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**Breaking the Chains:**

**Privatization and Deinstitutionalization of Chinese State Enterprises**

**Guochen Du**

Nankai University

China

**Klaus E Meyer**

University of Bath

U.K.

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#### **Abstract**

A key step of corporate transformation in transition economies is privatization. It deinstitutionalizes the firm from its inheritance of state control, and thus opens up new paths of growth. We investigate this process by applying and advancing institutional theory to assess which firms are most likely to undergo this process. In particular, we argue that the external and internal institutional pressures (arising from embeddedness and survival threats) are moderated by the firm's cognitive and material resources. In an empirical study on state owned enterprises listed on the Shanghai and Shenzhen stock exchanges, we find support for both the direct and the moderating effects.

Keywords: Privatization; Deinstitutionalization; Institutional Transition

## INTRODUCTION

The question ‘how do firms restructure themselves in response to institutional change?’ (Hoskisson, Eden, Lau & Wright, 2000: 254) has become a focus of strategic management research, especially in the context of transition economies (Meyer & Peng, 2005; Meyer, Lu, Lan and Lu, 2002; Peng, Wang & Jiang, 2008; Tan & Tan, 2005). Since the early 1980s, transition toward market-based institutions has largely reshaped the ‘rules of game’ (North, 1990: 3) for incumbent organizations in former planned economies. One of their key challenges is to restructure themselves to be able to compete in a turbulent institutional environment.

However, the restructuring process is ‘neither smooth, automatic, nor uniform across different markets’ (Hoskisson et al., 2000: 252). The incompleteness and misalignment of institutions during the ‘institutional upheaval’ raise the uncertainties faced by the organization (Newman, 2000; Kostova & Roth, 2003). Moreover, restructuring requires departure from established routines, and disconnection from the residual structures of the old institutional framework. This process may create new ambiguities and cognitive challenges that may undermine its legitimacy (Newman, 2000). Hence, the essential question is how companies engage in competition, when the rules of that competition are not completely known? (Peng, 2003). In view of the extensive ‘institutional voids’ (Khanna and Palepu, 1997) and associated risks, it may be surprising that firms at all disengage from the old institutional structure and adapt new procedures to fit new, yet ambivalent, rules of the game. Thus, we investigate, under what conditions firms are more likely to engage in restructuring when facing incomplete rules of game.

To address this question, we investigate the conditions under which Chinese state owned enterprises (SOEs) engage in privatization between 1998 to 2006, the probably most important institutional transition. Privatization, defined as ‘any measure that transfers some or

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all of the ownership and/or control over SOEs to the private sector' (Ramamurti, 2000: 526), has been extensively studied from both economic (Megginson & Netter, 2001; Djankov & Murrell, 2002; Estrin, Hanousek, Kocenda & Svejnar, 2008) and organizational perspectives (Antal-Mokos, 1998; Zahra, Ireland, Gutierrez & Hitt, 2000). This research has mainly focused on post-privatization restructuring and outcomes, while few studies have investigated the antecedents of privatization (Ramamurti, 2000; Estrin, et al., 2008). In particular, we still lack sound theories and empirical evidence to explain why some firms are more likely than others to be privatized (Zahra, et al., 2000).

Introducing a new perspective into privatization and transition research, we apply and advance institutional theory (DiMaggio & Powell, 1983; Zucker, 1987; Scott, 1995) to argue that privatization is not only an efficiency-based process but also a complex institution-based process, which is highly embedded in the firm's internal and external environment. Specifically, privatization evokes a process of deinstitutionalization, defined as 'the process by which institutions weaken and disappear' (Scott, 2001: 182), that fundamentally changes the firms' form of organizing as well as its relationships with the environment. We explore the antecedents of privatization as a deinstitutionalizing process in a distinct institutional environment characterized as co-existence of two competing systems, state-based and market-based systems. We find that (a) the extent to which firms are embedded in the state-based system plays a direct role in buffering their conversion to private sector, while (b) efficiency-based pressures push privatization when the survival of the organization is threatened. Yet, efficiency-based pressures do not necessarily lead to organizations to abandon state ownership as it is contingent on both institutional and resource characteristics of SOEs. Hence, we argue that the uncertainty arising from incomplete and misaligned institutions create institutional and resources contingencies that shape the privatization process.

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This research offers four contributions to the literature. First, while large parts of the literature on privatization considers privatization as given and focus on post-privatization processes, we empirically examine the antecedents of privatization. Second, responding to the call by institutional theorists to ‘place studies of deinstitutionalization in a broader context of institutional change’ (Scott, 2001: 182), we empirically examine a set of factors influencing deinstitutionalization of state-ownership in a context of co-existing competitive systems and logics. Third, we examine the effect of slack resources on institutional change, thus extending institutional theory by explicating the role of behavioural influences on deinstitutionalizing processes. Fourth, where most privatization research has analyzed the context of radical institutional change in Central and Eastern Europe (CEE), we extend the research to the gradual transition context of China, which is characterized by the co-existence of two competing systems rather than one systems replacing with another.

### **RESEARCH BACKGROUND AND MOTIVATION**

Most research on privatization has investigated the impact of institutional upheaval on firms in CEE (Newman, 2000; Uhlenbruck & De Castro, 2000; Meyer & Peng, 2005). In these countries, privatization has been very rapid, and decision were to a large extend centralized in privatization agencies, though in some case firm-level interest groups influenced the process (Antal-Mokos, 1998; Hare, Batt, Cave & Estrin, 1999). In contrast, privatization in China has been undertaken in a more incremental way, creating a mixed economy characterized by ‘a diversity of organizational forms and a plurality of property rights’ (Nee, 1992: 2). We thus extend privatization research to a more incrementally changing environment.

A salient feature of China’s gradual transition has been a ‘negotiated property rights reform’, which means that privatization usually happened as a result of ‘informal negotiation and bargaining on a case-by-case basis in determining how new property rights are to be

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reassigned in these countries' (Spicer, McDermott & Kogut, 2000: 633). In this way, privatization is not the direct result of mass privatization but a process involving multiple economic actors such as government agencies, public and private corporations, as well as individuals' (Walder, 1994: 53). Decisions regarding privatization of any specific firm thus are influenced by a wide array of interests and powers that may conflict and interact with each other at firm level (Antal-Mokos, 1998).

The situation is further complicated by the conflicting pressures and expectations of co-existing institutional logics of state-based and market-based systems (Tan & Tan, 2005). In the state-based system, the state as large institutional authority still controls resources critical for the survival of firms, while the socialist ideology retains its legitimacy and dominant position at least in the formal institutional framework. This implies that the embeddedness in the inherited state-based system retains its importance. On the other hand, the market-based system creates increasing pressures to reorganize and compete with new players such as private and foreign firms. Yet, embeddedness in the old system may be a liability that inhibits such a transformation. As the two competing logics 'co-exist, compete, and counteract ... tremendous energy and turbulence have been created' that result in a high degree of uncertainty and ambiguity (Tan & Tan, 2005: 144). Firms will react to these conflicting demands with "competitive commitments", as some members prefer the emerging new pathm whereas others stick to the template-in-use. Such a competitive commitment, however, is considered a necessary condition for institutional change (Greenwood & Hinings, 1996). However, what causes firms to abandon their old template of organizing (e.g., public ownership) and replace this with the opposite one (e.g., private-ownership) particularly as two competitive logics are still in influence?

## **THEORETICAL FOUNDATION**

### **Antecedents of privatization**

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Research on privatization has mainly been from an economic perspective among which only few focus on the pre-stage of privatization. However, prior research shows that firms are not simultaneously privatized (Megginson, et al., 1994; Gupta, Ham & Svejnar, 2008). It has been suggested that the selection of firms for privatization is influenced by their economic importance, their performance record, gains and cost of privatization and by the industrial structure (Djankov & Murrell, 2002; Megginson, et al., 1994; Gupta, et al., 2008).

A potential problem in this stream of research is that the focus on economic efficiency may overlook the complexity of privatization processes in which organizational influences may resist or encourage the occurrence of privatization (Antal-Mokos, 1998; Uhlenbruck, Meyer & Hitt, 2003). This constraint leaves gaps in our knowledge about how organizations interpret, respond to and interact with external environment as they pursue a major change like privatization. The relationships between stakeholders are inherently complex, which inhibits predictions based solely on economic analysis of the pre-privatization stage (Megginson and Netter, 2001).

Management scholars recognize that privatization is about not only ownership change but also a complex and context-specific process of organizational change (Cuervo-Cazurra & Villalonga, 2000; Dharwadkar, George & Brandes, 2000; Dixon, Day & Meyer, 2007). Scholars have thus explored broader organizational and contextual factors in privatization (Newman, 2000; Makhija, 2003; Uhlenbruck, et al., 2003; Uhlenbruck & De Castro, 2000; Meyer & Lieb-Dóczy, 2003). This stream of research, however, is limited to the post privatization processes, and thus largely leaves the organizational antecedents of privatizations unexplored. Some authors have discussed the factors affecting the likelihood of privatization (Antal-Mokos, 1998; Ramamurti, 2000; Uhlenbruck and Castro, 1998) from an organizational perspective. Yet, we still lack theoretical foundations and empirical evidence regarding the factors motivating privatization.

### **Privatization as Deinstitutionalization**

Profound institutional change is usually associated with a rapid emergence of novel forms of organizing (Scott, 2002). In the China's transition process, a salient feature has been the increasing diversity in organizational forms in a previously quite homogeneous field of economic organizations, namely SOEs, in the former planned economy (Nee, 1992; Scott, 2002). This divergent change is characterized by the emergence of plural property rights in which privately owned firms gradually increase their contribution to the economy, and some former SOEs are eventually privatized.

The implications of ownership change on firms' behaviour in China extend far beyond finance and governance aspects. Child (1994: 19) suggests, 'the Chinese concept of ownership (*suo you zhi*) is appreciably more ambiguous and is a political and ideological consideration rather than an economic and legal one.' For privatized SOEs, this kind of change is significant not only because it changes the economic function of SOEs (Megginson, Nash, Netter & Poulsen, 2000), but because it triggers changes in their internal cognition and beliefs (Johnson, Smith & Codling, 2000) and their relationships with external stakeholders (Shleifer & Vishny, 1994). Resources and underlying assumptions of SOEs have been highly embedded in the state-based system (Johnson, et al., 2000). Privatization thus evokes and signals a radical change of those institutionalized practices, and moves organizations from one 'template-in-use' to another (Greenwood & Hinings, 1996; Newman, 2000). Thus, Johnson and colleagues (2000: 576) argue that privatization can be viewed usefully as a process of 'deinstitutionalizing public sector templates and institutionalizing private sector templates'.

Moreover, such divergent change in China occurs in a highly uncertain and turbulent environment where the competitive institutional logics between state-based and market-based systems co-exist, which exert conflicting demands and pressures on organizations. In such a situation, organizations often exhibit a degree of 'comprise' or 'balance' behaviour (Oliver, 1992). For example, newly established private firms competing in the marketplace tend to



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show their conformity or relatedness to state-based system by taking ‘Red Cap Strategy’ (Chen, 2007) or ‘macro-ties’ with state officials (Peng & Luo, 2000; Li, Poppo & Zhou, 2008). On the other hand, market pressures induce some SOEs embedded in the state system to engage in more entrepreneurial activity than before (Tan & Tan, 2005; Tan, 2005).

However, the co-existence of competitive logics may also create opportunities for firms to adopt new organizational forms rather than a strategy of comprising or balancing. Some researchers argue that the divergence of organizational forms may be attributed to the co-existence of competitive institutional logics. The heterogeneity of the organizational field with multiple institutional influences gives organizations more discretion to abandon established templates by facilitating the acceptance and legitimacy of new templates (D'Aunno, Succi & Alexander, 2000). We argue that privatization is a special case of ‘deinstitutionalization’ as SOEs depart from the old logic to new ones, rather than pursuing comprising or balancing (Oliver, 1991; 1992). This theoretical perspective has to date not been adequately applied to the context of transitional economies (Peng, 2003; Newman, 2000; Tan & Tan, 2005).

### **Mechanisms of Deinstitutionalization**

Interpreting privatization as a deinstitutionalizing process emphasizes the associated changes in the structure of the organizational field, including organizational practices and relationships with external stakeholders. Institutional theorists suggest that the pressures driving divergent institutional change can be framed along two dimensions: institution-market and internal-external (Scott & Meyer, 1983; Zucker, 1987). Along the institution-market dimension, institutional change is regarded as a function of both efficiency in a task environment and legitimacy in institutional environment (Scott and Meyer, 1983: 140, 149). From an efficiency-based reasoning, the adoption of a new organizational form will be the result of efficiency improvements as competitive pressures push organizations to search and evaluate

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more efficient forms (Roberts & Greenwood, 1997). However, this prediction may over-emphasizes the influence of the market environment relative to the institutional influence. For example, D'Aunno and colleagues (2000) find that divergent change of rural hospitals in the U.S. depended on both market and institutional forces. Similarly, Lee and Pennings (2002) find that an institutional change might be the result of interaction between market selection and institutional mimicry. Some researchers thus suggest that organizations are primarily motivated by competitive pressures, and constrained by institutional factors (Roberts & Greenwood, 1997; D'Aunno, et. al., 2000).

The internal-external dimension is based on the dichotomy between organizations and environment as institution (Zucker, 1987). Institutional pressures can arise both outside the organization, for instance dependence on an institutional power such as the state, or within the organization, for instance, from organizational routines and practices. Radical organizational change can thus be understood as a function of organizational context and internal dynamics in terms of interest, values, power dependencies and capacity for action (Greenwood & Hinings, 1996).

This typology indicates the role of the interactions between market and institutional forces and between contextual and organizational characteristics in inducing institutional change (Scott, 1987; Scott & Meyer, 1991). A comprehensive theoretical framework by Oliver (1992) suggests that the drivers of deinstitutionalization arise from political, functional and social pressures at both organization and environment level. She argues that deinstitutionalization may be the result of shifting dependence on environmental constituents (politically), perceived problems of performance (functionally) or changing social expectation and organizational cognition and norms (socially). Although Oliver's framework provides us with a good starting base, Dacin and colleagues (2002: 48) point out that 'pressures for deinstitutionalization, whether they are primarily functional, political or social in nature, will

not automatically lead to a breakdown in institutional norms.’ Deinstitutionalizing processes may be more complex as those pressures may be interdependent. For instance, the efficiency orientation may be distorted and constrained by social/political influences to the extent that uncertainty and ambiguity surrounding transactions induce actors to rely on more institutional evaluation through mimicry, coercive or normative approaches than on efficiency comparisons (DiMaggio & Powell, 1983). Furthermore, the heterogeneity of organizational characteristics such as cognition, interests and resources will give different interpretations of similar institutional and contexts, which may further enhance the diversity of organizational change (Dacin, 1997; D'Aunno et al., 2000).

Extending Oliver’s framework to take these interrelationship in account, we argue that deinstitutionalization is driven by three mechanisms: resources mechanism, efficiency mechanism and institutional/cognitive mechanism (Figure 1). The efficiency mechanism primarily motivates the SOEs to be privatized with respect to survival crisis (H2). However, due to the uncertain and turbulent environment, this mechanism is moderated by both institutional (H3b H4b) and resource mechanisms(H5b). The institutional mechanism enters our model via a direct effect of organizational dependence (H1) and indirect effect of external mimicry (H3a) and intra-organizational change(H4a). The resource mechanism is a crucial moderator as the resources of SOEs may play a enabling role to release the organization’s dependence on the state (H5a) but increase SOEs’ inertia in crisis situations (H5b). These detailed empirical relationships are illustrated in figure 2.

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Insert Figure 1 & 2 about here

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## **HYPOTHESES DEVELOPMENT**

### **Efficiency Mechanism**

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Institutional theorists have long recognized that institutional change can be triggered by efficiency or utility motivations (Scott, 1987). Hence, organizations will no longer conform to institutional pressures when the economic gains of such conformity decrease (Oliver, 1991; Kraatz and Moore, 2002). Thus, competitive pressures and resource scarcity have been identified as primary reason to for organization change such as the adaptation of the multidivisional form (Fligstein, 1985), human resources strategy (Sherer & Lee, 2002) and governance structures (Lee & Jennings, 2002).

A performance crisis may raise the doubt on the value of institutionalized practices (Oliver, 1992). Changes of the perceived utility or technical instrumentality of an institutionalized practice may thus evoke a process of deinstitutionalization (DiMaggio, 1988; Zucker, 1988). The under-performance of SOEs is often ascribed to low efficiency of state-control because of the state's inability to effectively monitor managerial behaviour, and the imposition of political objectives that conflict with firms' efficiency (Cuervo-Cazurra & Villalonga, 2000). As survival crisis of firms (e.g. threat of bankruptcy) increase, the benefits of state-ownership is likely to be challenged by internal and external stakeholders, who may push for ownership change. For instance, Zhou, Tse and Li (2006) found that recent poor performance provided a strong legitimization for SOEs to implement administrative change that depart from existed organizational structures and routines.

Furthermore, deinstitutionalization may result from power re-distribution and conflicts of interests between stakeholders (Oliver, 1992). A survival crisis may trigger such intra-organizational conflicts arising from the different interpretations and interests in the crisis. It may raise the prospect of potential losses of particular groups within organizations, which thus would be more dissatisfied with how their interests are accommodated (Greenwood & Hinings, 1996), may exert pressures to change. For the SOEs listed in the stock market, the conflicts between economic efficiency from the market and the accommodation with the state

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as largest owner in the firms become more salient when firms are closer to bankruptcy. If the state is unable to support the firm in generating market-return and to accommodate the interests of shareholders, market pressures likely push the SOE to further reduce the shareholding of the state.

If the loss of resources is related to particular institutional arrangement, decision-makers are more likely to deinstitutionalize in a non-isomorphic way (George, et al., 2006). Thus, faced with potential risks of privatization, decision-makers of SOEs will be more likely to pursue privatization with potential losses in a survival crisis. In contrast, decision-makers in a well-being SOE can be more risk-averse to reform SOEs even if there are possible gains from such reform. Hence, deinstitutionalization can be the result of survival crisis for the reasons of utility deterioration, internal conflicts and risk-taking.

*H1: The more likely a SOE faces a survival crisis, the more likely it is privatized.*

## **Institutional Mechanism**

### ***Institutional embeddedness***

Institutional embeddedness, the ‘interconnections between a population and its institutional environment’ (Baum and Oliver, 1992: 540) enhances the survival chances of organizations by providing both legitimacy and resources (Baum & Oliver, 1991; Baum & Oliver, 1992; Kostova & Zahra, 1999; Zimmerman & Zeitz, 2002). It can take many forms, such as macro-ties with government officials (Peng & Luo, 2000), institutional relatedness (Peng, Lee and Wang, 2005), political networking of new ventures (Li & Atuahene-Gima, 2002; Li & Zhang, 2007). Much scholarly attention has focused on the enabling role of embeddedness, yet institutional embeddedness in old institutions may be a major source of inertia when the institutions themselves change (Newman, 2000; Dixon et al., 2007). Thus, legitimacy and resources from embedded relations may become a kind of ‘baggage’ that strength resistance to change toward new sets of cognition, behaviour and dependence relations (Scott, 1987;

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Zucker, 1987; Oliver, 1992; Greenwood & Hinings, 1996). Hence, the more an organization has been embedded in a previous institutional context, the less likely it is to implement institutional change (Greenwood and Hinings, 1996). The embeddedness of organizations largely arises from the dependence of an organization on its external environment with respect to both resources and cognition. Resource dependence theory (Pfeffer & Salancik, 1978) emphasizes that firms' choices are largely shaped and constrained by external partners controlling critical resources.

Applying this reasoning into the case of privatization suggests that the inertial effect of institutional embeddedness contains two aspects: resource and cognitive dependence. Institutional embeddedness with the state-dominated system can facilitate access to resources from the state, especially under the soft budget constraint (Kornai, 1980), group affiliation (Yiu, Bruton & Lu, 2005), and business networks (Peng & Luo, 2002). Such embeddedness buffers SOEs from environmental uncertainty, which induces them to rely more on the state rather than to adapt to the market, and thus increases their resistance to break up this institutional linkage. At the same time, the state still has great interests in maintaining its influence over SOEs as means to control the economy and an important political power base. The mutual dependence between SOEs and their surrounding state-dominated environment reinforces their ongoing commitment to established activities and relationships (Romanelli & Tushman, 1994).

In addition to the resource dependence, SOEs are also cognitively embedded in the state system. The institutional characteristics of the former socialist environment are likely imprinted into SOEs' knowledge set (Kriauciunas & Kale, 2006). Such cognitive embeddedness in the existing institutions becomes less relevant in a changing external environment and constrains SOEs' learning ability (Newman, 2000). Johnson and coauthors (2000) suggest that uncertainty about privatization will make actors more likely to conform to

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the scripts formed in the state sector. Roth and Kostova (2003) also argue that firms' embeddedness in institutional environment would lead to a lasting resistance to new scripts and behaviours. In effect, the embeddedness in the state-dominated logic creates cognitive sunk cost that inhibits changes in organizational routines, norms and knowledge sets (Oliver, 1997: 702). This is likely to inhibit SOEs from pursuing economically rationale alternatives because of the disruption of what has traditionally been considered as legitimate and institutionally appropriate.

*H2: The more a SOE is embedded in the state system, the less likely it is privatized.*

### ***Cognitive change***

Both the push effect of survival crisis and the inertial effect of institutional embeddedness are moderated by the interpretation and acceptance of privatization by organizational actors. The progress of a deinstitutionalization process depends on the extent to which members of the organization acknowledge the need to give up old institutionalized practices (Oliver, 1992). The interests and cognition of internal actors within organizations plays a big part in interpreting the meaning and legitimacy of new organizational forms, and thus of their actions toward deinstitutionalization (Dacin, Goodstein & Scott, 2002). We suppose that the dynamics of change are shaped by two sources – internal leadership change and external mimicry – which respectively drive both internal and external dynamics of cognitional change.

**Leadership Change.** Organizational leaders play a role as key internal actors in deinstitutionalization, because they are the 'actual bearers of institutionalized assumptions and understandings' (Kraatz & Moore, 2002: 122). Disruptions in the historical continuity of organizations may result in disagreement or difference of interpretations on the institutionalized practice of organizations. Such disruptions are caused in particular by turnover in the top management team (TMT), which may break organizational routines and cognition and thus increase the chance of deinstitutionalization (Oliver, 1992; Zilber, 2002).

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Leadership change thus is an important predictor of organizational transformation in transition economies (Dixon et al., 2007). We thus expect leadership change in SOEs to facilitate the process of deinstitutionalization by reinforcing the changing dynamics of survival crisis and cognitive embeddedness in a state-dominated system.

The reluctance of incumbent leaders to change can arise from their embeddedness in existing arrangement of interests, and values intertwined with the organization's internal and external constituencies (Miller, 1993). For example, Clark and Soulsby (2007) find that TMT's interests and values were tied to employees' expectation and consensus rather than shareholders in SOEs before privatization in the Czech Republic. The commitment of incumbent leaders to existing stakeholder may also create social obligations that further constrain their search for new solutions beyond established relationships (Ahuja, 2000). In contrast, new leaders of SOEs have fewer established assumptions and conformity to the existing interests because their ties with those stakeholders are weaker. Furthermore, new leaders are more likely to introduce new knowledge sets, understandings, assumptions and values (Kraaz & Moore, 2002) which facilitates second-order learning and abandonment the old routines and thus the deinstitutionalization.

In summary, we argue that on the one hand, the resistance of institutional embeddedness of privatization will be reinforced by incumbent leaders' adherence to their established ties within the state-dominated systems. On the other hand, under pressures of a survival crisis, incumbent leaders tend to minimize the need for change by attributing the crisis to other causes such as need for greater commitment of resources (Miller, 1993). In contrast, new leaders have few ties to the established arrangement and less commitment to the status quo. They are thus more likely to pursue a major change such as privatization, which leads us to the following hypotheses:

*Hypothesis 3a: Leadership change positively moderates the relationship between survival crisis and the likelihood of privatization.*



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*Hypothesis 3b: Leadership change negatively moderates the relationship between institutional embeddedness and the likelihood of privatization.*

**Mimicry.** Organizations tend to imitate similar organizations in the same institutional field that they perceive to be more legitimate (DiMaggio & Powell, 1983; Greve, 1998). The change dynamics of privatization is thus likely to be influenced by the behaviour of other SOEs in the same industry. Privatization of other SOEs provides a strong signal and evidence to justify the privatization, especially in ambiguous and uncertain contexts.

The high uncertainty created by institutional transition may motivate firms to model themselves on other firms in the same organizational field (DiMaggio & Powell, 1983). Newman (2000) argued that mimetic change becomes common among former SOEs in CEE countries due to the uncertainties from institutional upheaval. In contrast, to the institutional upheaval and the sources of uncertainty in China's transitional process arise from the co-existing institutional logics of state-dominant and market-dominant systems (Tan, 2005; Tan & Tan, 2005). In particular, socialism retains its legitimacy at least in the domain of formal institutions in China, and the government aims to retain its influence in the economy. Therefore, SOEs are still regarded as an economic foundation of the socialist regime and an instrument of governmental power in the economy. In this situation, privatization is more controversial even though it may be regarded as an appropriate action from a market perspective, and a rationale step to save an SOE in a survival crisis. Furthermore, the incremental path of transition provides no clear direction of the transition process because even transition itself is a 'learning by doing' and 'trial and error' process. The ambiguity in the direction of transition leaves a grey area full of both opportunities and uncertainties.

Faced with such uncertainties, the behaviour of other listed SOEs in the same industry has significant influence on the cognition of decision-makers in SOEs. Industry has frequently been identified as an organizational field where firms are exposed to the similar institutional pressures and involve in more interactions (Peteraf & Shanley, 1997; Fligstein, 1985; Greve,

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1998; Lee & Pennings, 2002). Another identifier for a reference group is the common ownership type, which has been shown to affect the cognition of decision-makers in an uncertain environment (Peng, Tan & Tong, 2004; Delios, Wu & Zhou, 2006). Furthermore, listed firms would use other listed firms as an important referencing point because they operate usually under similar market regulations and expectations.

When deciding their approach to privatization in the unpredictable context of reform, SOEs may watch other SOEs' actions for signals of legitimacy and as a barometer of government attitudes and public opinion. Increasing numbers of successful privatization cases may be interpreted as signal of more munificent environment toward privatization. When SOEs are more embedded in the state dominated system, they face greater uncertainties and doubts with respect to new organizing templates such as emerging private ownership. Thus, they may have higher propensity to take a wait-and-see approach, and to follow others in the same industry. Increasing numbers of other firms adopting privatization will encourage them to pursue privatization themselves. The legitimacy of privatization will be strengthened by an increasing number of adopters, which in turn increases the effects of competitive commitment to private-ownership and thus alleviates the resistance inside the SOEs.

A survival crisis may trigger dissatisfaction or doubts regarding the status-quo, yet it would normally not provide direction for change (Greenwood & Hinings, 1996). For SOEs in a transition environment, one of challenges is the ambiguity of cause-effect relationships during the crisis because the unprecedented environmental change is beyond the cognitive horizon of decision makers (Newman, 2000). In such a situation, the mimicking actions of others in the reference group becomes a second best choice for decision making, providing convenient solutions for organizations facing ambiguous causes and unclear solutions (Cyert & March, 1963; DiMaggio & Powell, 1983; Greve, 1998). The quest for legitimacy may thus substitute for full-information rational decision-making.

*Hypothesis 4a: The percentage of other privatized SOEs in the same industry positively moderates the relationship between survival crisis and the likelihood of privatization.*

*Hypothesis 4b: The percentage of other privatized SOEs in the same industry negatively moderates the relationship between institutional embeddedness and the likelihood of privatization.*

### **Resources Mechanism**

Organization theorists argue that an important function of slack resources is to buffer firms' technical core from environmental turbulence (Cyert and March, 1963; Pfeffer and Salancik, 1978). Even as SOEs are facing declining performance and increasing survival pressures, slack resources may buffer the pressures for immediate change of organizational structure and ownership type. Thus, the effect of a survival crisis motivating privatization may be softened by slack resources because SOEs may use their slack resources to meet the challenges of the crisis, which cause an illusion that the problems of SOEs can be overcome without changing the existing organizational arrangements. Moreover, slack resources also play a role in resolving conflicts that arise due to the organizational crisis. They can be used to meet the conflict demands by the stakeholders of the organization, and thereby postponing deeper organizations change.

On the other hand, slack resources may play an enabling role by reducing an organization's resource dependence upon the state. Combining resource dependence with institutional analysis, Oliver (1992) suggests that organizations' dependence on external agencies may result in conformity to external requirements, while increasing 'ability of organizations to resist the demands of organizations on whom they are not dependent' (DiMaggio & Powell, 1983: 154). Thus, slack resources accumulated by the organization may increase the discretion of management and thus relieve their dependence on the control of state (Tan & Peng, 2003). In other words, slack resources play a dual role in the transition to private ownership: first, they may buffer the uncertainty and crisis, and thus reduce the pressures for change; second, they may substitute for resources provided by the state and increase SOEs discretion.

*Hypothesis 5a: Slack resources positively moderate the relationship between survival crisis and the likelihood of privatization.*

*Hypothesis 5b: Slack resources negatively moderate the relationship between institutional embeddedness and the likelihood of privatization.*

## **METHODS**

### **Data and Sample**

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The data for this study have been extracted from Sinofin database developed by Chinese Centre for Economic Research affiliated to Peking University. This database covers governance and financial information of all companies listed on the Shanghai and Shenzhen stock exchanges. We have selected all enterprises on both Shanghai and Shenzhen stock exchanges that were under state ownership in 1998. Listed firms comprise a key component of China's industry and economic development (Peng, 2004; Nee, Opper & Wong, 2007), and most of them are considered as well-performing SOEs and get great support from the state or state-controlled business groups.

We select 1998 as starting year for our study because the database began to provide the complete governance information in 1998. In addition, in 1997, the 15<sup>th</sup> National Congress of Communist Part of China (CPC) allowed state ownership to be transferred to private or foreign owners especially in some competitive industries. Since non-state controlled firms are restricted to enter some industries, we exclude some of SOEs in such industries as energy, finance, power and aerospace and defence. We exclude some cases due to the missing data and unreasonable values. Finally, we get total number of 6893 firm-year observations.

Delios, Wu and Zhou (2006) argue that it is necessary to understand that who is the ultimate owner when identifying the ownership of China's listed firms because state control may become more indirect and flexible when market-based system is gradually introduced so that the listed shareholders may not indicate the true owners of an SOEs. Following Delios et. al., (2006), we define the ownership identity as the ultimate owner of the largest shareholder that is categorized into state, collective, private, foreign, social and employee ownership.

### **Dependent Variables**

We use the likelihood of occurrence of privatization as dependent variable, which is a dummy variable taking the value of one if ownership identity changed from state ownership to foreign, private or social ownership for the first time in the period, and zero otherwise. All explanatory

variables are lagged by one year. Table 1 reports the frequency of privatization events in the dataset for each year.

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Insert Table 1 about Here

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## **Independent Variables**

*Institutional embeddedness:* We measure *institutional embeddedness* by the percentage shareholding of largest shareholder whose ultimate owner is classified as state-owned. The primary objective of Chinese SOEs listing on the stock exchanges is to access capital markets and to introduce more market-based governance systems, but without changing the status of state control (Xu & Wang, 1999). Beyond the legal status, the ownership identity thus reflects the social-political relation with institutional environment that shapes organizational response to institutional pressures (Oliver, 1991).

*Survival Crisis:* We measure the survival crisis of firms using Altman Z, a value developed by Altman (1983) to assess the degree to which firms are threatened by bankruptcy. This measure has recently been used by Miller and Chen (2004) and Chen and Miller (2007) as a proxy for bankruptcy risk, and is calculated as follows:

*Altman Z = (1.2 × working capital divided by total assets) + (1.4 × retained earnings divided by total assets) + (3.3 × income before interest expense and taxes divided by total assets) + (0.6 × market value of equity divided by total liability) + (1.0 × sales divided by total assets).*

The higher value of Altman Z, the lower is the likelihood of bankruptcy. For the convenience of explanation, we take the negative value of Altman Z. Thus, a higher value indicates higher threat.

*Industry Mimicry:* We argue that the SOEs will mimic others with similar traits such as ownership identity and industry when decision-makers consider privatization. Lee and Pennings (2002) argue that the absolute number of adopters may ignore the influence of non-adoption. We follow their approach and measure the effect of industry mimicry by the

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percentage of firms with ownership change from the state-owned to the private-owned among the SOEs in the same 2-digit industrial code (GICS code) in each year (*adoption of others*).

*Leader change*: The chairman of board and the general manager constitute the most important individuals in the TMT of SOEs. They are usually viewed as the ‘the first hand’ and ‘the second hand’ in the TMT. We measure management change as dummy variable *leader change* taking the value of one if the chairman, the general manager or both change, and zero otherwise.

*Slack resources*: According to Singh (1986), Miller and Leiblein (1996), and Cheng and Lesner (1997), we measure slack resources by the ratio of selling, general and administrative expenses/sales (SG&A) in total sales. The higher this ratio is, the more slack the firm has. A significant feature is the large inventory of slack in an absorbed form that can not be effectively utilized. Unlike unabsorbed slack, absorbed slack can not be directly used as firm’s discretion and transformed into firms’ capacity to buffer risks. Thus, how to deal with such absorbed part of slack becomes a big challenge and play a larger part in privatization decision.

### **Control Variables**

*Firm age and size*: Both firm age and size have been viewed as important sources of organizational inertia (Hannan & Freeman, 1984). We control for firm age in logarithmic form since SOEs with long history are likely to be more committed to the socialist ideology, which may inhibit their adoption of new organizational forms (Yiu, et al., 2005). Similarly, change is more difficult for large firms because of their visibility and social-economic importance, which exposes them to greater scrutiny and public interests (Meyer & Rowan, 1977; Ramamurti, 2000). We control for firm size by the logarithmic form of the firm’s assets.

*TMT age*: Research on top management teams (TMTs) suggest that older TMTs are less likely to be receptive to innovations, less able to make competitive moves and less

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flexibile (Hambrick & Mason, 1984; Bantel & Jackson, 1989; Wiersema & Bantel, 1992). In transition economies, some managers are educated in the former planned-economy context and lack experience in the newly emerging market based context. Some taken-for-granted practices and assumptions of the socialist context would be imprinted in their knowledge set and cognition.

*TMT Share holding:* The stock holdings of TMT members may also affect their discretion (Combs, 2007) and influence in the firm's strategy (Bigley, et.al., 2002). To account for this effect, we further control for the shares held by the TMT members (chairman, general manager and other senior managers ).

*Industry control variables:* Competitive pressures in particular industries are likely to expose the weaknesses of SOEs in a market-based economy. Hence, in a more competitive industry, we would expect more privatization (Ramamurti, 2000). To control for this effect, we introduce a Herfindahl Index of the market shares of listed firms in the same industry (2-digit GICS code) in each year (*Competition*). In addition, we control for other industry features such as historical embeddedness or economic importance influence privatization by introducing a set of dummy variables (*industry*) based on two-digit industrial codes.

*Location:* An important feature of Chinese transition is the imbalance between regions, which may create different pressures for privatization in different regions. Following Peng et al. (2007), we define the dummy variable *Location* as one for firms in coastal provinces, and zero for firms in non-coastal provinces, based on the location of corporate headquarters at the time of the initial listing. The coastal provinces include Beijing, Fujian, Guangdong, Hainan, Hebei, Jiangsu, Liaoning, Shandong, Shanghai, Tianjin, and Zhejiang.

## **Model**

We use discrete-time event history analysis (Allison, 1982) based on Logit models of dichotomous outcomes to estimate the likelihood of a particular event (ownership change) in

any one of the discrete time periods in this study. This model has been widely used in previous research on institutional change. An advantage of this model is that it does not require the exact time of occurrence of an event. Thus, the model is appropriate when we can only identify the particular year interval when the change of ownership identity occurred but do not know the exact time during the year. The other advantage of the model is that it allows to adjust for right-censored observations. We define right censors if the firms did not adopt ownership change until the year 2006 (the final year of observation) or exited from the sample for other reasons. As a firm's ownership change occurs in a particular year, it no longer exists in the risk and is dropped from the dataset.

The general form of discrete model is set as:  $\text{Log}[p(t)/(1-p(t))]=a(t)+bX_{it}$ , where  $\text{Log}[p(t)/(1-p(t))]$  is the logarithmic odds of the event's occurrence at time  $t$ ,  $a$  represents the baseline hazard of the event's occurrence at time  $t$ . We assume the baseline hazard as the logarithmic form of time  $t$  ( $T=\log(\text{time})$ ).  $X_{it}$  is the vector of both time-invariant and time-variant covariates predicting the occurrence of event.  $b$  is a vector of log-odds for each unit change of covariant.

To avoid the possible causal ambiguity, we lag all independent variables by one year. This leads us to drop the year 1998, such that our final sample covers eight years (1999-2006). Table 3 presents the descriptive statistics including means, standard deviations and a correlation matrix for main variables in the study. All VIF-scores are below 3 and thus far below the benchmark score of 10. This indicates that the multicollinearity is not a serious issue in this regression.

## RESULTS

Table 4 shows the results of the discrete history analysis. Model 1 includes all control variables. We add the main effects of both survival crisis and institutional embeddedness in model 2. Model 3 presents the interactive effect of cognitive mechanism and resource



mechanism on the survival crisis. The interaction relationship with institutional embeddedness is added in models 4. Across all of the models, we find that survival crisis has a significant direct effect, yet only at 10% significance level ( $p < 0.1$ ). Thus, hypothesis 1 is only weakly supported. Hypothesis 2 predicts that state ownership will decrease the likelihood of ownership change. As predicted, we find a very significant negative and stable effect of state-ownership ( $p < 0.001$ ) through all of models. As state ownership takes large share in the firm, it becomes more difficult for the occurrence of ownership change. Thus, there is very strong evidence on the negative role of institutional embeddedness in the privatization. Hypothesis 2 is supported.

In model 2, we add the interaction between leader change, percentage of adoption, slack resources and survival crisis. Most of interactions are significant and consistent with our predictions. As hypothesis 3a predicts, leadership change will increase the likelihood of ownership change triggered by survival crisis. In model 3, the effect of interaction between leader change and survival crisis (*Survival Crisis X Leader Change*) is significantly positive ( $p < 0.05$ ). Hypothesis 3a is supported. Similarly, we also found the significantly positive effect of interaction between industry mimicry and survival crisis (*Survival Crisis X Adoption of Others*,  $p < 0.05$ ), which indicates that percentage of other privatized SOEs strengthen the effect of survival crisis on ownership change. This finding is consistent with the predication of hypothesis 4a. In model 3, we find a strong significant and negative interaction between survival crisis and slack (*Survival Crisis X Slack*,  $p < 0.01$ ), which means the effect of survival crisis is weakened by the slack resources. Hypothesis 5a is thus supported.

In hypothesis 3b, 4b and 5b, we propose that leadership change, other firms' adoption of ownership change and slack resources may weaken the inertial role of institutional embeddedness on the likelihood of privatization. In model 4, the interaction between leadership change and public ownership (*Inst. X Leader Change*) is not significant. The result

does not support hypothesis 3b. The percentage of other privatised SOEs is found significantly and positively moderate the effect of state ownership ( $p < 0.05$ ), which means that the resistant role of institutional embeddedness may be alleviated by the adoption of other firms in the same referencing group. Hypothesis 5b states that more slack resource will alleviate the firms' dependence on the state as owner and thus weaken the effect of institutional embeddedness. In model 4, we find that slack resources is significantly positively moderate the effect of institutional embeddedness ( $p < 0.01$ ).

### **DISCUSSION AND CONCLUSION**

One of big challenges to organizations in a unstable institutional context is how to adapt to he changing rules of games (Peng, 2003a; Peng, 2003b; Meyer & Peng, 2005). However, Peng (2003: 277) argues that we still know little about 'how organizations reject old rules, learn new routines, and develop new capacities' in the restructuring process. Beyond this 'how' question, we suggest that we should examine the 'why' question first rather than taking the change for granted. Thus, we empirically examined the antecedents of privatization as one of most important transforming strategies for incumbent enterprises in China's transitional environment. Departing from the existed privatization literature mainly based on economic perspective, we explain the occurrence of privatization from organizational theories, particularly based on institutional arguments.

The result of our study offer an opportunity to enrich research on institutional change by focusing the conditions under which incumbent organizations may be involved in deinstitutionalization in a much uncertain environment with competitive-commitments (Greenwood & Hinings, 1996). From an institutional perspective, we view privatization as deinstitutionalizing process that changes not just the governance structure but also the institutional arrangement of SOEs. We find that privatization is influenced by both market and institutional pressures. Importantly, such denationalizing process becomes more

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theoretically interesting because it takes place in a more unpredictable and uncertain environment where state-dominant system and market-dominant system as two competitive commitments co-exist and compete (Greenwood & Hinings, 1996; Tan & Tan, 2005). Our results indicate that the deinstitutionalization can be the function of efficiency, cognitive and resource factors.

We argue that rejecting the old template of organizing may be the result of organizations' survival pressures. This argument is also consistent with the assumption of economic dysfunction as primary reason for SOEs restructuring. The empirical result, however, indicates that the survival crisis alone has weak effect on the occurrence of ownership change (H1). We believe that the single efficiency or performance based argument may oversimplify the complexity of organizational transformation in transitional environment. Interestingly, the interaction between survival crisis and cognitive or slack resources, however, becomes significant. The result strongly suggests that the survival crisis only play a role together with existence of supportive institutional and resources conditions. We find that even though the primary motivation for privatization may be from organizations' survival needs, the decision to accept new organizational ownership highly depends on 1) how much decision-makers understand or accept the new ownership form, and 2) how much resources they can potentially use in response to uncertainty and risk related to the change in future.

For the first point, we find that both leadership change and other firms' adoption behaviour have a significant effect upon ownership change (H3a, H4a). The finding indicates that organizations' cognition can be shaped by both internal and external sources. On the one hand, leaders of organizations play a significant role as institutional agent inside the organization by facilitating or inhibiting the acceptance of a new institutional within the organization. This finding is consistent with Kraatz and Moore (2002) who suggest that immigration of leaders possessing different assumptions, values and understandings can

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promote institutional change. On the other hand, other firms may be regarded as important reference group for organizations considering deinstitutionalization, especially when they experience great uncertainty upon their actions. For the second point, we find that the effect of slack resources may decrease the need of ownership change triggered by survival crisis (H5a). As slack resources may release organizations from the performance crisis, they may also create an inertial effect that reduces the change need motivated by such crisis. Organizations may thus be able to survive in the short run, but they lose a chance to implement change. In contrast to the emphasis on external sources of institutional power (DiMaggio & Powell, 1983; Scott, 1995), our findings suggest that organizational traits may also play a role as an internal source of institutional change. This view is consistent with prior research on the influence of firms' prestige (Sherer & Lee, 2002) and their position in an organizational field (Greenwood & Suddaby, 2006) on institutional change. Future research may thus further inquire which resources, and how, affect the process of institutional change.

Underlying the contingency of both cognitive and resource mechanisms is the ambiguous and uncertain institutional environment. As we discussed above, such uncertainty and ambiguity largely results from co-existing competitive logics, which means that even though market pressures may play a part in institutional change, adopting new institutional template such as privatization is still considered as risky or controversial action because of its competing against the existed state-dominant logic. Thus, under survival pressures, decision makers in SOEs will seek possible solutions still within the existing institutional framework such as keeping public ownership rather than making ownership change unless they perceive of favorable conditions to induce such change. SOEs are highly embedded in their internal environment constituted by organizational structures, power and interests and its relationship with external constituencies such as governmental control. Privatization may be less likely when one's cognition is highly committed to state-dominated system. Our findings show that

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SOEs' adoption of privatization is significantly prevented by organization's embeddedness in the existed institutional arrangement (h2). Despite this inertia quality, we also find that such effect can be mitigated by some favourable conditions through both cognitive and resource mechanism (h3b, h4b, h5b). However, leadership change does not show significant effect upon institutional embeddedness but does in survival crisis. The possible reason is that the influence of leaders may be quite limited under greater government control. However, new leaders are possible to gain more support or discretion when organizations struggle in crisis.

It is worth noting that the main effect of institutional embeddedness is more stable and significant than survival crisis. Researches in neo-institutional theory suggest that organizational fields vary in the relative strength of institutional and market pressures for organizations (Scott & Meyer, 1983; Dacin, 1997; D'Aunno, et al., 2000). Even though we suppose that China's transition is at a stage of two co-existed competitive systems/logics, it is still very possible that state-dominated system still keeps a critical influence upon SOEs despite market-orientated system is increasingly reinforced. From this result, we believe that privatizing decision may not be just an economic rationale choice by efficiency calculation presumed in previous researches. Even though privatization can be regarded as action rationalizing governance or property rights according to requirements of market-based system, it can only be realized when it is socially or legitimately accepted.

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**Table 1 Percentage of Ownership Change**

<b>Ownership change</b>	<b>Year</b>								
	1999	2000	2001	2002	2003	2004	2005	2006	总计
No change 0	648	738	876	880	860	845	859	803	6,509
Change 1	73	22	13	61	70	54	32	59	384
<b>Total</b>	721	760	889	941	930	899	891	862	6,893
<b>Percentage</b>	10.12	2.89	1.46	6.48	7.53	6.01	3.59	6.84	5.57

Table 2 Regression Analysis of Privatization

Dependent Variable: Privatization	Model 1	Model 2	Model 3	Model 4
Asset <sup>a</sup>	-0.660*** (0.07)	-0.676*** (0.08)	-0.683*** (0.08)	-0.684*** (0.08)
Firm Age <sup>a</sup>	0.543*** (0.11)	0.224+ (0.12)	0.210+ (0.12)	0.194+ (0.12)
TMT Age <sup>a</sup>	-0.341** (0.12)	-0.273* (0.13)	-0.266* (0.13)	-0.252* (0.13)
Leader Share <sup>a</sup>	-0.009 (0.02)	-0.007 (0.02)	-0.005 (0.02)	-0.006 (0.02)
Competition	-0.244 (0.18)	-0.381* (0.19)	-0.381* (0.19)	-0.369+ (0.19)
Industry (Others Omitted)	0.236 (0.62)	0.256 (0.57)	0.242 (0.58)	0.334 (0.58)
Location	0.006 (0.11)	0.029 (0.11)	0.055 (0.12)	0.029 (0.11)
Time <sup>a</sup>	-0.029 (0.11)	0.188+ (0.11)	0.174 (0.11)	0.207+ (0.11)
Survival Crisis		0.020+ (0.01)	0.021+ (0.01)	0.019+ (0.01)
Institutional Embeddedness (Inst.Emb.)		-0.929*** (0.16)	-0.906*** (0.15)	-1.038*** (0.14)
Adoption of Others <sup>a</sup>		-5.053** (1.66)	-5.258** (1.72)	-3.839* (1.74)
Leader Change		-0.046 (0.11)	-0.1 (0.12)	-0.031 (0.12)
Slack		-0.025 (0.04)	0.081 (0.05)	0.025 (0.06)
Survival Crisis X Adoption of Others			0.657* (0.29)	
Survival Crisis X Leader Change			0.064* (0.03)	
Survival Crisis X Slack			-0.019** (0.01)	
Inst.Embed.X Adoption of Others				4.535+ (2.32)
Inst.Embed.X Leader Change				0.061 (0.20)
Inst.Embed.X Slack				0.102* (0.05)
Wald Chi-square	199.825***	222.836***	249.563***	282.514***
Log-likelihood	-1378.724	-1338.714	-1328.794	-1332.898
Degree of Freedom	15	20	23	23
Number of Observation	6893	6893	6893	6893

\* p&lt;0.05, \*\* p&lt;0.01, \*\*\*p&lt;0.001

a: in logarithm form

**Table 3 Means Standard Deviations and Correlations**

		Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Owner	0.0557	0.2294	1												
2	Inst. Emb.	-0.8623	0.4404	-0.1559	1											
3	Survival Crisis	-5.2025	7.0466	0.0122	-0.0557	1										
4	Adoption of Others <sup>a</sup>	0.0444	0.0369	-0.0012	-0.0437	0.075	1									
5	Leader Change	0.3805	0.4856	0.0077	-0.0248	0.0106	0.1199	1								
6	Slack	0.2181	1.0125	0.0408	-0.0943	0.0622	0.0369	0.0539	1							
7	Asset <sup>a</sup>	21.0767	0.9241	-0.1347	0.1888	0.2248	0.0083	-0.0125	-0.114	1						
8	Firm Age <sup>a</sup>	1.8145	0.6153	0.062	-0.3531	0.1816	0.1414	0.1061	0.0607	0.0624	1					
9	TMT Age <sup>a</sup>	0.4168	0.4931	-0.0668	0.1464	0.0406	-0.0299	-0.0711	-0.0441	0.256	0.0069	1				
10	Leader Share <sup>a</sup>	-12.6356	3.4141	-0.0171	-0.053	-0.0342	-0.0466	-0.1536	-0.0495	-0.0056	0.0429	0.09	1			
11	Competition	0.4950	0.5000	0.0075	-0.0257	-0.0265	0.0583	0.0183	0.0196	0.0735	0.0814	-0.0242	-0.1098	1		
12	Location	0.5244	0.4994	-0.0106	0.0024	-0.027	0.0508	-0.0177	-0.012	0.1485	0.0423	0.0962	0.0558	-0.006	1	
13	Time <sup>a</sup>	1.3698	0.6270	-0.0177	0.0185	0.1734	0.2848	0.1194	0.0011	0.2617	0.3825	0.0153	-0.2391	0.1996	-0.0094	1

a: in logarithm form



Figure 1 Efficiency, Institutional and Resource Mechanism

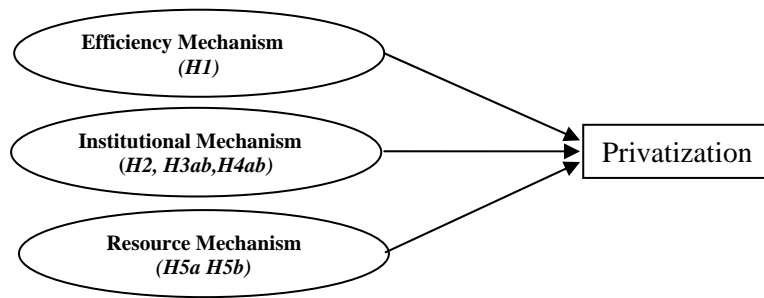


Figure 2 Hypothesis Relationships

