddaby, 2006; Oliver, 1992), and the *mechanisms* (processes) of institutional entrepreneurship, including collective actions of institutional entrepreneurs and framing or theorizing of entrepreneurial initiatives (e.g., Fligstein, 1997; King & Lenox, 2000; Lawrence, Hardy, & Phillips, 2002; Lounsbury, 2002).

There is a lack of management research on the *consequences* (outcomes) of institutional entrepreneurship (Battilana et al., 2009; Pacheco, York, Dean, & Sarasvathy, 2010). That is, researchers have examined the first half of the institutional change process (e.g., who begins to diverge from the institutional status quo), but they have not investigated the second half of the process (e.g., who finally succeeds/fails after the initiatives to break). Indeed, some institutional change efforts succeed, but many institutional projects do not proceed as expected. For instance, institutional entrepreneurs fail to engage more multinationals in the battle against the HIV/AIDS pandemic (Davis & Anderson, 2008), and the change promoted by institutional entrepreneurs leads to unintended consequences that contradicts the entrepreneurs' initial intentions (Khan, Munir, & Willmott, 2007).

Exploring the outcomes of institutional entrepreneurship promises to provide a more complete picture of the institutional change process by explaining why some institutional entrepreneurs begin to break with the status quo but finally fail. It also promises to remedy the strong bias toward success in the extant research on institutional entrepreneurship (Battilana et al., 2009). The existing focus on successful cases has tended to convey a heroic image of institutional entrepreneurs (Lounsbury & Crumley, 2007), potentially overstating their capacity to effect change. Little attention has been paid to failure cases because of the difficulty of studying them in retrospect. Researchers have thus called for further studies to address such bias, which seriously hinders our understanding of institutional entrepreneurship (Battilana et al., 2009).

Echoing such calls, I study the outcomes of institutional entrepreneurship. Specifically, I focus on the outcomes at the micro level. Despite the conceptual importance of individuals in institutional studies (DiMaggio & Powell, 1991; Zucker, 1991), the roles of individuals in institutional changes have yet to be fully explored (Powell & Colyvas, 2008; Thornton & Ocasio, 2008). While institutional entrepreneurial initiatives intend to benefit the broad system, what would be the likely outcomes for these individual actors at the micro level? For instance, will those individuals who begin to break with the institutional status quo be "punished" or "praised"? Who is likely to be punished, and

who can successfully bypass the sanctions? Do other actors play a role here? What types of actors accelerate the potential punishments or promote the potential benefits of the focal changing actor? Addressing such questions promises to offer a better understanding of the micro-foundation of institutional change (Thornton & Ocasio, 2008).

Empirically, I examine the stock-option exercise behaviors—behaviors considered deviant from the institutional norms of the Chinese state bureaucracy—of executives in Chinese state-owned firms. These Chinese state-owned firms are publicly listed on the overseas stock exchange market. Executives therefore reside in a complex zone with two competing institutional systems: an old institutional system (i.e., the state socialist institution) and a new institutional system (i.e., the market institution). It is thus interesting to explore the question: If an executive begins to diverge from the old state institutional expectation of not exercising stock options, then what would be the likely consequences for this executive?

My study promises to make the following three contributions. First, it contributes to the institutional research by exploring outcomes of institutional entrepreneurship at the micro level. The focus on outcomes of institutional entrepreneurship may explain why some institutional changes fail, thus responding to the recent call for further research on failed institutionalization efforts (Davis & Anderson, 2008). A focus on the micro level promises to improve our understanding of the micro-foundation of institutional studies (Thornton & Ocasio, 2008). Given the substantial amount of interest already paid to macro-level factors, researchers have called for more attention to individual agencies in this line of research (e.g., Battilana et al., 2009). Second, I explore a few contingency factors, including both the attribute of the focal changing actor and the characteristics of other actors that may affect the likelihood of punishment or praise. My study thus sheds new light on the types of audiences that increase the likelihood of failure or success among institutional entrepreneurs. Indeed, a full account of institutional change not only addresses who initiates the change, but also how it is received and processed by incumbents and other actors (Fligstein, 1997). Yet the audience perspective is largely absent in the institutional entrepreneurship literature. Third, my study may also carry implications for the research on status attainment. Individual promotion within a firm is a primary means for individuals to improve their social status (e.g., Baron & Bielby, 1980; Bridges & Villemez, 1994; DiPrete & Soule, 1986, 1988); however, the existing research has largely been conducted in an institutionally stable period. My study promises to improve our understanding of status attainment during a period of change for institutions, with overarching competing institutional logics.

The paper proceeds as follows. First, I present my theory and hypotheses regarding individual-level outcomes after stock option exercises in Chinese firms. The empirical context is discussed in my second chapter and is therefore not repeated here. I then present the research design and results. Finally, I discuss the contributions and limitations of this study and outline directions for future research.

Theory and Hypotheses

Literature Review

The existing research on outcomes of institutional entrepreneurship is sparse. In general, the empirical research on institutional entrepreneurship has focused on describing the determinants and the process (mechanism) of institutional changes. For instance, extant research in institutional theory has acknowledged the importance of a variety of factors that lead to institutional entrepreneurship initiatives, including the external pressures that influence the inception of institutional change (e.g., Oliver, 1992), the power and legitimacy conditions leading to institutional change (e.g., Snow & Benford, 1992; Suchman, 1995a; Zucker, 1988), the effects of environmental conditions where the entrepreneurial organizations or individuals reside (e.g., Greenwood & Hinings, 1996; Greenwood & Suddaby, 2006), and the core characteristics that institutional entrepreneurs must possess to lead institutional transformations (e.g., Dorado, 2005; Kraatz & Moore, 2002; Maguire et al., 2004). In the meantime, the extant institutional theory literature has discussed a number of processes (mechanisms) through which entrepreneurs drive institutional change. For instance, institutional change is often driven by the cooperation or collective actions of institutional entrepreneurs (e.g., Fligstein, 1997; Lawrence et al., 2002; Zucker, 1988); political tactics of institutional entrepreneurs, such as incentivizing behaviors and the utilization of power (e.g., Fligstein, 1997; Maguire et al., 2004); and the use of framing or theorizing entrepreneurial initiatives as efforts to create new legitimacy appealing to a wider audience (e.g., Greenwood et al., 2002; King & Lenox, 2000; Lounsbury, 2002; Rao, 1998; Zilber, 2002).

Despite such understandings, the extant research has yet to advance understandings regarding the consequences of such institutional entrepreneurial initiatives (see Pacheco et al., 2010 for a review; see Khan et al., 2007 for an exception). Integrating prior research in institutional entrepreneurship, Pacheco et al. (2010, p. 996) suggest that “institutional theory could benefit from further exploration of the outcomes and consequences of institutional change.” While institutional entrepreneurship efforts may eventually lead to changes in institutional logic where these institutional entrepreneurs reside, entrepreneurs often run the risk of being labeled “deviators” rather than “entrepreneurs.” How these individual actors may deal with such risk and reduce the likelihood of failure remains an imperative question to be understood (Pacheco et al., 2010).

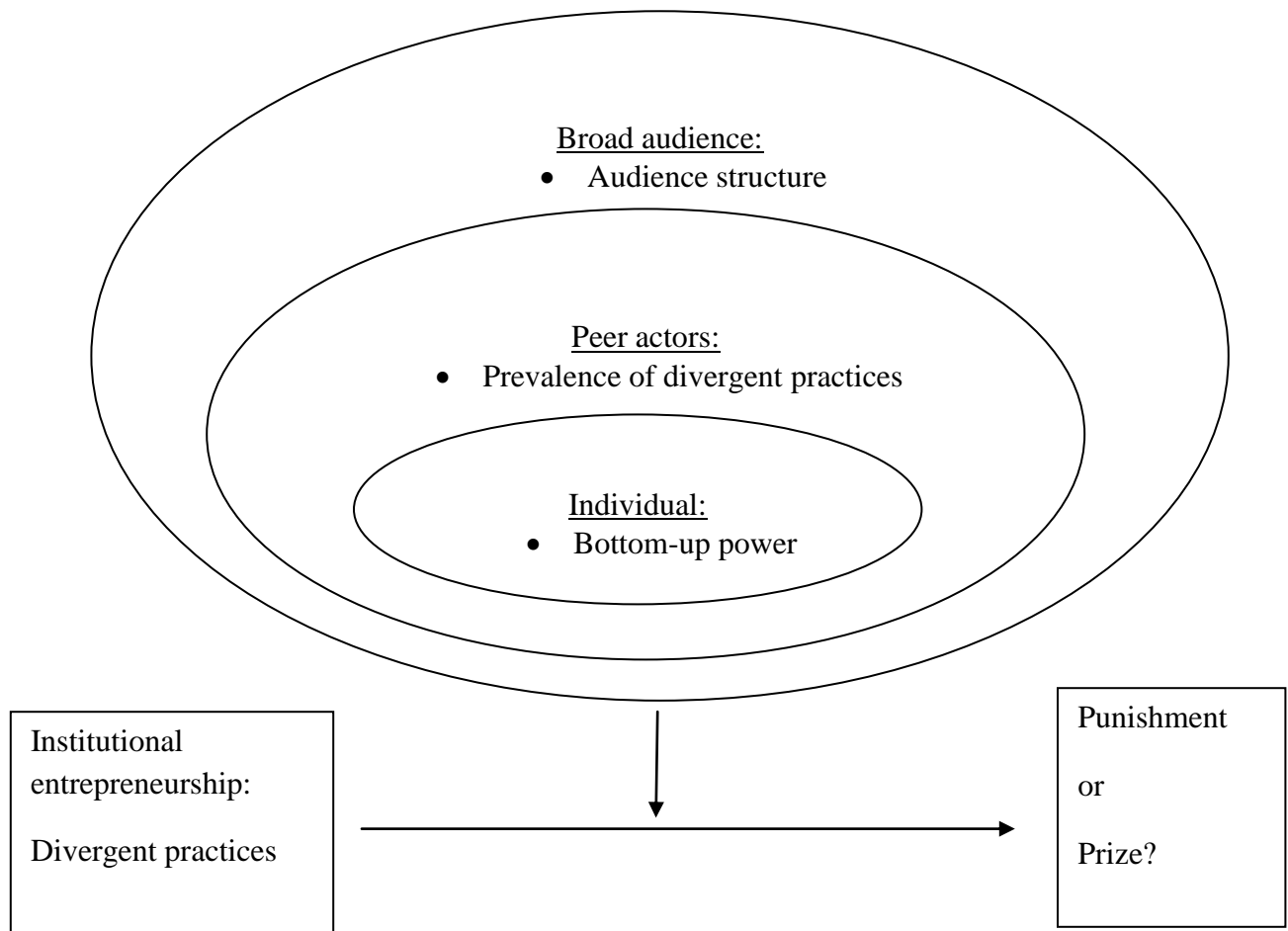
Stock Option Exercises and Individual Consequences

The particular phenomenon that interests me is the promotion/demotion pattern of Chinese executives after stock option exercises. As I mentioned in the second chapter, stock option exercise behaviors are controversial in China. Under the state socialist institution, executives work for the wealth of the people, as a whole, and of the nation, but not for themselves (Newman, 2005). As a result, stock-option exercises, which bring fat profits to individuals, are considered divergent behaviors by the state socialist institution.

It is reasonable to expect that *executives are more likely to be demoted after exercising stock options in overseas-listed Chinese state-owned firms*. Institutional theory suggests that individual actors adhering to the institutional logic enjoy better outcomes, such as more needed resources and higher survival rates (Meyer & Rowan, 1977). By contrast, individual actors who deviate from the institution will have to “bear considerable costs” (Meyer & Rowan, 1977, p. 34). The state may enforce actions toward executives who diverge from the institutional expectation of not exercising stock options.

It is also likely, however, that *executives may be less likely to be demoted after exercising stock options*. Indeed, the state is not the only audience. Foreign investors, the public, and other actors all form parts of the audience that evaluates the executives and the firm. For instance, foreign investors usually favor stock option programs, which could better align the interests between executives and owners (Jensen & Meckling, 1976). As a senior executive at China Investment Corp. mentioned, “Many foreign investors viewed this [stock option program] as an important benchmark as to whether Chinese executives could be responsible for their enterprises” (my interview with this executive, dated on July 1, 2013). Different from stock option granting, stock option exercises may indicate a substantial rather than a symbolic adoption of a good corporate governance practice. This may lead to high levels of trust from foreign investors as to the effectiveness of the governance in Chinese firms, resulting in a positive return on the stock market. If executive promotion is positively related to organizational stock market performance, it is reasonable to expect that executives are not likely to be demoted after stock option exercises.

Figure 1: Theoretical model



It is then interesting to explore the contingent conditions under which stock option exercises are more or less likely to lead to demotion, given the competing arguments above. I suggest that, whether an executive will be punished for exercising stock options represents the ongoing competition for a dominant institutional logic among multiple players. Executives are more likely to be demoted in situations where the state socialist institutional logic prevails in the competition among players. The results of the competition depend on multiple forces—not only the attributes of the institutional entrepreneurs, but also characteristics of the audience (“other” actors) to whom the entrepreneurs are related (e.g., peer individuals, the state, foreign investors) (Battilana et al., 2009; Fligstein, 1997). Indeed, a full account of institutional change not only addresses those who are first to break with the institution, but also how this change is received and processed by “other” actors (Battilana et al., 2009; Fligstein, 1997).

Below, I propose a few of these contingent factors: the bottom-up power of the institutional entrepreneur, the prevalence of the divergent practices among peer individuals, and the broader audience structure. These factors affect the logic that comes to dominate the competitive process and thus whether institutional entrepreneurs are punished for diverging from the state socialist institution. Figure 1 depicts the theoretical model of the paper.

Individual Moderating Effect: Bottom-Up Power Versus Top-Down Power

First, I suggest that the relationship between stock option exercises and executive demotion is contingent on the bottom-up power of the executive. There is an old debate over the locus of power within organizations: top-down versus bottom-up (Dornbusch & Scott, 1975). On the one hand, Weber (1947) emphasizes a top-down approach, which suggests that power resides in higher-level members. In other words, power exists when an individual’s orders are supported and enforced by the higher-level members of an organization. On the one hand, Barnard (1968) proposes a bottom-up view, arguing that power resides in lower-level members, such as the individuals who comply with an order. Power therefore exists when subordinates accept and comply with the orders given by their superiors. If one individual does not accept another’s right to give an order and fails to comply, the order-giver cannot be said to have power over that person.

When an executive challenges the higher-level institution, the bottom-up power rather than the top-down power may buffer the potential punishments. Top-down power is likely to be tentative. Executives get top-down power immediately upon taking office. Such authorization can be revoked quickly, however, if higher-level members develop significant concerns about the executive (Weber, 1946), as in the case of stock option exercises. By contrast, bottom-up power usually takes time to establish; however, once it is established, it tends to be more stable (Bernard, 1968). The stable bottom-up power may legitimize executives’ stock option exercise behaviors among subordinates and promote the market logic implicit in the stock option exercise practice. Executives with high levels of bottom-up power are thus likely to be protected from serious punishments from the state socialist logic, but executives with low levels of bottom-up power are more likely to be punished. Therefore, I predict that:

Hypothesis 1 (individual effect): Executive bottom-up power moderates the relationship between stock option exercise and demotion. Specifically, executives with low levels of bottom-up power are more likely to be demoted after stock option exercises than executives with high levels of bottom-up power are.

Peer Moderating Effect: Prevalence of Divergent Practices

The relationship between stock option exercises and executive demotion is also contingent on the prevalence of divergent behaviors among peer individuals. The contingent effect is more complicated than a simple linear relationship. On the one hand, prior research on institutional change has largely considered the positive consequences of the prevalence of divergent practices. For instance, research suggests that practices that were initially highly controversial can become legitimated and widespread through the observed prevalence of the practice (e.g., Davis and Greve, 1997). In this case, increased prevalence of stock option exercises among peers will decrease the demotion likelihood after exercises.

There is another side of the coin, however: the potential negative impact of the prevalence of the divergent practice. First, the popularity of divergent practices indicates an enhanced level of clash between the old and the new logics, which may lead to a strong resistance to the new institutional logic. For instance, Marquis and Lounsbury (2007) find that increased activities from national banks, introducing a new national banking logic, triggers borrowers' hostile attitudes toward national banks. Borrowers react negatively to having national banks invade their communities, in an attempt to preserve the old community logic (Marquis & Lounsbury, 2007). Second, collective actions are usually more observable. Increased popularity of the deviant behavior is likely to attract attention from the dominant institution, hence enhancing the likelihood of being penalized by the existing institution.

Combining the two competing arguments, I suggest an inverted U-shaped moderating effect: the likelihood of demotion after stock option exercises is the largest when the prevalence of option exercises is moderate. When the prevalence of such divergent practices is low (before achieving some level of prevalence), then the increasing level of prevalence may enhance the likelihood of being punished. Failure to reach a threshold undermines the practice. When the prevalence of such deviation reaches a turning point, however, the increasing spread of option exercises may decrease the likelihood of being punished. In other words, sufficient widespread of option exercises legitimizes this practice.

Hypothesis 2 (peer effect): The prevalence of stock option exercises among peer executives moderates the relationship between stock option exercise and demotion. Specifically, executives are more likely to be demoted after stock option exercise when the prevalence of exercise is at a medium level.

Audience Moderating Effect: Structure of the Broad Audience

I further suggest that the relationship between stock option exercises and executive demotion depends on the structure of the audience evaluating the executive and the organization. My study thus demonstrates the critical role that audience structure plays in whether institutional entrepreneurs fail (DiMaggio, 1988; Fligstein, 1997; Levy & Scully, 2007).

Specifically, I explore whether the audience structure is more concentrated or dispersed. When the audience is more concentrated, this structure may not allow for a varied institutional logic to surface. When the ideology of divergent practices does not fit with the dominant actors' interests in preserving their standing, the adoption of those practices may be subject to strong punishments. On the other hand, when an audience is less centralized, the structure places fewer constraints on divergent opinions. A heterogeneous audience can become a source of internal contradiction (Clemens & Cook, 1999; Dorado, 2005; Haveman & Rao, 1997; Leblebici et al., 1991; Rao, Morrill, & Zald, 2000; Seo & Creed, 2002), which leaves room for varied opinions to emerge. For instance, as mentioned above, stock option exercise, a practice that diverges from that of the state, may appeal to foreign investors. When the audience is dispersed with multiple stakeholders—including the state, general public, and foreign investors—and when multiple audiences have diverse views about the practice, the potential punishments on stock option exercises may be reduced.

Hypothesis 3 (audience effect): The structure of the broad audience moderates the relationship between stock option exercise and demotion. Specifically, executives are more likely to be demoted after stock option exercises when the audience is more concentrated.

Methods

Sample and Data

I focus on the sample of Chinese firms that went public on the Hong Kong Stock Exchange market from 2000 to 2010 (within that period more than 200 Chinese firms were listed on that market). I exclude firms that did not grant executives stock options. My final sample includes 81 state-owned firms that granted stock options, among which 892 Chinese executives held options and 427 exercised options during the study period. The stock options of 309 executives expired or lapsed without being exercised during this period.

The firm-individual-year level is the primary unit of analysis. Eighty-one firms constitute 2,312 firm-executive-year units. My primary data source is corporate financial statements and announcements. I manually code each executive's option exercise behaviors and biography (including career movements) from this data source.

Variables and Measures

Dependent variable. *Promotion versus demotion* is measured by the difference between individual positions within the corporate hierarchy in the current year, as compared to the previous year. A corporate hierarchy usually consists of different levels of job titles, responsibilities, power, or authority. Virtually all individuals are assigned particular positions within the corporate hierarchy. I assess the change in individual positions over the years. A positive value indicates that the individual is promoted in the current year compared to the previous year, and a negative value suggests that the individual is demoted.

Independent variables. All independent variables and control variables, time varying, are lagged for one year ($t-1$) for predicting promotion versus demotion at time t . *Exercise* is a dummy variable indicating whether an executive exercised stock options in a given year. *Exercise* is coded as one if the executive exercised stock options, and as zero otherwise.

To test executive bottom-up power in Hypothesis 1, I calculate *tenure* as the number of cumulative years that an executive served in the firm. Executives with high levels of bottom-up power are usually those with longer tenures (Shen & Canella, 2002). Executives in the late years of their tenures are likely to have already proved their leadership capacity and established their authorities among subordinates (Selznick, 1957). On the contrary, new executives usually have low levels of bottom-up power (Shen & Canella, 2002). New executives have not proved their competence and do not meet the expectations of subordinates yet. The leadership capacity of new executives is therefore under scrutiny from the subordinates.

To test the prevalence of stock option exercises among peers in Hypothesis 2, I calculate *others' exercises in the firm* as the number of other executives exercising stock options in the same firm.

To test the audience structure in Hypothesis 3, I differentiate between executives in the core industries—such as coal, oil, natural gas, electricity, or steel industries—from those in other industries. The core industries constitute themselves as a relatively centralized structure, with the state as the dominant stakeholder, while other industries are more decentralized, with the public as the major audience. *Core industry* is coded as one if the firm is in one of the five industries (coal, oil, natural gas, electricity, or steel) and as zero otherwise.

I include the interaction term between executive tenure and exercise to test Hypothesis 1. I enter the interaction terms between others' exercises and the exercise by the executive to test Hypothesis 2. To test the curvilinear effect of others' exercises, I enter both the linear term and the squared term of others' exercises to interact with the exercise by the executive. I include the interaction term between core industry and exercise to test Hypothesis 3.

Control variables. The prior research on job attainment has identified a few factors that affect the dynamics of career growth. Both the linear and squared terms of age are included to test the curvilinear effect of age. I also include an individual characteristic variable of *gender* to control for possible effects at the individual level. Male is coded as one if the executive is male, and zero otherwise. Within-firm rank takes values from one to a positive number larger than one, indicating position in an ascending order. Usually the departmental manager is assigned a value of one, and the board chairman is assigned the highest value.

Results

Table 1 presents the descriptive statistics and correlations for all variables. Table 2 presents the results of an OLS regression analysis in predicting executive promotion versus demotion in Chinese state-owned firms. Model 1 includes control variables as a baseline model. The coefficient of tenure is positive and significant. Consistent with previous findings in the job attainment research, this suggests that individuals are more likely to be promoted if they have had a longer tenure. Model 2 includes my key variable of interest, exercise. The results suggest that executives who exercised stock options are more likely to be demoted in the following year.

Models 3–5 test Hypothesis 1–3. Model 3 includes the interaction term between exercise and tenure to test Hypothesis 1. The interaction between exercise and tenure is positive and significant, supporting Hypothesis 1. Executives with longer tenure (i.e., high levels of bottom-up power) are less likely to be demoted after stock option exercises. Model 4 includes the interaction between exercise and others’ exercises in the firm to test Hypothesis 2. The interaction between exercise by the executive and the linear term of others’ exercises in the firm is negative, and the interaction between exercise by the executive and the squared term of others’ exercises is positive. In support of Hypothesis 2, executives are more likely to be demoted after stock option exercise when the prevalence of stock option exercise among peer executives is at a medium level. Model 5 includes the interaction between core industry and exercise to test Hypothesis 3. Consistent with Hypothesis 3, the interaction between core industry and exercise is negative and significant. Executives are more likely to be demoted after stock option exercise in core industries when the audience is more concentrated.

Table 1: Correlations and descriptive statistics

Variables	Mean	Std. Dev.	1	2	3	4	5	6	7
1 Promotion/Demotion	0.03	1.55							
2 Age	51.58	8.38	-0.08						
3 Male	0.94	0.23	0.01	0.07					
4 Tenure	8.83	6.53	0.15	0.25	0.01				
5 Within-firm rank	3.06	3.37	0.01	0.03	-0.01	-0.08			
6 Others’ exercises in the firm	2.84	4.64	0.05	0.01	0.05	0.00	0.06		
7 Core industry	0.12	0.32	0.02	-0.07	-0.03	0.03	-0.03	-0.09	
8 Exercise	0.21	0.41	-0.03	0.00	0.04	0.02	0.00	0.66	-0.07

Table 2: OLS regression results predict executive promotion versus demotion in Chinese state-owned firms

	Models				
	1	2	3	4	5
<u>Control Variables</u>					
Individual attributes					
Age	0.49 (0.43)	0.51 (0.43)	0.53 (0.43)	0.50 (0.43)	0.50 (0.43)
Age square	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Male	1.69 (1.85)	1.73 (1.85)	1.53 (1.85)	1.67 (1.85)	1.77 (1.85)
Tenure	0.55** (0.18)	0.57** (0.18)	0.55** (0.21)	0.56** (0.18)	0.59** (0.19)
Position in the firm	0.15 (0.13)	0.13 (0.13)	0.13 (0.13)	0.13 (0.13)	0.13 (0.13)
Firm and environmental attributes					
Others' exercises in the firm	0.30 (0.21)	0.30 (0.26)	0.33 (0.26)	0.30 (0.26)	0.27 (0.26)
Others' exercises in the firm square	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.03 (0.03)	-0.01 (0.01)
Core industry	1.50 (1.31)	1.35 (1.31)	1.15 (1.31)	1.08 (1.31)	2.30 (1.41)
Exercise		-3.45** (1.40)	-9.65** (2.40)	-9.05** (2.69)	-2.66* (1.40)
<u>Interactions</u>					
Tenure x Exercise			1.30** (.41)		
Others' exercises in the firm x Exercise				-1.42* (0.63)	
Others' exercises in the firm square x Exercise				0.06* (0.03)	
Core industry x Exercise					-7.33* (3.70)
Constant	-25.05* (11.59)	-25.40* (11.59)	-24.48* (11.58)	-25.05* (11.59)	-25.38* (11.58)

Robust standard errors in parentheses,
+ significant at 10%; * significant at 5%; ** significant at 1%

Discussion

Why do some institutional entrepreneurs fail? In response to the question above, this study finds that institutional entrepreneurs are more likely to be punished for divergent behaviors if (a) the institutional entrepreneur has low levels of bottom-up power, (b) the prevalence of divergent practices among peers is at a medium level but has not reached a threshold which sufficiently legitimizes the practice, and (c) the broader audience is concentrated.

This study makes the following contributions. First, it adds to the research on institutional change by studying the outcomes of institutional entrepreneurship during a given period. It promises to fill the research gap resulting from limited attention previously directed toward studying outcomes of institutional entrepreneurship. Moreover, the current study is conducted during an uncertain period, with two competing types of institutional logics: a state socialist institutional logic and a market logic. Whether the state socialist logic will finally be replaced by the market logic is so far unknown. This is an ongoing project of institutional entrepreneurs that may largely remedy the bias toward successful institutional change in the existing research (Battilana et al., 2009).

Second, this study promises to improve our understanding of the role of power in institutional change. The previous research has highlighted the importance of formal authority conferred by official positions in institutional change (Fligstein, 1997, 2001; Maguire et al., 2004; Phillips, Lawrence & Hardy, 2004). Formal authority can help in framing stories (Fligstein, 2001) and can be used by institutional entrepreneurs to promote acknowledgement of their discourse by other actors (Phillips et al., 2004). Different from the existing research, this study emphasizes that the association of top-down power with official positions may not promote the institutional entrepreneurs' success, but rather the bottom-up power that originates from subordinates. The current study thus offers a more refined understanding of power in institutional change.

Third, this study may shed new light on the importance of other actors in institutional change. Much of the existing research focuses on characteristics and efforts of the entrepreneur, at the cost of considering who or what the institution is trying to change (Aldrich, 2010). Empirical research on institutional entrepreneurship clearly must encompass a larger number of actors and actions to account for the actions not only of institutional entrepreneurship, but also of the actors who support or oppose to them (Battilana et al., 2009). Indeed, other actors interpret and respond differently to the efforts of an institutional entrepreneur, and their interactions can influence whether change occurs. This study finds that the more dispersed the audience, the more likely for institutional entrepreneurs to succeed.

Finally, this study also carries implications for the research on status attainment. The analysis of individual promotion or demotion within a firm should be a centerpiece of investigation in the research on status attainment (e.g., Baron & Bielby, 1980; Bridges & Villemez, 1994; DiPrete & Soule, 1986, 1988). Yet the data for examining this theme, such as the work histories of employees, are difficult to obtain. Few firms will permit a

researcher such extensive access to corporate records. My study thus may shed new light on status attainment by tracing each executive's career path. I examine this theme from an angle that differs from the existing research. Individual upward and downward movement may be affected by the competition between broad institutional forms of logic.

Limitations and Future Research

First, this study investigates the individual promotion versus demotion pattern in the state socialist system when an individual's ideology deviates from that of the state socialist institution. It would be interesting to explore the deviator's career development in the competing institution, the market institution. An individual may be punished by one institution because of divergent behavior; however, will the individual be praised in the competing institution? Will the divergent behavior help him or her get a pass to the other trajectory?

Second, this study explores individual-level consequences of institutional entrepreneurship. A natural extension is to study firm-level outcomes. What are the likely consequences for firms with executives who break with the institutional status quo? What are the stock-market-performance or accounting-performance implications?

Third, the institutional entrepreneurship studies have largely overlooked the mainstream entrepreneurship research (Battilana et al., 2009; Philips & Tracey, 2007), although the moniker of entrepreneurship is frequently adopted. For instance, the entrepreneurship research has long affirmed the importance of prior knowledge in entrepreneurship (Shane, 2000; Shane & Venkataraman, 2000). Does prior knowledge in political actions or other mechanisms used in the process of institutional change promote the success of institutional entrepreneurship? The entrepreneurship research has also highlighted the significant role of social networks (e.g., Djankov, Qian, Roland, & Zhuravskaya, 2006; Stuart & Ding, 2006). Then how do social networks influence institutional entrepreneurs' success in reforming the current institution?

Finally, the study's empirical analyses are still preliminary. For instance, it uses OLS. Event history techniques are necessary in future analyses to account for the importance of time.

CHAPTER 3

THE DIFFUSION OF AN INVISIBLE CORPORATE PRACTICE: EVIDENCE FROM STOCK BACKDATING, 1981-2005

Introduction

Research on the diffusion of corporate practices points to several mechanisms, such as uncertainty reduction and conformity, underlying organizations' decisions to adopt the practices of other organizations (Cyert & March, 1963; DiMaggio & Powell, 1983; March, 1981; Tolbert & Zucker, 1983). A key theme in this work is that the decision to adopt practices is influenced by observations of what peers are doing. Some practices, however, are not easily observable because those who adopt them have reason for caution in disclosing adoption. Consider the practice of stock backdating, or retroactively granting options without disclosure. Although the first known case of stock backdating dates back to 1981, public information about this practice was virtually absent until 2005, when the first publication identifying stock backdating appeared (Lie, 2005). The reason for the lack of public information is that adopters of a practice that is either illegal or morally unacceptable to the larger community, such as stock backdating was, conduct their activities in secrecy, confiding information about the practice only to individuals likely to conceal information about adoption. We refer to unethical practices that are not publicly observable as invisible practices (Lee, 1969).¹

Due to the lack of public information about their adoption, the rate at which invisible practices spread is likely to be slower than the rate at which publicly observable practices spread. Less clear is the impact that distinct channels may have on the diffusion of invisible practices. Diffusion researchers distinguish between direct (relational) and indirect (nonrelational) channels (Scott, 2008; Soule, 1997; Strang & Meyer, 1993), where direct channels imply flow of information through direct contact, and indirect channels imply flow of information through monitoring. Invisible practices, unlike other practices studied by organizational theorists, are unlikely to diffuse through indirect channels because information about these practices is not publicly available. Direct contact through social networks is needed to ensure the transfer of information between adopters and potential adopters, but *which* direct channels serve as vehicles for the diffusion of this type of practice remains unknown.

In this paper we examine the impact of two direct channels that have received considerable attention in the diffusion literature: board interlocks and geographic proximity. Connections among firms through shared directors have been shown to serve as a diffusion channel for a wide range of corporate practices (e.g., Davis, 1991; Galaskiewicz & Wasserman 1989; Haunschild, 1993; Palmer, Jennings, & Zhou, 1993), but the evidence on whether board interlock networks serve as a conduit for the diffusion of invisible practices is still limited. Advocating the benefits of adopting a controversial practice that is publicly observable, such as the golden parachute, may require a level of trust that is not common among individuals who sit on the same board (Davis & Greve

¹ Following Jones (1991) and Brass, Butterfield, & Skaggs (1998), we define unethical behavior as behavior that is either illegal or morally unacceptable to the larger community.

1997). The stakes in such disclosures of confidential information may even be higher in the case of an unethical practice that is not publicly known, as in the case of stock backdating. On the other hand, adopters of invisible practices may be more inclined to share information with individuals embedded in localized social structures that are often characterized by deeper social bonds than those that unite board members (Hedström, 1994; Strang & Soule, 1998).

To study the impact of board interlocks and geographic proximity on the diffusion of an invisible practice we examine the occurrence of cases of stock backdating. A key difficulty in the study of invisible practices, of course, is identifying the adopters; if adoptions of a practice are not publicly disclosed, mapping the diffusion process is an arduous task. Stock backdating offers a rare opportunity for such an inquiry because it is one of the most scrutinized corporate practices in recent decades. To identify instances of stock backdating, the Securities and Exchange Commission (SEC) and the Justice Department conducted their own investigations and, to cast as wide a net as possible, they also invited boards of directors of suspect companies to conduct their own internal investigations. These considerable investigative efforts resulted in the identification of cases of stock backdating that involved misconduct as well as numerous cases of suspect firms that proved to be in compliance with SEC rules. Misconduct typically involved falsifying documents and/or failing to disclose the backdating of option grants. Using the results of these investigations to identify the adopters of this practice yielded 107 cases during an observation period that began in 1981, the year of the first recorded case, and ended in 2005, the year in which the first public mention that firms might be engaging in this practice occurred. Stock backdating diffused slowly between 1981 and 1995 and proceeded at a faster rate after 1995.

To empirically examine the impact of board interlocks and geographical proximity on the diffusion of stock backdating we focus on the diffusion of this practice at the county level, that is, the occurrence of the first case of stock backdating in counties that had at least one headquarters of a publicly held firm. A striking feature of the spatial diffusion of this practice is that it was adopted by firms residing in only a small fraction of the U.S. Of the 1182 U.S. counties that had at least one headquarters of a publicly held firm between 1981 and 2005, only 35 counties had at least one case of stock backdating. Our empirical analyses seek to reveal the extent to which the occurrence of the first case of backdating in counties such as Fulton, Georgia or Union, New Jersey was influenced by board interlock ties to counties that already had experienced cases of stock backdating or by geographic proximity to counties that already had experienced cases of stock backdating.

Our study contributes to the literature on diffusion of corporate practices in at least three ways. First, whereas much effort has been directed to studying adopter differences in this literature, relatively little attention has been paid to practice attributes (Rogers, 1995). Our study of an invisible practice offers an opportunity to shed new light on the importance of practice observability in determining channels through which practices diffuse. Second, one of the most serious shortcomings of the diffusion literature is what some have labeled a “pro-innovation bias”: a focus on the diffusion of practices that are viewed as beneficial (e.g., Briscoe & Safford, 2008; Gaba & Meyer, 2008; Guler, Guillen,

& MacPherson, 2002; Still & Strang, 2009); hence little effort has been devoted to studying how potentially harmful practices spread. Our study of stock backdating—a practice that harmed firms, investors, and the executives perpetrating it—could help reduce the dominant pro-innovation bias by shedding light on the processes by which a potentially harmful practice diffuses. Third, diffusion researchers have called for closer inspection of the type of information that flows through different diffusion channels (Davis & Greve, 1997; Strang & Soule, 1998). By comparing two communication channels in the spread of stock backdating, our analyses aim to identify limits to the kinds of information circulating through board connections and geographic proximity.

Theory and Hypotheses

Unique Features of Invisible Practices

Corporate practices that do not violate the law and that are morally acceptable to the larger society are generally relatively easy to observe. For instance, changes in organizational diversification strategies can be inferred from observing the activities of firms in the market (Greve, 1996). Changes in corporate governance practices, like the adoption of poison pills and golden parachutes, are reported on proxy statements (Davis & Greve, 1997). The business media may further facilitate information diffusion by broadcasting managerial innovations and strategies (Burns & Wholey, 1993; Haunschild & Beckman, 1998). In contrast, practices that violate the law and accepted norms are not recorded on any formal statements, nor are they known to the mass media until they are uncovered (Baker & Faulkner, 1993). The larger society usually remains unaware of the existence of these practices.

Before 2005, there was little or no public awareness that several firms engaged in the practice of stock backdating without disclosure and, of course, the identities of the firms engaging in the practice were not known. Besides low observability, which clearly is a defining characteristic of invisible practices, previous research suggests that there are at least two additional unique features of this kind of practices that may help understand how they diffuse.

Need for secrecy. Invisible practices remain invisible because adopters maintain secrecy around the practice. Unlike actors who engage in activities that are legal and that do not violate moral standards, individuals involved in the adoption of an unethical corporate practice agree to conduct their activities in secrecy, because the practice violates the law or accepted moral standards. They set up a “secret society,” which is organized to conceal itself and protect its members from detection (Simmel, 1950: 345-76). Lee (1969: 8), in a study of the diffusion of abortion when abortion was still illegal, notes that “part of the explanation for the invisibility of abortion is that the participants, both patients and abortionists, are trying to keep it quiet to avoid confrontation with the law...” Lee reports that women who had an abortion communicated about the practice but they very carefully chose to whom they felt comfortable disclosing their abortion experience. Similarly, Baker and Faulkner (1993) found that the need for secrecy is the primary

driving force underlying the structure of an inter-corporate secret society in price-fixing conspiracies, exceeding the need for efficiency that drives the structure of legal networks. Researchers have noted various buffers and means used to maximize concealment (Baker & Faulkner, 1993; Goffman, 1970; Granovetter, 2007; Simmel, 1950). For instance, a graduated division of labor hierarchy may separate members of a secret society, making it difficult to unravel the secret (Goffman, 1970; Shapiro, 1984; Simmel, 1950). Corrupt entrepreneurs may assiduously collect blackmail materials to limit the threat of exposure (Granovetter, 2007). Conspirators create sparse and decentralized communication networks to maximize concealment (Baker & Faulkner, 1993).

Neutralization of moral judgments. Another distinguishing feature of invisible practices is that their adoption involves moral judgments. When potential adopters are exposed to such practices, they may choose not to follow because they may question the moral appropriateness of the practice. So the successful spread of an invisible practice may require the existence of conditions that can alter potential adopters' judgments of the practice's moral acceptability. Granovetter (2007: 154) refers to a process of moral neutralization whereby individuals aware of the action in question neutralize the taint of moral defect, by thinking that no moral violation has occurred given the particular circumstances. In other words, a morally unacceptable behavior may be seen as acceptable when individuals find a way to justify it to themselves in ways that neutralize moral judgment. A bribe, for example, can be framed as a gift. Similarly, stock backdating can be seen as an aggressive but acceptable policy aimed at retaining and attracting executive talent in an over-heated labor market.

The Diffusion of Invisible Practices

The unique features of invisible practices – low observability, need for secrecy, and moral neutralization - may have important implications for understanding the channels through which this type of practices diffuse. In general, researchers have identified two types of channels that facilitate diffusion: direct channels (relational) and indirect channels (nonrelational). Direct channels have been shown to increase the likelihood of adopting medical technology and techniques (Coleman, Katz, & Menzel, 1966), the multidivisional form (Palmer et al., 1993), and poison pills (Davis, 1991). Indirect channels explain why corporate practices often diffuse rapidly beyond interaction patterns linking adopters and potential adopters and have been shown to influence the diffusion of ISO 9000 quality certificates (Guler et al., 2002), the hiring of investment bankers in acquisitions (Haunschild & Miner, 1997), and market entry (Haveman, 1993).

While both direct channels and indirect channels contribute to explaining the diffusion of visible corporate practices, indirect channels are less relevant to the study of invisible practices due to the low observability of these practices. Without the ability to observe through publicly available information what others do, indirect monitoring of structurally equivalent actors, higher status actors, or culturally similar actors is disabled. However, direct contact through social networks between adopters and potential adopters can still enable information exchange regarding invisible practices. In addition, direct contact may

allow adopters to assess whether they can trust those with whom they exchange information, satisfying the need for secrecy. Frequent interactions may also lead one actor to take the perspective of another, influencing the moral judgment of whether an unethical practice is appropriate or not (Erickson, 1988). But not all direct channels may serve as vehicles for the diffusion of an invisible practice.

Board interlocks. Interlocking boards of directors in which individual directors serve on two or more boards at once are perhaps the most studied networks in the organizational literature (Mizruchi, 1996). A reason for this sustained interest is that interlocking boards often serve as conduits of information flowing among organizations (Useem, 1984). Board members' jobs consist of providing advice and guidance on corporate strategy and evaluating the performance of the company and its executives (Finkelstein & Hambrick, 1996). Given these responsibilities it is easy to understand why interlocks would serve as a diffusion channel. Directors sitting on multiple boards who adopt a practice on one of their boards bring the experience gained about the practice to other boards they serve on, helping resolve the ambiguity surrounding the cost and benefit of adopting the practice.

Considerable evidence supports the importance of board interlocks as a diffusion channel. Davis (1991), for example, showed that firms were more likely to adopt poison pills, securities that prohibitively raise the cost of hostile takeovers, if they were tied to prior adopters through board interlocks. Similarly, Haunschild (1993) demonstrated that a firm's propensity to engage in corporate acquisitions was affected by the acquisition activities of its board interlocks. And Palmer, Jennings and Zhou (1993) reported that firms were more likely to adopt the multidivisional form if they had board ties to prior adopters. Given this evidence and considering that the board of directors sets the level and structure of executive compensation, including defining the amount and timing of option grants, it is quite plausible that board interlocks may be an important channel influencing the occurrence of stock backdating.

Board interlocks, however, do not explain the spread of every corporate practice. Davis and Greve (1997) found that the golden parachute, a practice that awards generous severance packages to executives whose employment ends following a takeover, did not diffuse through the board interlock network. The reason, they suggest, is board members' hesitation to push for a practice that other board members regarded as controversial. A chairman of a firm, they quote, described it as "an unconscionable rape of a shareholder's assets" (Davis & Greve, 1997: 31). Likewise, a director sitting on multiple boards, thought that the rationale was highly questionable: "If an executive needs a multi-million dollar contract to get his mind clear in a takeover situation, then maybe he should see a psychiatrist" (Davis & Greve, 1997: 31). Given these negative views about the practice, Davis and Greve (1997: 32) suggest that directors of companies that had adopted the practice might have not been willing to stand up and say that this practice was a great thing. The thought that other directors may have opposed the practice might have dissuaded them from sharing the experience gained about the practice.

Directors who became familiar with stock backdating on one of their boards may have experienced even greater reluctance to share their experience than the reluctance felt by

directors familiar with the golden parachute. First, the need for secrecy that was absent in the case of the golden parachute, a publicly disclosed practice, might have been a salient consideration for directors who had adopted backdating. Confronting the risk that disclosure to others of their involvement in backdating could have personal negative consequences, they had to consider whether they could trust that their peers would keep the disclosure secret. Second, stock backdating, like the golden parachute, had the potential of generating opposition. Backdating the grant dates of employee stock options typically required falsifying documents, a behavior morally unacceptable to the larger community. Would other board members view stock backdating as morally acceptable? Or would they object to it?

Deep social bonds and trusting relationships may alleviate these potential barriers to communication and adoption in two distinct ways. First, they may encourage the sharing of the practice with potential adopters by increasing confidence that delicate information will not be disclosed to others (Simmel, 1950). Second, they may create a context conducive to neutralizing the moral judgment of potential adopters as individuals are more likely to take each other's perspective if they communicate frequently (Erickson, 1988) and frequent communication is often a correlate of deep social bonds and trusting relationships. Board membership, however, is not generally believed to generate such bonds. Scholars view board interlocks more as thin linkages tying geographically dispersed members of the national business elite than as contexts encouraging the mutual socialization produced by cohesive interpersonal relations (Strang & Soule, 1998). So although studies of diffusion suggest that board interlocks often underlie the spread of corporate practices, consideration of the unique features of invisible practices suggests that stock backdating may be an exception to this pattern. To verify whether this is indeed the case, we test the following hypothesis:

Hypothesis 1: The greater the level of board interlocking between counties where stock backdating has occurred and a focal county, the higher the likelihood of the occurrence of the first case of stock backdating in a focal county.

Geographic proximity. A considerable body of empirical work suggests that spatially proximate actors influence each other's adoption. Vasi and Strang (2009) show effects of geographic proximity on the spread of municipal reform. Hedström (1994) reports how the Swedish trade union movement expanded geographically. Myers and Caniglia (2004) find that the propensity to riot falls with distance from cities where riots have occurred. Davis and Greve (1997) point to the diffusion of golden parachutes via local business communities while Burns and Wholey (1993) locate regional influences on the adoption of matrix management. Briscoe and Safford (2008) find effects of geographic proximity on the diffusion of domestic partner benefits.

Two primary mechanisms have been invoked to account for these findings: greater access to information about the practice and shared cultural understanding. Spatially proximate actors are more likely to be connected socially than spatially dispersed actors (Stouffer, 1940). Social relations then facilitate the transfer of information (Allen, 1977; Festinger, Schachter, & Back, 1950) which creates awareness and prompts adoption (Hägerstrand,

1967; Ryan & Gross, 1943). Spatially proximate actors are also more likely to share standards of what is appropriate than spatially dispersed actors (Marquis, Glynn, & Davis, 2007; Suchman, 1995b). Particularly when a practice is controversial, questions of propriety can be settled by looking at what other local actors do (Davis & Greve, 1997). So what is seen as appropriate in a locale may not be seen as appropriate in another.

Both mechanisms may influence the diffusion of stock backdating among spatially proximate firms. The adoption of stock backdating involves primarily executives and board members, and members of the local business elite are often connected to each other through a mix of formal and informal institutions, ranging from upper-class clubs to exclusive neighborhoods and local art and cultural organizations (Kono et al., 1998; Marquis, 2003). By creating opportunities for repeated interactions among members of the local business elite, geographic proximity might facilitate the creation of social bonds that are probably thicker than the social bonds linking members of the national business elite. The trust that comes with thick social bonds may encourage communication of the practice because it increases adopters' confidence that disclosed information about an unethical practice such as stock backdating will be kept secret by their contacts. The common socialization and interactions that come with being member of the local elite may also help form shared cultural understanding about corporate practices. Davis and Greve (1997) report that the golden parachute did not diffuse through board interlock ties but it diffused among firms collocated in geographical space. They attribute this effect of geographic proximity to shared cultural understanding that promoted the acceptance of a practice seen as controversial in other places. Analogously to the case of a controversial practice such as the golden parachute, local cultural understanding of unethical corporate practices may encourage potential adopters to take the perspective of adopters and thus neutralize moral judgments of the appropriateness of the practice. This leads to our next hypothesis.

Hypothesis 2: The smaller the geographic distance between counties where stock backdating has occurred and a focal county, the higher the likelihood of the first case of stock backdating in a focal county.

Because geographical proximity is a catchall indicator of all kinds of interactions and influence (Strang & Soule, 1998), it provides only indirect evidence of the impact that interaction and communication among the local business elite may have on the diffusion of an unethical corporate practice. A more direct indicator of the existence of social interactions among members of the local business elite is the extent to which directors sit on the board of other local companies. Although the board interlock network is largely non-local, approximately 25% of board ties are between firms headquartered in the same state (Davis & Greve, 1997; Davis, Yoo, & Baker, 2003). Firms' propensity to form local board interlocks, however, varies across locales. Kono et al. (1998) and Marquis (2003) found that communities that have a greater presence of upper class clubs tend to have a greater proportion of local board interlocks and suggested that it is in these exclusive social settings that executives and directors become intimately acquainted with one another. Therefore, unlike directors who sit on the board of geographically dispersed companies, directors who sit on the boards of companies located near each other have

greater opportunities for social interactions beyond the interaction opportunities offered by board meetings. So if greater frequency of interactions implies stronger social bonds and lesser reluctance to communicate about the adoption of an unethical practice, the effect of geographic proximity to locales that have already experienced cases of backdating on the occurrence of the first case of stock backdating should be stronger in locales with a large presence of directors sitting on the boards of local companies than in locales with a small presence of local board interlocks.

Hypothesis 3: The greater the local board interlocks in a focal county and nearby counties, the greater the positive effect of geographic proximity to counties where stock backdating has occurred on the likelihood of the first case of stock backdating in a focal county.

Due to the low observability of a practice such as stock backdating, we expect that features such as the centrality of potential adopters and the centrality of adopters that have been found to influence the diffusion of corporate practices such as poison pills (Davis, 1991) and corporate acquisitions (Haunschild, 1993; Haunschild & Beckman, 1998) will not influence the diffusion of an invisible corporate practice. Nonetheless, our empirical analyses include control variables that capture any potential effects of such indirect diffusion channels.

Method

Sample and Data

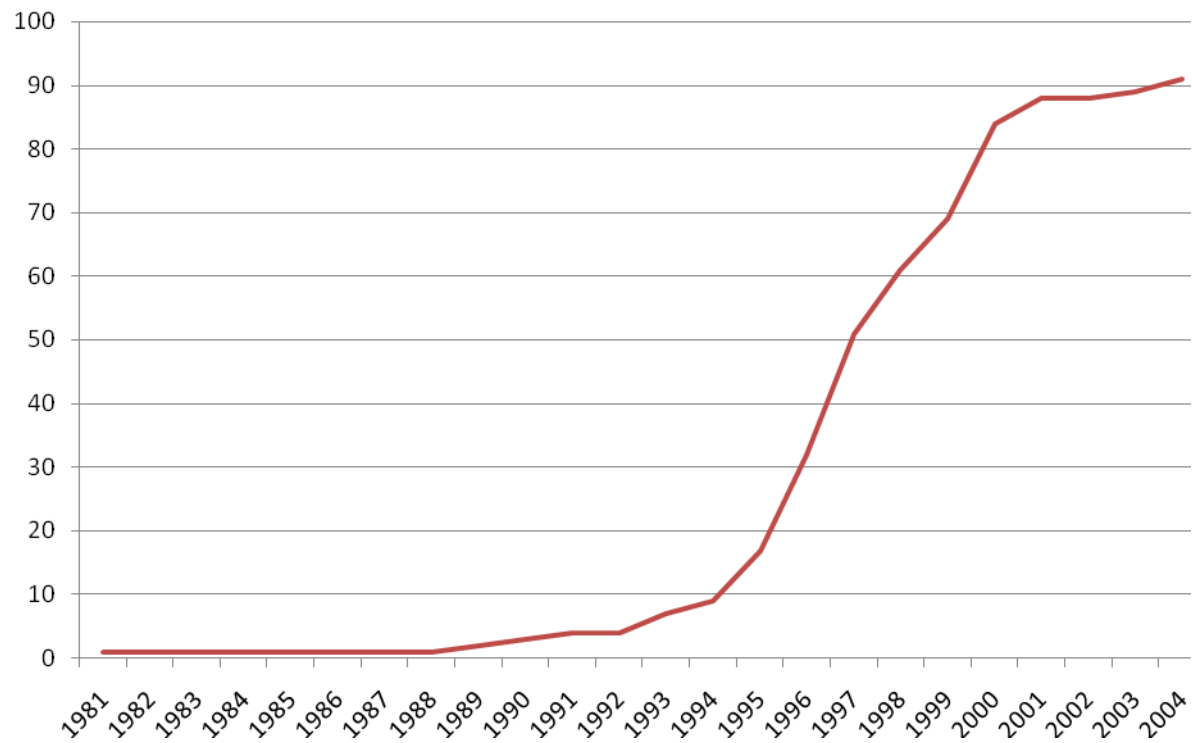
To examine the spread of stock backdating across communities in the U.S., we identified the list of firms investigated by the SEC or Justice Department for stock backdating by using public sources. At the end of 2010, 107 firms had announced government probes by the SEC or Justice Department. We excluded two firms that are not U.S. based, eight firms about which the SEC and Justice Department investigations did not find evidence of stock backdating, and six firms for which we could not identify the year when inappropriate backdating occurred. So our sample includes 91 cases of stock backdating. For each case the geographic location is given by the county in which the firm's headquarter resides. The entire country consists of 3,141 counties or county-equivalent administrative units. We excluded counties where publicly listed firms are not headquartered. Our final sample includes 1,182 counties, of which 35 experienced backdating. About 40% of the 91 backdating cases are in Santa Clara County in Silicon Valley (27) and Middlesex County in the Boston area (8). The earliest case of stock backdating practice occurred at Home Depot in 1981, headquartered in Fulton County, Georgia. Between 1981 and 1994 there were only ten cases of stock backdating. The second case did not occur until 1989 when CEC Entertainment, headquartered in Dallas County, Texas, granted its stock options. Adoption of this practice intensified after 1995. Table 1 reports seven counties with the earliest incidence of stock backdating conducts. These counties are Santa Clara in California, Middlesex in Massachusetts, Harris and Dallas in Texas, Fulton in Georgia, Hennepin in Minnesota, and Union in New Jersey.

Table 1: Counties with the earliest incidence of backdating cases

County	Santa Clara CA	Middlesex MA	Dallas TX	Harris TX	Fulton GA	Union NJ	Hennepin MN
Largest City	San Jose	Cambridge	Dallas	Houston	Atlanta	Elizabeth	Minneapolis
FIPS code	6085	25017	48113	48201	13121	34039	27053
Year of the first case	1993	1991	1989	1993	1981	1993	1994
Company with the first case	Mercury Interactive	Comverse Technology	CEC Entertainment	Cyberonics	Home Depot	Bed, Bath & Beyond	United Health
Total number of cases, 1981-2005	27	8	3	3	2	1	1
Number of headquarters, 1996	351	269	308	328	137	29	207
Average establishment size, 1996	15.7	14.79	14.32	14.14	13.94	13.8	14.29
Crime rate, 1996	0.046	0.018	0.064	0.066	0.095	0.047	0.063
Centrality, 1996-2005	56.88	59.68	41.17	66.97	54.44	38.41	61.69
Localness, 1996-2005	72.89	17.84	40.73	39.61	54.75	7.3	53.94

Figure 1: Diffusion of stock backdating cases among U.S. firms

Cumulative adoptions



Our observation period begins in 1981, when the first case of backdating was recorded, and ends in 2005, when the first public mention that firms might be engaging in backdating occurred and thus when the practice ceased to be invisible. Our unit of analysis is the county-year. Each county contributes as many observations as the number of years it is at risk. Once a county experiences backdating, it is dropped from our sample. For example, Fulton County (Georgia), which had its first backdating in 1981, contributes only one observation, while a county where no backdating occurred contributes 25 observations. Because our focus is on the first occurrence of backdating in each county, subsequent events are excluded from consideration. The 1,182 counties contribute a total of 19,690 county-years. We then exclude 130 county-years when no data on establishments and employment in the county are available. Our final sample consists of 19,560 county-years. We compared the missing cases and non-missing cases on variables where information is available (e.g., number of headquarters, population, board interlock centrality, number of stock backdating cases). We did not find noteworthy differences. We also run regression models including the 130 cases and dropping the control variables with missing values. The results did not change.

To detect board interlock we drew on director data assembled by RiskMetrics from the Wharton Research Data Service (WRDS), which provides details on the structure and practices of the boards of directors at Standard & Poor's (SP) 500, S&P Mid Caps, and S&P Small Caps firms from 1996 to the present. We used Compustat to obtain information on public firms' headquarters locations. The two datasets, RiskMetrics and Compustat, were matched by stock ticker and CUSIP. The matching success rate reached 97.9%. For the 2.1% companies in RiskMetrics that we could not match to headquarters locations in Compustat, we hand-collected information on headquarters locations by using internet search engines. Other data sources were the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and the Wages (QCEW) program, which publishes a count of employment and establishments at the county, state and national levels by industry, and the Bureau of Justice Statistics, which provides data on crime rates.

Inter-county Board Interlock Networks

A key feature of the structure of the board interlock network is that it is remarkably persistent over time. For instance, Davis, Yoo and Baker (2003) found the connectivity of the board interlock network appear to be rather consistent from the early 1980s to the late 1990s, in spite of major changes in corporate governance and nearly complete turnover in the firms and directors. In an examination of the U.S. inter-community board interlock network systems in 1986 and 2000, Marquis (2003) demonstrated the imprinted pattern of the inter-corporate community networks and attributed it to organizational emulation of locally legitimate templates of action. Our data at the county level reveal a similar pattern. Inter-county board interlock matrices for 1996, 2000 and 2004 are highly correlated with correlations between 0.7 and 0.8, which is consistent with the stability of inter-county board interlock connections noted by other researchers.

Based on this evidence and following Burt (2006), we generated an aggregated board interlock matrix. The 24,899 directors define a 1182 x 1182 table, or network, of interlocks within and

between the 1,182 counties in which public companies were headquartered. The number of interlocks linking counties A and B—directors sitting on the boards of firms located in counties A and B—were calculated for each year and then summed across time. As the director data are only available after 1996, we focused on a nine-year period from 1996 through 2004. The off-diagonal cell A, B indicates the number of interlock ties linking companies headquartered in county A with companies headquartered in county B. The diagonal cell indicates the number of interlocks linking companies headquartered within the same county.

Following Burt (2006), we fit a loglinear model to the board interlock matrix, and then obtained multiplicative coefficients from the loglinear model. The loglinear coefficients measure the extent of interlocking holding constant regional differences in interlock volume. Hence they are regarded as better indicators of the interlock connections than the simple count of interlocks (Burt, 2006). The off-diagonal multiplicative coefficients measure the extent of interlocking between counties. A coefficient of 1.0 means that the number of interlocks between the counties equals the number expected if companies within the two counties were drawing directors independent of location. A coefficient of 2.0 means the observed number is 200% of the number expected if interlocks were independent of locations. The three highest values of inter-county connections are St. Louis county (MO) – St. Louis city (MO) with a loglinear coefficient of 33.14, Cook (IL) – Dupage (IL) with a loglinear coefficient of 23.09, and Cook (IL) – Lake (IL) with a value of 22.73. The diagonal multiplicative coefficients measure the level of concentration of interlocks within counties. The three largest diagonal coefficients are Santa Clara County (CA) with a coefficient of 72.89, Fulton County (GA) with a coefficient of 54.75, and Hennepin County (MN) with a coefficient of 53.94. Table 2 presents cross-county and within-county multiplicative loglinear coefficients for top 12 counties with the largest number of publicly held firms.

Variables and Measures

Dependent variable. The dependent variable, *backdating*, is coded as 1 if a county experienced backdating in a given year.

Independent variables. To examine the impact of direct channels between the case-origin county and the focal county, we used board interlocking and geographic distance between two counties. The first measure, *prior nonlocal backdating weighted by board interlock ties*, takes into account the level of board interlocking between each alter county and a focal county.

$$\text{Prior backdating weighted by board interlock ties}_{it} = \sum_j B_j \times l_{ij}, \quad i \neq j$$

Where i indexes all counties, j indexes counties excluding county i , t indicates year, B_{jt} is the number of prior stock backdating cases in county j in year t , l_{ij} is the off-diagonal multiplicative coefficient between county i and county j when fitting the loglinear model mentioned above.

Table 2: Inter-county board interlock network for 12 populous counties

	County	Largest city	1	2	3	4	5	6	7	8	9	10	11	12
1	New York, NY	New York City	23.24											
2	Los Angeles, CA	Los Angeles	7.59	22.87										
3	Cook, IL	Chicago	9.66	2.55	42.80									
4	Harris, TX	Houston	5.81	3.42	6.06	39.61								
5	Dallas, TX	Dallas	4.75	1.76	2.64	11.24	40.73							
6	Santa Clara, CA	San Jose	2.11	4.46	1.59	2.74	2.43	72.89						
7	Middlesex, MA	Cambridge	3.34	0.43	2.35	1.53	4.30	10.50	17.84					
8	Orange, CA	Santa Ana	0.92	7.38	0.56	2.54	4.38	4.71	4.16	31.10				
9	Hennepin, MN	Minneapolis	2.78	4.09	3.56	1.66	2.86	1.39	1.01	2.03	53.94			
10	San Diego, CA	San Diego	2.51	8.09	1.00	1.71	0.88	4.54	1.55	3.69	2.01	27.28		
11	Fairfield, CT	Bridgeport	6.19	1.79	2.97	5.96	2.64	2.78	2.78	1.41	0.77	2.04	9.12	
12	Fulton, GA	Atlanta	3.83	1.68	3.71	2.09	2.51	1.59	1.34	2.26	2.63	0.78	2.36	54.75

Cross-county multiplicative loglinear coefficients are in off-diagonal cells; within-county multiplicative loglinear coefficients are in diagonal cells.

The second measure, *prior backdating weighted by geographical proximity*, takes into account the geographic distance between each alter county and a focal county. We created this measure for a focal county by weighting the contribution to the measure of each alter county according to the inverse of the distance between the focal county and each alter. We then sum these weighted contributions across all counties using the following formula.

$$\text{Prior backdating, weighted by geographic proximity}_{it} = \sum_j B_{jt} \times \frac{1}{(1+d_{ij})}, \quad i \neq j$$

Where i indexes all counties, j indexes counties excluding county i , t indicates year, B_{jt} is the number of prior stock backdating cases in county j in year t , d_{ij} is the geographic distance between county i and county j . To calculate d_{ij} , we identify the latitude and longitude of the geographic center of the counties and compute the geographic distances using spherical geometry (Sorenson & Audia, 2000).

Board interlock localness weighted by geographic proximity measures the extent to which a focal county and the counties geographically proximate to it are characterized by the presence of firms with local directors sitting on their boards. In computing this measure, we modeled geographical proximity not just as a binary measure of adjacent versus non-adjacent, but rather as a continuous measure of actual distance between the focal county and all other counties.

$$\text{Board interlock localness weighted by geographic proximity}_{it} = \sum_j BL_{jt} \times \frac{1}{(1+d_{ij})}$$

Where i indexes all counties, j indexes counties including county i , t indicates year, d_{ij} is the geographic distance between county i and county j , and BL_{jt} is the diagonal multiplicative coefficients in the 1182 X 1182 board interlock matrix described above, that is, the level of concentration of interlocks within counties holding constant regional differences in interlock volume (Burt, 2006).

Control Variables. Counties with more firms should be more likely to experience stock backdating cases simply because they have a larger economic sector, so we include the *number of headquarters* of publicly listed firms in the county in a given year. Similarly, we include the log of the county population since more populous counties may be more likely to be important financial and industrial centers where the incidence of practices such as stock backdating may be greater. Some studies find that larger organizations are more likely to commit violations (e.g., Baucus & Near, 1991; Dalton & Kesner, 1988), because increasing communication and coordination problems and decreasing personal and structural controls in larger firms create opportunities to behave illegally. To control for the effect of size, we measure *average establishment size* in the county, calculated as the sum of the proportion of each industry in a county multiplied by the industry's average establishment size. The industry's average establishment size is measured by dividing the total number of employees by the total number of establishments in the industry in the U.S, and the proportion of each industry in a county is measured by the ratio of the number of establishments in an industry to the total number of establishments in a county.

Firms in industries experiencing rapid growth may have experienced greater competition in the labor market for senior executives and this may have elevated their propensity to backdate

options to retain and attract talent. To account for this effect we include in the models a county's industry growth, which is the sum of the proportion of each industry in a county multiplied by the industry's establishment growth. The extant research also suggests that the ethical climate is likely to exert a strong influence on illegality (Mathews, 1987; Mckendall & Wagner III, 1997). To proxy for this effect, we include the *crime rate* in each county each year, calculated by dividing the total number of arrests by the total number of people in the county in a given year.

In addition, we include the county's *board interlock centrality*, measured by the extent to which the county is strongly connected to other central counties by interlocks. A county's board interlock centrality may indicate the degree to which directors in a county are integrated into the corporate elite and act on the corporate elites' collective interests (Davis, 1991). Given that backdating artificially increases returns awarded to executives, which favors the interests of elites, a central county may display a greater propensity to backdate options. Following Burt

(2006), we first calculate a county's centrality score C_i as $\sum_j Z_{ij} Y_j$, where i indexes all counties, j indexes counties excluding county i , Y_j is the relative number of interlocks that involve county j (number of between-county interlocks that involve county j divided by the maximum number of between-county interlocks that involve a county), Z_{ij} is the relative frequency of interlocks from county i to j (frequency of interlocks between counties i and j divided by the maximum frequency between i and any one county). Therefore C_i is the weighted combination of strong connections with central others. We then calculate a county's relative centrality score by

comparing its C_i score to the most central county: $\left(\frac{100 \times C_i}{\max C_i}\right)$, where $\max C_i$ is the maximum C_i score for any county. Centrality scores vary from 100, for the most central county, down to a minimum of zero. The three most central counties (in the middle of the network) are: Hamilton (OH) with a centrality score of 100, Barrion (MI) with a centrality score of 97.78, and Montgomery with a centrality score of 94.82. We use these relative centrality scores in our analyses.

Actors central in inter-organizational networks could better observe others' behavior, because they are exposed to more information that flows through the network than actors that are not central (Haunschild, 1993; Haunschild & Beckman, 1998; Mariolis & Jones, 1982; Useem, 1984), increasing their susceptibility to other corporations' behavior. Actors central in the network are also likely to serve as role models for other actors because of their prestige and visibility (Davis, 1991); hence their behavior is more infectious than conduct by actors that are not central. However, because invisible practices are not observable, the centrality of potential adopters and prior adopters may not be relevant to the diffusion of backdating. We still examine the effect of these attributes of positions in the board interlock structure by including *prior backdating weighted by focal county board interlock centrality*, calculated as the sum of prior backdating cases in other counties weighted by the board interlock centrality score of the focal county (potential adopter), and *prior backdating weighted by origin county board interlock centrality*, calculated as the sum of prior backdating cases in other counties weighted by the board interlock centrality score of the case-origin county (prior adopter).

Table 3: Correlations and descriptive statistics

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1.Number of backdating cases X100	0.17	0.04												
2.Number of headquarters	8.82	26.53	0.18											
3. Log county population	11.54	1.21	0.07	0.49										
4.Average establishment size	14.02	2.56	-0.01	0.05	0.06									
5. Industry growth	1.29	2.03	-.00	-0.02	-0.04	-0.1								
6.Crime rate	0.05	0.03	0.01	0.05	0.1	-0.01	-0.00							
7. Board interlock centrality	12.21	20.23	0.07	0.51	0.61	0.1	-0.03	0.06						
8. Board interlock localness weighted by geographical distance	5.41	6.21	0.12	0.63	0.49	0.08	-0.02	0.07	0.6					
9.Prior backdating	31.13	35.95	-0.01	-0.07	-0.05	-0.4	0.19	0.05	-0.08	-0.07				
10. Prior backdating weighted by origin-county board interlock centrality	1747.98	1993.54	-0.01	-0.07	-0.05	-0.4	0.19	0.05	-0.08	-0.07	0.99			
11. Prior backdating weighted by focal-county board interlock centrality	321.48	958.59	0.03	0.21	0.33	-0.12	0.04	0.04	0.53	0.25	0.38	0.38		
12. Prior backdating weighted by board interlock ties	3.97	15.48	0.09	0.35	0.34	-0.09	0.02	0.01	0.45	0.31	0.27	0.27	0.78	
13. Prior backdating weighted by geographical distance	0.06	0.08	0.02	0.02	0.12	-0.3	0.12	0.04	0.04	-0.01	0.73	0.73	0.42	0.39

N=19,560; All correlation coefficients with a magnitude greater than .01 are significant at the .05 level

Table 4: Results of rare logistic models of the probability of stock backdating in U.S. counties

Variable	1	2	3	4	5 Low board interlock localness	6 High board interlock localness
Number of headquarters	0.003** (0.001)	0.003** (0.001)	0.002 (0.001)	0.002 (0.001)	0.043 (0.031)	0.003 (0.002)
Log county population	0.887** (0.171)	0.879** (0.169)	0.795** (0.161)	0.722** (0.165)	0.931** (0.399)	0.446* (0.202)
Average establishment size	-0.424** (0.141)	-0.423** (0.141)	-0.395** (0.144)	-0.375** (0.144)	-0.178 (0.327)	-0.404* (0.164)
Industry growth	-4.71 (4.159)	-4.654 (4.142)	-5.132 (4.233)	-4.841 (4.161)	13.994** (2.704)	-4.392 (4.437)
Crime rate	-0.386 (5.707)	-0.376 (5.708)	2.428 (6.102)	1.366 (6.422)	1.113 (7.682)	2.439 (6.522)
Board interlock localness weighted by geographical distance	0.042** (0.016)	0.043** (0.016)	0.034 (0.018)	0.038* (0.017)	1.275 (1.57)	0.042* (0.017)
Board interlock centrality	0.008 (0.008)	0.008 (0.008)	0.015 (0.008)	0.015** (0.008)	-0.011 (0.044)	0.007 (0.009)
Prior backdating	-0.004 (0.005)					
<u>Indirect diffusion channels</u>						
Prior backdating weighted by focal-county board interlock centrality		-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Prior backdating weighted by origin-county board interlock centrality		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	-0.001 (0.000)
<u>Direct diffusion channels</u>						
Prior backdating weighted by board interlock ties			0.019 (0.012)	0.019 (0.012)	0.072 (0.062)	0.018 (0.011)
Prior backdating weighted by geographical distance				3.375* (1.42)	-0.195 (3.132)	2.947* (1.332)
Constant	-7.138 (5.064)	-7.105 (5.05)	-6.04 (5.152)	-5.72 (5.152)	-35.088 (10.138)	-1.6 (5.637)
Number of observations	19,560	19,560	19,560	19,560	14,680	4,880

** $p < .01$; * $p < .05$

Analysis

With more than a thousand counties at risk of experiencing stock backdating and only 35 counties that experienced at least one occurrence of this type of corporate misconduct, stock backdating is a clear instance of a rare event. Regular logistic regression would not be appropriate because it tends to underestimate the factors that predict positive outcomes in rare events data. To correct for this bias, we used King and Zeng's (2001) rare logistic estimator that gives lower mean square error in the presence of rare events data. Furthermore, to allow that the observations might be dependent within a county, the variance of the estimated coefficients were estimated with the county as a cluster.

Results

Table 3 presents descriptive statistics and correlation coefficients. Models 1- 4 in Table 4 report the coefficients for the rare logistic models predicting the occurrence of the first stock option backdating case in a county. Starting with Model 1, which includes the control variables, as expected, we see that counties with a larger number of headquarters and counties with larger population are more likely to experience backdating. Counties with smaller firms are also more likely to experience backdating, which may be interpreted as indicating that insufficient resources may result in increased pressure for illegality. Board interlock localness is also positively associated with the incidence of stock backdating, suggesting that perhaps the degree of social cohesiveness of local elite increases the propensity to adopt practices that benefit the local elite. Note also that, in line with expectations, the count of prior occurrences of an invisible practice such as stock backdating does not significantly impact the likelihood of the first case of stock backdating occurring in a county.

Model 2 examines the indirect diffusion channels, whether centrality affects a county's susceptibility to cases in other counties and a county's infectiousness to other counties. Prior backdating weighted by focal-country board interlock centrality is not significant, suggesting that more central counties are *not* more susceptible to backdating than counties that are less central. Prior backdating weighted by origin-country board interlock centrality is not significant, suggesting that backdating cases in more central counties are *not* more infectious to other counties than cases in less-central counties. These results are in line with our expectations: given the invisibility of backdating practices, counties' central positions in the board interlock structure do not affect the occurrence of backdating. Also, central positions do not make cases more likely to be observed by others.

Models 3 and 4 examine the direct diffusion channels. In Model 3, the coefficient of prior backdating weighted by board interlock ties is positive but not significant. This means that board interlock ties to counties that had already experienced cases of stock backdating do not significantly increase the likelihood of the first occurrence of stock backdating in the focal county. Therefore, hypothesis 1 is not supported. *Prior backdating weighted by geographical distance*, however, has a positive and significant coefficient ($p < 0.05$), which means that geographical proximity to counties that experienced cases of stock backdating increases the

likelihood of the occurrence of the first case of stock backdating in the focal county, as predicted in hypothesis 2.

In Model 5 and 6 we disaggregate the sample in counties with low board interlock localness and counties with high board interlock localness. The numerical distribution of board interlock localness is highly skewed, with most counties and their adjacent counties having no interlocks of the type in question, many counties and their adjacent counties having few such interlocks, and a smaller number of counties and their adjacent counties having large numbers of local board interlocks. Initially we split the sample at the median (median board interlock localness = 3.89) but the model with the low board interlock localness sample could not be estimated due to the lack of events. We therefore opted to split the sample at the 75th percentile (75th percentile board interlock localness = 5.06). The key finding is given by the coefficient of prior nonlocal backdating weighted by geographical distance which is positive and significant when board interlock localness is high but turns negative and not significant when board interlock localness is low. So hypothesis 3 is supported: geographic proximity to counties that had experienced cases of stock backdating alone does not positively impact the likelihood of the first case of stock backdating. This effect depends on the existence of high levels of local board interlocks.

Discussion

These results suggest that the practice of stock backdating did not significantly diffuse through interactions shaped by the board interlock structure. Rather, the medium for the spread of stock backdating was geographic proximity: counties were more likely to experience the first case of stock backdating to the extent that counties geographically located close to them had already experienced cases of stock backdating. Further, this effect of geographical proximity was conditional on the presence of high levels of local board interlocks which suggests that social interactions among local directors that take place in board meetings as well as in other social venues associated to the presence of local board interlocks (Kono et al., 1998; Marquis, 2003) may be a key condition for the effect of geographic proximity to materialize.

A potential implication of these results is that the diffusion of an unethical practice may follow the same path taken by the diffusion of an illegitimate practice. Davis and Greve (1997) found the same pattern of results emerging from our data in their analysis of the diffusion of the golden parachute. As we noted above, the golden parachute was a completely legal and visible practice but what complicated its diffusion was that it had not been fully accepted within business circles. Opposition to the golden parachute likely created barriers to communication and influence. The barriers to the communication of an unethical practice may be steeper but the end result may be similar. Adopters of an unethical practice are cautious in disclosing information about the practice because they are concerned that those who receive information about the practice may not conceal it and may object to it (Baker & Faulkner, 1993; Granovetter, 2007). Strong social bonds likely help adopters alleviate these concerns and encourage communication, but board interlock ties may not foster social relations that are sufficiently strong to remove these barriers to the flow of information, whereas, consistent with Davis and Greve's analysis, frequent social relations among geographically proximate executives and directors may reduce these barriers.

We should note that our results differ from the results of previous work that found that board interlocks played a significant role in the diffusion of backdating (Bizjak, Lemmon, & Whitby, 2009). There are three possible reasons for this divergence. First, we took into account the impact of geographic proximity, whereas this previous work did not. We think that this is an important difference that may explain the divergence in findings, given that board interlocks are known to be more likely among geographically proximate firms and that a board interlock effect may often reflect a geographic propinquity effect. What may appear a board interlocks effect in a firm level analysis may in reality be a geographic propinquity effect if the board interlocks facilitating diffusion of the practice are local. Second, our observation starts from 1981, when the backdating practice first took place, according to SEC investigations, while previous work does not include backdating cases that occurred prior to 1996, thus missing the early stage of the diffusion process and facing left-censoring problems. Third, we defined backdating on the basis of investigation results by the SEC or the Justice Department. Previous work defined stock backdating on the basis of the stock price movement around the dates in which options were granted. In that work, backdating is seen as occurring when there is at least a 10% negative abnormal return in the 20-day period prior to the reported grant date, followed by at least a 10% positive abnormal return in the 20-day period following the reported grant date. That procedure may have led to an overestimation of backdating, because it may have confounded random stock price movements with manipulations of grant dates and because it may have treated cases of stock backdating with proper disclosure as instances of stock backdating without disclosure.

Our results carry implications for organizational research on board interlocks and the diffusion of corporate practices. Some researchers have leveled strong criticism against board interlock research, suggesting that “we should abandon our concentration on boards of directors as a source of network data,” as interlocks “do not predict much that is interesting in the strategic choices of firms” (Fligstein & Brantley, 1992: 304). Given the overwhelming evidence that interlocks do contribute to explaining strategic choices (e.g., Davis, 1991; Haunschild, 1993), our results support an intermediate position which holds that interlocks are useful in predicting some corporate activities, but not others. In other words, rather than arguing about whether interlocks matter, our results lend support to the view that future research should aim to identify boundary conditions governing when interlocks do matter, versus when interlocks have little influence. Haunschild and Beckman (1998) took an important step in this direction by suggesting that the influence of board interlocks depends on alternate sources of information. For instance, they found that CEOs’ membership in major business associations reduces the impact of interlock on corporate acquisitions. Adding to that work, our study suggests that whether board interlocks serve as an information source depends on the type of information. If the practice is unethical, shared directorship may not help spread it. The depth and strength of the social bonds fostered by board interlocks, especially those that are geographically dispersed, may not be sufficient to create the conditions necessary for the sharing of information regarding unethical practices. So board interlocks may be best viewed as “a thin sort of linkage important for the flow of information about high corporate strategy” (e.g., acquisitions) (Strang & Soule, 1998: p. 273), but less relevant to other kinds of behaviors that require a thick linkage. In this sense our results echo Stinchcombe’s concern (1990: 381) that “we need to know what flows across the links, who decides on those flows in the light of whose interests, and what collective or corporate action flows from the organization of links, in order to make sense of intercorporate relations”. By

suggesting that secret information may not spread through board interlocking networks, our results help us gain a better understanding about what is really flowing through the interlock tie.

An additional implication of our analysis is that it illustrates a rare example of the potential negative effects of geographic propinquity. A considerable literature emphasizes how propinquity benefits organizations that are collocated by facilitating access to valuable information not easily available to those residing elsewhere (e.g., Jaffe, 1989; Jaffe, Trajtenberg, & Henderson, 1993). This study, in contrast, suggests that there may also be a dark side to propinquity. Not all influences facilitated by propinquity are beneficial or, paraphrasing Marshall (1920), “not all secrets that are in the air are worth knowing.” Adopters of backdating influenced collocated individuals to adopt a practice that often resulted in personal and organizational losses. So the high levels of trust facilitated by frequent interactions in the same local social circles in some cases may be a source of advantage but in other cases may be a source of disadvantage by reducing actors’ ability to fully consider the risks involved in the adoption of an unethical practice.

Our results also have potential practical implications. When a previously invisible unethical practice is uncovered, investigative efforts are undertaken to identify adopters. A key task for investigators in those situations is to identify, within the entire population at risk of adopting, segments that present the highest risk of exposure to the practice. Our results point to the importance of giving special attention to geographically proximate actors, based on the rationale that information about unethical practices tends to flow more easily among individuals tied by strong social bonds, and strong social bonds are more likely among individuals collocated in geographical space.

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