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Political constraints, organization design and performance measurement in China's state-owned enterprises

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Abstract

This study develops a theoretical model to test how political constraints on labor decisions mediate the effects of economic liberalization forces on aspects of organizational design such as delegation, performance measurement, and incentives in Chinese state-owned enterprises. Hypotheses tests using a large survey of divisional managers generally confirm the model: that the influence of three liberalization forces (industry level growth and foreign firm competition, joint venture experience and stock market listing) on organization design is mediated by political constraints. © 2005 Elsevier Ltd. All rights reserved.

Introduction

Since 1997, most state-owned enterprises (SOEs) in China have become markedly more independent as a result of a massive liberalization program, which has not only created greater autonomy for business expansion but has also introduced competitive pressure under which SOEs strive to grow or struggle to survive through significant improvements of productivity,

efficiency, innovation, and services. To achieve these ends, the development of a more “Western” micro-level organization design is now commonly viewed as the fundamental force that determines the successful restructuring of SOEs (Jefferson, Rawski, & Zheng, 1996; Qian, 1996; Shirley & Xu, 2001).¹ For instance, recent research indicates that the use of incentive schemes in China's SOEs enhances productivity (Qian, 2001; Xu, 2000;

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¹ The term ‘Western’ is used to reflect the economic prescriptions (efficiency rationale) that underlie the choice of the organizational design components (for example, delegation, performance measurement, and incentive compensation) in the accounting and economics literature (Milgrom & Roberts, 1995).

Zhuang & Xu, 1996). Lee (2001) reports increased delegation during the process of the financial restructuring of a large SOE. Other studies find that liberalization forces such as market competition (Firth, 1996), foreign joint venture experience (Firth, 1996; O'Connor, Chow, & Wu, 2004), and stock market listing (O'Connor et al., 2004) are associated with the level of adoption of various Western management accounting techniques, including performance measurement systems.

To date, however, there has been little systematic examination of how these organizational design components are constrained by political conditions, which tend to be an important feature of economies in transition, especially China (Qian, 1996). Recent studies highlight the prevalence of political constraints. For instance, Li (2000) provides evidence that tighter governmental control results in more unprofitable production and surplus employment. Xu, Zhu, and Lin (2002) find that political interference tends to dominate labor decisions, whereas other decisions are dominated by agency costs. According to Qian (1996, p. 429), “understanding this interaction between the effective control by managers over some decisions and the ultimate control by the Party and the government over other decisions is the key to understanding the problems with the past reform and the issues to be addressed in the future.” The question of how to break up the old vested interests in state-owned industry has been described as a “forbidden area” of reform, because it affects the government’s ability to regulate, monitor, or control employment and other resource allocation issues. “The contradictions in the situation are obvious to many Chinese enterprise managers and academic analysts, but there is only limited research on how to resolve them because of the issue’s great political sensitivity.” (Hassard, Sheehan, & Morris, 1999, p. 76).

This paper extends the literature on Chinese SOE reform by examining the mediating influence of political constraints on organizational design in China’s SOEs. Political constraints are defined in this paper as the degree to which governmental authorities and Communist Party representatives intervene, regulate, or control an SOE’s labor decisions (hiring, firing, and promotion). As these

political constraints are in play along with market liberalization forces (Li, 2000), it is likely that the effect of liberalization forces on the organizational design or decisions of SOEs is mediated by political constraints. For example, market competition has a positive direct effect on the adoption of Western management controls (e.g., Firth, 1996), but also an indirect effect because it is associated with higher growth industries, which were the first to experience the reduced political constraints (Chen, 2000) that can slow the adoption of Western management controls. The direct effect potentially provides a misleading impression of the influence of competition. We suggest that this possible mediating effect is important because, in a socialist market economy such as China, economic reforms take place under various political constraints, and accordingly SOEs need to cope with not only economic transformation and market liberalization but also political constraints and regulatory conditions.

We develop a theoretical model to test the mediating influence of political constraints on the associations between liberalization forces, and the use of three organizational design components (delegation, performance measurement, and incentives) within SOEs. Consistent with the recent China reform literature, we use agency theory to develop the separate links in the model.² We use the firm as the unit of analysis and focus on the organizational design components at the divisional manager level such as profit-center managers (in various divisions, branches, or units) and cost-center managers (in various departments), as the deci-

² Researchers suggest that collective cultural values challenge the self-interest assumption that underlies agency theory and the design of many accounting control systems (e.g., Howell & Sakurai, 1992). However, there is growing evidence of the prevalence of self-interested behavior in China. For example, Chen (1995) finds that mainland Chinese employees in reform-oriented companies actually favor more merit-based pay. In another study involving US, Japanese, and Chinese subjects, Bailey, Chen, and Dou (1997) find that the Chinese “consistently departed from prediction,” hypothesizing the effect of collectivism on their preference for performance feedback. Their results led them to conclude that the Chinese may “depart from collectivist values in ways that resemble Americans more than Japanese” (pp. 605, 620).

sions and actions of managers at this level are likely to have a far greater effect on the enterprise than those of lower level managers (O'Connor et al., 2004). We use an analytical framework that was developed by Jensen and Meckling (1992), Milgrom and Roberts (1992, 1995), and Brickley, Smith, and Zimmerman (1995, 2001), in which the delegation of decision-making authority (delegation), objective performance measures, and incentive compensation within an organization's hierarchy jointly constitute the organization's design. The consideration of the interdependencies among these components adds another dimension to our understanding of organizational design and is consistent with recent studies in the management (Mendelson, 2000), economics (Delmastro, 2002) and accounting (Nagar, 2002) literatures. For example, Nagar (2002) finds that understanding the influence of firm growth on the strength of incentives is enhanced when the interdependency of delegation and incentives is taken into consideration.

The remainder of the paper is organized as follows. The next section develops the three hypotheses that comprise the model. The research methods and measurement of the variables are then explained, followed by the results. The paper concludes with a discussion of the findings.

Theory and hypotheses

Theoretical model

Liberalization and political constraints

One of the main thrusts of recent SOE reforms has been to encourage SOEs in growth industries in certain locations to seek alternative sources of capital to decrease their reliance on the state. The major liberalization forces that pertain to Chinese SOEs include market competition (industry growth, foreign competition), export market sales, joint venture experience, and stock exchange listing (Huang & Duncan, 1997; Lin, 2000; Lin, Cai, & Li, 1998; Xu, 2000). In the transition from central planning to a market economy, however, SOE operations are complicated because liberalization forces and state influences coexist and jointly con-

strain SOE management and organizational change (Child, 1994). In particular, opaque, uncertain, and unpredictable regulatory frameworks that are formed by both central and local governments heighten the complexity of organizing production and marketing, and often nullify the strategic planning of SOEs (Lin et al., 1998).

One of the prime channels in which the State controls SOEs is in the area labor decision making. Political constraints on labor decision making in SOEs take place through various policy regulations and government representatives (i.e., party secretaries, board members, or state-asset-management representatives). Such control is orchestrated via the power of Communist Party representatives to intervene in enterprise decision making, including the appointing, firing, and promotion of divisional managers (Hassard et al., 1999). Although previous SOE reforms adopted various restructuring policies, the fundamental principle of the so-called "Party controls personnel" policy remained unchallenged.

When personnel management systems, including authority regimes and performance evaluation structures, are infused with political considerations through government interference (e.g., imposing "caps" to reduce income disparity, or restricting the dismissal of redundant or unproductive employees), the benefits to be gained by adopting these components become restricted, and agency hazards within the SOE hierarchy become more serious. Such restrictions or hazards are what Shleifer and Vishney (1994) call the political costs that are associated with privatization and liberalization. The political costs model states that the effective restructuring or modernization of public enterprises is largely dependent on the extent to which employment control rights are transferred to management (from government) in the process of corporatization (Shleifer & Vishney, 1994, p. 1015). This is expected to directly affect the functionality of the organizational design and the effectiveness of its components (Pannier, 1996).

Organizational design components

Top management plays a major role in formulating organizational design, including decisions about how much decision authority to delegate

to divisional managers, and how to structure the performance evaluation and reward system so that qualified employees are attracted, retained, and motivated (Brickley et al., 2001).³ When delegated to managers in various profit or cost centers, decision rights—which are the rights to decide on and take action—can boost organizational adaptation and market responsiveness (Bushman, Indjejikian, & Penno, 2000). Knowledge transfer costs within an organization's hierarchy are lower when decision-making rights are moved to individuals who operate at organizational edges (Christie, Joye, & Watts, 2003).⁴

Firms also need to measure the behavior and efficiency of divisional managers with a mix of objective and subjective performance measures, and to reward them on this basis (Haveman, 1992; Jensen & Meckling, 1995). The greater use of objective performance measures, which is defined in this study as the relative weighting placed on objective measures in the objective/subjective performance measurement mix, means that the measurement is increasingly “free from personal bias” (Merchant, 1989, p. 26), which in turn reduces the potential gains from influencing activities as perceived by the agent (Prendergast, 1999).⁵ Objective performance measures also provide an important norm of expected performance, as high uncertainty in performance evaluation may otherwise inhibit the development of entrepreneurial attitudes and behavior among managers, thus enlarging agency costs (Baker, Gibbons, & Mur-

phy, 1994). Subjectivity also plays an important role in efficient performance monitoring because it can reduce gaming activities (Gibbs, Merchant, Van der Stede, & Vargus, 2004; Ittner, Larcker, & Meyer, 2003). However, in the China reform context subjectivity in performance evaluation has traditionally been used to preserve the status quo in terms of centralized power in the SOE rather than as an efficiency enhancing mechanism (Byrd & Tidrick, 1991).

Finally, agency theory prescribes the use of incentive compensation that is based on the performance of agents, because the resultant information asymmetries make their behavior costly or difficult to observe (Eisenhardt, 1989; Gerhart & Milkovich, 1990). The use of incentives is defined in this study as the size of monetary rewards that distinguish between levels of manager performance. These three components are interrelated and inseparable in such a manner that performance monitoring is a foundation on which reward and authority allocations are built and appraised, while decision rights and incentives accentuate each other in a competitive yet volatile environment (Nagar, 2002; Tosi, Katz, & Gomez-Mejia, 1997). Consistent with the organizational design framework developed by Jensen and Meckling (1992) and others (Brickley et al., 2001, Chapter 11; Milgrom & Roberts, 1992, Chapters 4 & 12) we develop hypotheses for the joint choice of components that comprise the organizational design.⁶ Each of the links in the model is developed in turn (see Fig. 1).

³ This is not an exhaustive view of controls. Controls also communicate strategy and develop capabilities in the organization (Simons, 1995).

⁴ Jensen (1998) defines knowledge transfer costs along a specific (general) knowledge continuum that measures high (low) transfer costs. We refer to knowledge transfer costs in terms of this continuum. See Christie et al. (2003) for an extensive review of delegation and knowledge transfer costs.

⁵ The accounting literature identifies several economic attributes of performance measures (informativeness, sensitivity, noise, and objectivity: Moers, 2005). The objectivity attribute of performance measurement is particularly critical in the Chinese transitional economy (and therefore this study) because performance measurement systems at the divisional and lower management levels have traditionally been highly subjective (dependent on superior personal assessment) (Byrd & Tidrick, 1991).

⁶ There is some debate over whether these components are actually chosen simultaneously in organizations, with regard to each other, or are chosen in some kind of simplifying unidirectional order (cf. Luft & Shields, 2003; Nagar, 2002). That question is not examined in this study. In addition, by taking an organizational level of analysis, we focus on variations in the use of organizational design components across SOEs that face different levels of exogenous influences. Our survey design restricted us from effectively examining the influences of several potential endogenous variables such as strategy, task uncertainty, and human asset specificity (Fisher & Govindarajan, 1992).

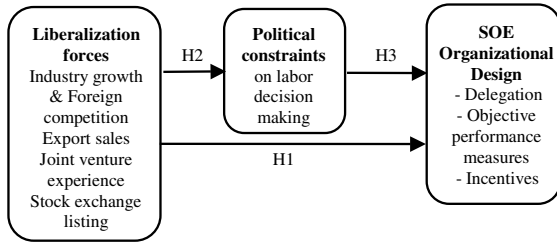


Fig. 1. Theoretical model.

Use of organizational design components in Chinese enterprises

Liberalization forces and organizational design components

Previous studies have developed general expectations for the SOE adoption of management accounting/controls and have examined the influence of liberalization forces on only some of the organizational design components in this study (e.g., Firth, 1996; O'Connor et al., 2004).⁷ To examine the mediating effect of political constraints, we first need to propose the main effect of liberalization forces on the organizational design components. We develop hypotheses for industry level, market openness, and market function-related liberalization forces.

When an industry is freed from government control as a result of liberalization, rapid market growth usually ensues. However, this growth may not last very long because liberalization also encourages local and foreign competition (Perkins, 1994). Following agency logic, SOEs in faster growing industries that have higher levels of foreign competition, are likely to depend more on the knowledge and experience of divisional managers and thus face higher knowledge transfer costs (Jensen, 1998). The delegation of decision authority to divisional sales managers enables them to effectively use their information advantage

to quickly respond to the environment (Baker et al., 1994). There is also greater pressure on senior management to make accurate judgments about manager performance with respect to quality, delivery and budget targets. Li (1997, p. 1101) notes that market competition has “generated considerable pressure to improve both cost and quality”, which in turn increases the need for more extensive controls such as performance measurement systems.

Pressure to adopt more objective performance measurement and performance-based incentive systems to retain and attract quality managers is more likely in faster growing industries that have higher concentrations of foreign invested enterprises (i.e. joint venture or wholly-owned subsidiaries). In such industries, SOEs could suffer from the loss of managers to higher paying competitors; as a result, “some experts have proposed raising manager’s salaries based on annual performance reviews.” (Zhongguo, 1997, p. 1). Foreign invested enterprises typically attract the best Chinese graduates and have developed the leading examples of modern managers in China (Branine, 1996, p. 37).

H1.1: There will be a positive relationship between the strength of industry-level industrial growth and foreign competition and the use of delegation (H1.1a), the relative use of objective performance measures (H1.1b), and the level of incentives (H1.1c).

At the firm level market openness-related liberalization forces (joint venture partnering and related export opportunities) provide SOEs with financial incentives (access to foreign capital) and operational privileges (e.g., priority in accessing innovative technology from the foreign partner, including Western management techniques) that are likely to spur the adoption of a more Western organizational design. As joint ventures also provide access to export markets, SOEs are able to gain access to further capital in terms of refunds of value added tax and the retention of foreign exchange earnings. These institutional incentives propel SOEs to allocate important resources to control the delivery and quality of products, which in turn increases the scope for the use of delegation, performance measures, and incentives to plan

⁷ For example, O'Connor et al.’s (2004) construct comprises five dimensions, only two of which (approval procedures and performance targets) match the dimensions in this study (delegation and objective performance measures). They find that these dimensions are significantly associated with only one type of liberalization force (joint venture experience).

and control such practices. For example, greater delegation can help in more timely responses to the quality and on-time delivery demands of export customers. Similarly, motivating divisional managers, especially those in product divisions, to export more is a prerequisite measure, which may make it necessary for SOE executives to link incentives with divisional managers' export performance, to ensure that the corporate priority in export is adequately materialized.

In addition to providing access to export markets, joint ventures provide operational privileges through the secondment of staff and expatriate training, which enables SOEs to learn perceived best practices to take advantage of such export opportunities (Branine, 1996; Firth, 1996). Joint ventures provide access to Western management control systems that would normally be expensive to introduce. In addition, they provide the training and support that ensures the successful implementation of such systems. This, in turn, increases the likelihood that joint venture partnering SOEs have a greater capability to delegate decisions, and that they have a greater range of performance measures at their disposal to use in evaluating and rewarding employees.

Goodall and Warner (1999, pp. 25–26) note that foreign-Chinese JVs have the potential to provide the seeds of global bargaining in three potentially key areas of human resource management: employment contracts, reward systems, and welfare/social insurance. Firth (1996) and O'Connor et al. (2004) find that SOEs with greater foreign joint venture experience tend to have higher levels of use of Western management controls (e.g. budgeting and performance targets) than do their non-joint venture counterparts. Firth (1996) also finds that SOEs with greater export sales tend to have higher levels of use of Western management controls than their non-export counterparts. These controls include the use of budget setting, which, in the transitional economy setting, is likely to increase the degree of objectivity in the performance measurement.

H1.2: There will be a positive relationship between export market sales and joint venture experience

and the use of organizational design components in terms of delegation (H1.2a), the relative use of objective performance measures (H1.2b), and the level of incentives (H1.2c).

An important market function-related liberalization force is allowing SOEs to list on stock exchanges (Li, 2000). The shares of over 1000 firms are listed and exchanged in China's stock market, with a market capitalization of over 2000 billion Yuan (China Securities Regulatory Commission, 2001). In addition, the central government now allows private companies to acquire a greater number of poorly managed listed SOEs, which has lowered the average government shareholding to 30% (Cheng, 2001). Stock market listings pressure SOEs to adopt more advanced management systems, such as performance measurement systems, to enhance organizational transparency, efficiency, and productivity (Cheng, 2001; Megginson & Netter, 2001; Pannier, 1996). O'Connor et al. (2004) found a positive relation between the use of management accounting/controls and stock exchange listing. Because most SOEs that are listed on China's exchanges have decentralized organizational structures, divisional managers in various profit or cost centers are real contributors who are responsible for the entire company's accounting performance (e.g., return on investment, earnings per share, and return on assets) and marketing performance (e.g., sales growth, market share, and asset turnover). These conditions increase the opportunity to use more objective measures and tie manager rewards to performance outcomes (Keating, 1997; Lambert & Larcker, 1987). In light of the above discussion, we hypothesize:

H1.3: There will be a positive relationship between stock market listing and the use of organizational design components in terms of delegation (H1.3a), the relative use of objective performance measures (H1.3b), and the level of incentives (H1.3c).

Liberalization forces and political constraints

The level of political constraints varies according to several factors, such as size, industry competition and growth, export, foreign partnering

opportunities and stock exchange listing. Apart from firm size, the vigor of political constraints over different SOEs is also likely to vary according to competition, growth, and the extent of export and foreign partnering opportunities (Lin et al., 1998).⁸ Firms in different industries and regions are subject to idiosyncratic treatment by governmental policies on human resource management. For instance, Chen (2000) argues that in some industries with less growth, export, and employment opportunities, the government has a greater influence over human resources, thereby constraining the adoption of more efficient forms of enterprise. SOEs in coastal cities have greater export and foreign partnering opportunities, thereby reducing SOE financial reliance on the state. Finally, by way of dilution of ownership, the government has less influence on publicly listed SOEs. For example, in a study of China's publicly listed firms, Wang (2003) reports a significant positive relationship between the level of state ownership and the degree of government intervention.

These influences, however, are not independent of each other. For example, during the 1990s period of transition, the faster growing industries were first opened up to foreign direct investment, and were thus subject to higher market competition than their lower growth counterparts (Chen, 2000). Hence, both industry growth (directly) and market competition (indirectly) influence the level of political constraints. Based on these factors, we hypothesize:

H2: There will be a negative relationship between the strength of liberalization forces (industrial growth, foreign competition, export market sales, joint venture experience, and stock market listing) and the level of political constraints.

Political constraints and organizational design components

Direct interference in the greater use of organizational design components by resident Party secretaries is generally profound because the overriding job of these secretaries is the management of SOE personnel. First, when Party representatives have greater control over personnel, the selection of divisional managers may be made on political grounds and not profit grounds. This effectively reduces the benefits of (and hence the use of) delegation to managers who are supposed take greater responsibility for front-line decisions in the context of increasing liberalization. The resulting centralization of decisions, although considered to be as efficient in some contexts, is more likely to come at the cost of organizational efficiency. According to Qian (2001), with the Party secretary acting as a "super owner" for the maintenance of social stability, corporate governance that promotes organizational efficiency is hard to establish.

Second, political constraints decrease the intention of SOE executives to sharpen managerial discretion and improve organizational efficiency through the use of objective performance measures and incentive systems (Branine, 1996; Peng & Heath, 1996).⁹ Party bureaucrats generally lack the ability and the incentives to make decisions about managerial selection and compensation according to business criteria because they are mainly politically motivated (Huang & Duncan, 1997; Jefferson & Rawski, 1994). Therefore, penalties for poorly performing managers may be restricted on the basis of maintaining a stable workplace under the guise of gradual reform. This, in turn, reduces the visibility and credibility of objective performance measures and incentives, thus curtailing their adoption or limiting their effectiveness (Shirley & Xu, 1998).

⁸ We included size (number of employees in the SOE) as a control variable in the analysis because it is positively associated with both agency and political costs and has been an important criterion in the SOE reforms (Goodall & Warner, 1999; O'Connor et al., 2004).

⁹ Political constraints also have the potential to decrease agency costs through the monitoring that is provided by the government representative. We argue, however, that this substitution effect (government monitoring of organizational design components) is a less efficient option due to the dual roles (political and economic) of the government. That question was not directly tested in this study.

These expectations are partly supported by existing evidence. For example, while Li (1997) finds that the increased use of incentives is related to increases in marginal and total factor productivity, Shirley and Xu (1998) do not, and attribute the failure of contracts to political constraints (e.g. the inability of the government to follow through on promised actions and the inefficient monitoring of contracts). Xu et al. (2002) find that political constraints tend to dominate labor decisions, while other decisions are dominated by agency costs. Thus, although political constraints appear to have a direct influence on delegation, following agency logic one can expect that the supporting control components (objective performance measures and incentives) will be affected, albeit indirectly. We state the hypotheses in terms of the general expectation about the association between political constraints and organizational design components.

H3: There will be a negative relationship between the level of political constraints and the use of delegation (H3a), the relative use of objective performance measures (H3b), and the level of incentives (H3c).

Research methods

Sample and data collection

We collected survey data from 502 divisional level managers in 502 SOEs. The respondents represented a range of functions such as accountancy (identified $n = 68$), administration (92), human resources management (30), production (88), sales and marketing (92), and research and development (36). Access to the managers was obtained through a list of executive MBA alumni who worked in SOEs that operated in two Chinese provinces (Hubei and Guangdong). The survey was distributed in 1999 to four separate MBA groups across two Mainland Chinese universities, and completed in class. While it was possible that more than one manager could come from one SOE, this case is highly unlikely for the following reasons. First,

the respondents indicated over 20 specific industries, and that no two SOEs from the same industry were indicated to have the same size or the same age. Second, based on discussions with the MBA programme leaders, the selection process is competitive and individual and the managers are not sponsored by the SOEs. Moreover, there are over 10,000 SOEs in the vicinity of the two universities where the MBA programmes are taught.

We considered issues that were associated with the reliability and validity of responses from MBA students when designing the study. First, MBA students might only represent less traditional SOEs, such as those further down the privatization path, and not average SOEs. Second, MBA students might think differently, and are thus likely to be a concern for studies that seek to examine individual level phenomena such as cognitive characteristics. For example, Priem and Rosenstein (2000, p. 517) contrast the 'cause maps' of MBA students with those of CEOs without such education and find that MBA respondents exhibit much stronger contingent thinking. We balanced these issues against the difficulty of obtaining primary data on Chinese SOEs and the benefits of exploring a relevant research question, given the limited large-scale surveys on SOE management practices in the China reform literature.

We also considered the level of analysis that was required in our study, and took steps to test the validity of the responses. First, we focused the analysis at the organization level rather than the individual level. For example, we asked the respondents to assess the level of particular controls in place in their firm, rather than asking for their preferences or their level of personal job satisfaction. Second, we took two steps to test the validity of responses by comparison with industry characteristics (see the results section). The respondents were paid an incentive (100 Yuan) to complete the survey. This was necessary given the survey length (6 pages) and the greater sense of manager time urgency.

Measuring instrument

A summary of the survey measures is presented in Table 1. The survey instrument comprised sev-

Table 1
Confirmatory factor analysis—variables used in the model ($n = 502$)

| Factor | | Factor score |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1. Size | | |
| | About how many full time employees does your firm have? | 0.774 |
| 2. Liberalization forces—industry level | | |
| GWH | Industry—average sales growth (1996–1998) | 0.929 |
| FCMP | Industry—percentage of foreign firms | 0.915 |
| 3. Liberalization forces—firm level | | |
| EXPORT | What percentage of your firm's output is exported out of the country? | 0.486 |
| JV | Does your firm have a joint venture with a foreign enterprise? Yes (1) No (0) | 0.528 |
| STOK | Is your firm listed on stock exchange? Yes (1) No (0) | 0.688 |
| 4. Political constraints | | |
| To what extent does each of the following parties (people) affect the human resources decisions (hiring, firing, and promotion) of cost or profit center managers in your firm? The response scale ranged from 1 (not at all) to 7 (a very high extent). | | |
| PC1 | Government agency/ministry responsible for your industry | 0.648 |
| PC2 | Communist Party representative | 0.847 |
| What is the extent to which authority is given to the Communist Party representative from the government ministry to make the following decisions for your firm? The response scale ranged from 1 (not at all) to 7 (a very high extent). | | |
| PC3 | The promotion of cost or profit center managers | 0.931 |
| PC4 | The hiring of cost or profit center managers | 0.939 |
| PC5 | The firing of cost or profit center managers | 0.915 |
| 5. Delegation | | |
| To what extent is authority delegated to the cost/profit center managers from the general manager (or senior managers) to make the following decisions for the firm? A 5 item response scale ranged from 0 (not at all) to 5 (a very large extent) | | |
| DEC1 | Development of new products and projects | 0.463 |
| DEC2 | The hiring and firing of personnel | 0.607 |
| DEC3 | Sourcing of inputs (materials and parts, etc.) | 0.692 |
| DEC4 | Setting the budget for each function or division | 0.783 |
| DEC5 | Spending items in the budget for each function or division | 0.802 |
| DEC6 | Spending items outside the budget for each function or division | 0.635 |
| 6. Objective performance measures | | |
| What is the relative weight given to (a list of four) objective criteria or (a list of four) subjective criteria in evaluating the performance of cost or profit center managers? A 5 item response scale ranged from "100%Obj" (Objective measures are the most important) to "100% Subj" (Subjective measures are the most important) in 25% increments. The coding for analysis ranged from 0% to 100% objective measures | | |
| OBJ1 | Increasing their responsibilities | 0.674 |
| OBJ2 | Increasing their variable bonus salary—based on <u>individual</u> performance | 0.804 |
| OBJ3 | Increasing their variable bonus salary—based on <u>cost/profit center</u> performance | 0.783 |
| OBJ4 | Increasing their variable bonus salary—based on <u>overall firm</u> performance | 0.713 |
| OBJ5 | Determining the new contract terms (or non-renewal) at the end of the current contract. | 0.676 |
| 7. Incentives | | |
| Merit-based monetary incentives | | |
| A 5 item response scale ranged from 0 (not at all) to 5 (very high extent) | | |
| REW1 | Rewards are tied to an accounting earning measures (e.g. sales revenue, return on equity, operating earnings, net income before tax) | 0.831 |
| REW2 | Rewards are tied to quantitative measures (e.g. production output, production costs, production quality targets, sales growth targets) | 0.838 |

(continued on next page)

Table 1 (continued)

| Factor | | Factor score |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| REW3 | The extent to which compensation contracts clearly specify how compensation is related to manager performance relative to their department's budget | 0.725 |
| REW4 | What is the level of earnings of the (a) highest 10% and, (b) lowest 10% performing managers? A 6 item response scale for each question ranged from: \$ Yuan <= 1000, 1001–2500, 2501–4000, 4001–6000, 6001–10000, >10000. The gap between these levels of earnings was divided by the lowest performing managers to obtain a % score | 0.833 |

eral categorical and descriptive questions in addition to nine parts with non-categorical responses that were anchored on 5 and 7 point Likert scales. Several issues relating to the survey design were considered. First, the measurement of the constructs in the survey was based upon those of several articles in the management (Killing, 1983) and management accounting literature (Baiman, Larcker, & Rajan, 1995; Baker, Jensen, & Murphy, 1988, 1994; Shields & Young, 1993). Based on a previous survey of Chinese SOEs (Firth, 1996) and actual site visits, we expanded the content of the survey to include political constraints and liberalization forces.¹⁰

Second, it was important to design the questions to reflect the China context. Initially, meetings were conducted with a mainland Chinese professor and a Vice President of Finance from a large private company in Shenzhen (1998), after which numerous phone calls and e-mails were exchanged. This communication enabled us to agree on several constructs that were considered relevant to the pace of human resource management reform in Chinese SOEs, such as items that comprised political constraints. We were also able to agree on the influence of several liberalization forces that had already been discussed in the literature (see Firth, 1996). Another issue was ensuring that the salary range which we used to obtain responses about the level of base and bonus pay equated with the range of SOE salaries in the two locations.

¹⁰ As part of an earlier project, one of the authors conducted case studies of the use of management control mechanisms in four SOEs in Shanghai. The case studies involved half-day visits to each SOE in December 1997.

Prior experience in collecting data in China also aided the design of the scales. For example, based on past survey research in China, the researchers found that it was important to expressly label each anchor of the items that required a response on a Likert scale. Many versions of the survey were produced based on three meetings between the investigators in April, May, and June 1999. This refinement process included several translations from English into Chinese and the subsequent back translation of several variables and items.¹¹ To ensure internal reliability, a bilingual Chinese research professor translated the final version of the survey into Mandarin. Back-translation, changes, and corrections were made to this translation by another Chinese professor.

Finally, we considered common response bias issues. As with any attempt to collect and analyze data using a survey instrument the question of assessment and self-reporting arose (Young, 2000). We addressed this issue in several ways. For example, we used different response scales for the different sets of items that pertained to each construct. We also reversed the items that pertained to objective performance measures. We also used archival data to measure industry liberalization forces (as explained in the next part).

Liberalization forces and political constraints

Following the recent reform literature we identified four main variables as comprising liberalization forces. At the industry level the latent factor

¹¹ The English and Chinese versions of the questionnaire are available from the authors upon request.

Table 2
Descriptive statistics of variable survey items^a

| | Alpha | Mean | SD | Max | Min |
|--------------------------------------------------------|--------------------|---------|--------|---------|-------|
| <i>Exogenous factors</i> | | | | | |
| <i>Liberalization forces</i> | | | | | |
| Industry—average sales growth (1996–1998) ^b | | 15.43% | 11.79% | 55% | –20% |
| Industry—percentage of foreign firms | | 14.14% | 9.77% | 33% | 2% |
| Export sales—percentage of sales export | | 17.82% | 38.32% | 100% | 0% |
| Joint venture experience | | 15.94% | 36.64% | 100% | 0% |
| Stock exchange listing ^c | | 22.51% | 41.81% | 100% | 0% |
| Political constraints | 0.921 | 12.33 | 7.50 | 25.00 | 0.00 |
| <i>Organizational design</i> | | | | | |
| Delegation | 0.740 | 17.68 | 4.85 | 30.00 | 0.00 |
| Objective performance measures | 0.799 | 268.94% | 84.99% | 500% | 0.00% |
| Incentives | 0.782 | 8.76 | 2.78 | 15.00 | 0.00 |
| Incentives—% Gap b/w top and bottom 10% | 0.100 ^d | 52.91% | 68.20% | 350.00% | 0.00% |
| <i>Control variable</i> | | | | | |
| Size—full time employees | | 3020 | 9395 | 80000 | 400 |

^a All within-organization measures relate to the divisional cost/profit center manager level; $n = 502$.

^b Over 20 industries were represented in the sample. The largest representations were: Electronics and Communication Equipment (88), Non-metal Mineral Products (77), Transportation Equipment Manufacturing (55), Construction (38), Chemical Raw Material and Chemical Products (31), Special Equipment Manufacturing (14), Textiles (9), Electricity, Steam, Hot Water Production and Supplies (8), Trading (7), Medicine Manufacturing (6), Manufacturing of Foods (4), Electrical Machinery and Equipment (2), Tobacco Processing, Instruments, Meters, Educational and Office Equipment, Educational and Sports Products Manufacturing. Average sales growth for the three years (1996–1998), and the number of foreign firms in each industry was taken from the *China Markets Yearbook (2000)*. 72.87% of the sample was located in Guangdong (considered as a special economic zone), while 27.13% was located in Hubei (considered as an inland province).

^c Indicates that a dichotomous response (for example, yes (1) or no (0)) was obtained for this variable.

^d Pearson correlation between salary gap between top and bottom 10% performing managers and incentives scale (REW1 – REW3) ($p = 0.026$).

of industry liberalization forces was measured with two observable measures: industry sales growth and foreign firm concentration. *Industry sales growth* and the extent of *foreign firm concentration* were taken from the *China Markets Yearbook (2000)*, which consists of 550 industrial codes (at the 2 digit level). Twenty different industry codes were represented in our data (see the footnote in Table 2). For each industry, the market growth for the three years to 1998 was averaged. For *foreign firm concentration*, the percentage of foreign firms in each industry was computed. We used this measure to proxy for the extent of foreign competition in a particular industry.

We also measured three main liberalization forces at the firm level: percentage of sales exported, foreign joint venture experience and stock exchange listing. The percentage of *sales exported* was measured by asking respondents what per-

centage of their firm's output was exported out of the country. Foreign *joint venture experience* was measured by asking respondents whether their firm was in a joint venture with a foreign firm. A dummy variable of 1 was allocated to those SOEs in a joint venture and 0 to those that were not.¹²

¹² As foreign joint venture experience and sales export opportunities are partly a function of location and the sample used in this study was gained from two different locations (Hubei and Guangzhou) we included location as a control variable in this study. A dummy variable of 1 was allocated to those SOEs in Guangdong, which is a coastal province and special economic zone, and a zero was allocated to those SOEs located in Hubei, which is an inland province. When location was entered into the model as an independent variable of the four liberalization forces and political constraints, the sign and significance of the parameter estimates for all of the hypothesized paths remained unchanged.

Stock market listing comprised listing on the Shanghai or Shenzhen Stock Exchanges, and we used a dummy variable with the value of 1 if the SOE was listed, and 0 if not.

Political constraints were measured with five observable measures that related to human resource decision-making authority. There were five items in response to two questions. The first question asked about the extent to which the government agency/ministry that was responsible for the industry (item 1) and the Communist Party representative (item 2) affected the human resource decisions (hiring, firing, and promotion) of cost or profit center managers in the firm. The second question asked about the extent of authority that was given to the representative from the government ministry to make the following decisions for the firm: the hiring (item 3), promotion (item 4), and firing (item 5) of cost or profit center managers. The responses were anchored on a seven point Likert scale that ranged from 1 (not at all) to 7 (a very high extent). The Cronbach (1951) alpha for the items was 0.92.

Size (number of employees in the SOE) was included as a control variable in the analysis since it is positively associated with both agency and political costs and has been an important criterion in the SOE reforms, as evidenced by government intervention in larger SOEs, which carry a heavier burden in the form of social-welfare costs (Goodall & Warner, 1999; Lee, 2001; Lin et al., 1998). The natural logarithm of the number of employees was used in the analysis.

Organizational design components

Three organizational design components were examined in this study (delegation, objective performance measures, and incentives). We adapted the Killing (1983) delegation measure, and asked the respondents about the extent to which authority was delegated by the senior management (e.g., the general manager or the board of directors) to cost or profit center managers in decision-making areas that were related to the development of new products and projects, the sourcing of inputs, the hiring and firing of personnel, budget setting, and budget and non-budget spending. The six items were extracted from nine items in the survey

on the basis of face validity (budget responsibility orientation) and confirmatory factor analysis (see the next section). A 5 item response scale ranged from 0 (not at all) to 5 (a very large extent). The Cronbach (1951) alpha for the items was 0.74.

As a check of discriminant validity it was important to distinguish between political constraints and delegation variables because items that relate to hiring and firing appear in both variables. However, the context of each is different in terms of: (i) who has the power—for political constraints it is the extent to which the Party member affects hiring, promotion, and firing decisions, and for delegation it is the extent to which authority is delegated to profit/cost centre managers; and (ii) the scope of each variable—delegation has a broader scope in that it seeks the level of delegation on a greater range of factors than human resources management. The low negative correlation between these two measures (−0.219, see Table 3) also provides support for the discriminant validity. As will be shown later, all of the constructs loaded onto separate factors.

We measured the extent to which objective performance measures were used by asking about the relative weight (between 0% and 100%) that was given to objective or subjective criteria in evaluating the performance of cost or profit center managers for the purposes of: (a) increasing their responsibilities; (b) increasing their variable bonus salary based on individual performance; (c) increasing their variable bonus salary based on cost/profit center performance; (d) increasing their variable bonus salary based on overall firm performance; and (e) determining new contract terms (or non-renewal) at the end of the current contract. To make this clear to the respondents, we gave them a list of objective criteria (four budget and accounting items taken from the Hopwood (1972) budget emphasis measure) and subjective criteria (four qualitative items taken from the same work). The response was sought on a five point Likert scale that ranged in 25% increments from “100% Obj” (objective measures are the most important) to “100% Subj” (subjective measures are the most important). Transformations of the scale were made to indicate the level of objective measures, thus producing a range from 0% to 100% objective

Table 3
Construct and error matrixes

| | Pearson correlations | | | | | | | |
|---------------------------------------------|------------------------------------|--------------------------------|--------------|--------------------------|------------------------|------------|--------------------------------|------------|
| | Political constraints ^a | Industry liberalization forces | Export sales | Joint venture experience | Stock exchange listing | Delegation | Objective performance measures | Incentives |
| Industry liberalization forces ^a | –0.097** | | | | | | | |
| Export sales | –0.008 | 0.137** | | | | | | |
| Joint venture experience | –0.261** | –0.024 | 0.049 | | | | | |
| Stock exchange listing | –0.138** | 0.104** | 0.231** | 0.181** | | | | |
| Delegation ^a | –0.229** | 0.061 | 0.254** | 0.135** | 0.119* | | | |
| Objective performance measures ^a | –0.203** | 0.072 | –0.012 | 0.172** | 0.074 | 0.256** | | |
| Incentives ^a | –0.030 | 0.158** | 0.236** | –0.016 | 0.037 | 0.582** | 0.499** | |
| Size | 0.201** | –0.067* | 0.088 | 0.083 | 0.122* | 0.053 | 0.046 | –0.204* |

* $p < 0.05$; ** $p < 0.01$.

^a Variables represent factor construct scores from the seven factor model; $n = 502$.

measures for each of the five items. The Cronbach (1951) alpha for the five items was 0.80.¹³

The incentives measure comprised two components: the Shields and Young (1993) incentives instrument and the average total monthly income range for all cost or profit center managers. The Shields and Young (1993) instrument comprised three items: the extent to which compensation was related to managerial performance; the extent to which managers in the top 25% of performers were given larger rewards than those in the bottom 25%; and the extent to which financial rewards increased as actual performance exceeded budgeted performance. A five item response scale ranged from 0 (not at all) to 5 (very large extent). The Cronbach (1951) alpha for the three items was 0.78. For determining the average total monthly income range for all cost or profit center manag-

ers, we asked the respondents to indicate the income level for (a) the highest performing 10% of managers and (b) the lowest performing 10% of managers. A 6-item response scale ranged from Yuan ≤ 1000 , 1001–2500, 2501–4000, 4001–6000, and 6001–10,000 to $>10,000$. The difference in these two responses (2 sets of 6-item scales) was divided by the lowest performing 10% level of monthly income to obtain a percentage score. The descriptive statistics of the variables are included in Table 2.

Sample validity and reliability

The respondents had an average term of employment of 7 years. This suggests that they had adequate SOE knowledge with which to answer the survey questions. Because it is possible that managers' knowledge concerning political constraints and parts of organizational design may vary according to the division that they are in or the size of the SOE, we measured their degree of confidence in their answers to items that comprise four variables (political constraints, delegation, objective performance measures and incentives) using a 5 point Likert scale (response scale: 1 = very small extent to 5 = very large extent). The average response across the four vari-

¹³ As a further indication of the reliability of the measure, we cited the actual range in response across the five items. With the theoretical range being 100% (i.e., an indication of subjective (i.e., 0%) for one item and an indication of objective (i.e., 100%) for another item) there would be a concern if a significant (5%) portion of cases had a range that was more than 50%. Out of 502 cases, in 21 (4.2%) there was a difference of 75%, and in one (0.2%) there was a difference of 100%.

ables ranged from 3.233 to 3.750. While we found no significant difference in the average level of respondent confidence across various samples that were split according to the five main divisions and between large and small SOEs, the average level of respondent confidence was the lowest for the measure of incentives, therefore related findings must be interpreted with some caution.

The SOE sample had an average size of 3020 employees, exported an average 18% of sales, and exhibited an average 15% sales growth. About 16% of the SOEs were a partner in a foreign-Chinese joint venture and 23% of the SOEs were listed on the stock exchange. The average monthly manager salary ranged from 250 to 11,000 Yuan, with a mean of 3395 Yuan. This is comparable to the lower monthly salary of 1500 Yuan that Goodall and Warner (1999) report for the workers in 38 SOEs. Comparisons with industry statistics were undertaken to provide further insight into the validity of some SOE characteristics. For example, we correlated the sales growth of the SOE with the sales growth characteristics of the SOE's industry and obtained a low but significant Pearson correlation of 0.12 ($p < 0.01$), which is consistent with the expectation that SOEs in higher growth industries will exhibit, on average, higher levels of sales growth.

We also measured the percentage level of bonus-based salary (bonus pay/base pay * 100) by asking respondents to indicate the average level of bonus using the same 7 item scale as base pay (ranging from less than 500 Yuan to more than 10,000 Yuan). The Pearson correlation between this measure and the measure of the average total monthly income range percentage was 0.138 ($p < 0.05$). Substituting this measure for the bonus measure in the model resulted in no difference in the significance of the parameter estimates.

Structural equation model

A structural equation modeling (SEM) approach was used to analyze the survey and archival data using the SPSSx AMOS 4.0 statistical package. The following equations were simultaneously tested to estimate the parameters for the initial (unconstrained path) model.

$$\begin{aligned} \text{DEL} = & B_0 + B_1 \text{OBJ} + B_2 \text{INC} + B_3 \text{COMP} \\ & + B_4 \text{EXP} + B_5 \text{JV} + B_6 \text{STOK} \\ & + B_7 \text{PC} + B_8 \text{SIZE} + \varepsilon \end{aligned} \quad (1)$$

$$\begin{aligned} \text{OBJ} = & B_0 + B_1 \text{DEL} + B_2 \text{INC} + B_3 \text{COMP} \\ & + \beta_4 \text{EXP} + B_5 \text{JV} + B_6 \text{STOK} \\ & + B_7 \text{PC} + B_8 \text{SIZE} + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} \text{INC} = & B_0 + B_1 \text{DEL} + B_2 \text{OBJ} + B_3 \text{COMP} \\ & + \beta_4 \text{EXP} + B_5 \text{JV} + B_6 \text{STOK} \\ & + B_7 \text{PC} + B_8 \text{SIZE} + \varepsilon \end{aligned} \quad (3)$$

$$\begin{aligned} \text{PC} = & B_0 + B_1 \text{COMP} + B_2 \text{EXP} + B_3 \text{JV} \\ & + B_4 \text{STOK} + B_5 \text{SIZE} + \varepsilon \end{aligned} \quad (4)$$

where

| | |
|------|--------------------------------------------------------------------|
| DEL | delegation |
| OBJ | objective performance measures |
| INC | incentive compensation |
| COMP | industry growth and competition |
| EXP | export sales |
| JV | joint venture experience (yes (1), no (0)) |
| STOK | listed on stock exchange (yes (1), no (0)) |
| PC | political constraints |
| SIZE | firm size (log of number of employees, used as a control variable) |

The SEM specifies the relationships between the unobserved constructs. Similar to a set of regression equations, the model is used to describe the associations between constructs. However, in contrast to regression models, the structural equation model links unobserved (latent), hypothetical constructs rather than concrete, empirical indicators. The model in this study comprised five latent variables (DEL, OBJ, INC, COMP, PC) and four observed variables (EXP, JV, STOK, SIZE) (see Fig. 2). The principal advantage of the SEM approach is that it goes beyond conventional linear models and accounts for measurement error, allows for simultaneous estimates of measurement and structural parameters, and hence provides diagnostic statistics/information for the model as a whole (Joreskog & Sorbom, 1979). Another advantage of SEM was the ability to model bi-directional

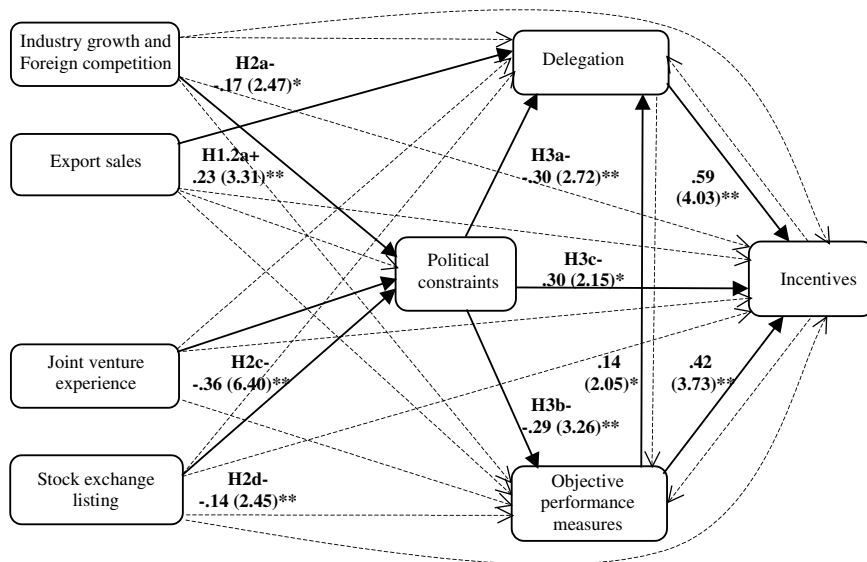


Fig. 2. Parameter estimates of the modified model. * $p < 0.05$; ** $p < 0.01$. The unconstrained path model includes all of the paths (dotted and solid). The solid lines form the modified model of best fit. Standardized coefficients (β) and p levels are displayed (two-tail test) for the significant paths. The parameter estimates of the size control variable (not shown) were significant for political constraints ($\beta = 0.23^{**}$) and incentives ($\beta = -0.38^{**}$). $\chi^2 = 395.894$ (261 d.f.), AGFI = 0.918, CFI = 0.878 and IFI = 0.885.

relationships between two or more constructs (see Byrne, 2001, p. 120), which is an assumption of the organizational design framework (Milgrom & Roberts, 1995). As some of our data were measured using ordinal scales (e.g., delegation and objective performance measures) we used the GLS estimation method. According to Golob (2001, p. 3), GLS estimation methods are useful for dealing with discrete choice variables and ordinal attitude scales (such as the Likert scale).¹⁴

Confirmatory factor analysis (CFA)

In building the proposed system of relationships, we began the analysis by examining only the measurement properties of the initial model. We conducted CFA to test the goodness-of-fit of the model that comprised size, liberalization forces at the industry (growth and foreign market compe-

titution) and firm (export sales, joint venture, stock exchange) level, political constraints, delegation, objective performance measures, and incentives (Bollen, 1989). The overall model fit could be assessed by the Chi-square test, and heuristically by a number of goodness-of-fit indices: the adjusted goodness-of-fit index (AGFI), the root mean square residual (RMSR), the incremental fit index (IFI) and comparative fit index (CFI) (Anderson & Gerbing, 1988; Bollen, 1989). The fit indices indicate the extent to which the associations between the unobserved endogenous and exogenous latent variables and their observed indicators in the hypothesized (measurement) model are significantly different from a random associations model. Values of greater than 0.80 provide an acceptable level of incremental fit (Carmines & Mclver, 1981).

We performed several checks to gauge the potential threat of multicollinearity in the data. First, we reviewed the correlations among the variables shown in Table 3. The correlation between the independent (dependent) variables with the greatest magnitude was .261 (.582), which is below the criterion of .80 for the level of correlation that indicates a serious multicollinearity problem (Ken-

¹⁴ There is debate in the literature about the appropriateness of using ordinal measures (including the use of dummy variables to represent different categories in a particular order) (Golob, 2001). For general discussions of GLS, see Browne (1984) and Muthén (1984).

ned, 1979). As a second check we ran the factor analysis with a varimax rotation and seven factors emerged that corresponded to the variables in the model. This, along with the significant fit indexes for the confirmatory factor analysis model indicated that multicollinearity was not a problem.

Table 1 shows the factor loadings for each of the seven constructs. Although the initial factor analysis resulted in seven factors (the three liberalization forces at the firm-level loaded onto the same factor), we expanded the model to consist of nine factors (five latent and four directly observed variables). This enabled us to test the hypotheses by examining the separate paths pertaining to each of the firm-level liberalization forces. The nine factor/variable model showed good levels of fit against the baseline models and against the benchmarks set in the literature (Bagozzi & Yi, 1988).¹⁵ The goodness-of-fit indexes were within tolerable ranges: (e.g. AGFI = 0.917, RMSR = 0.033, IFI = 0.890, CFI = 0.883). All of the factor loadings of the measurement instrument exceeded the 0.4 level that is commonly considered meaningful in factor analysis (Ford, MacCallum, & Tait, 1986). The bi-variate correlations of the factors/variable scores provide an initial indication of the relationships between the measured and latent variables (see Table 3).

Results

To test the hypotheses, we first assessed the model using a series of nested models beginning with the least constrained model—one that included all of the paths that were shown in Fig. 2.¹⁶ To do this, some of the paths in the model were constrained (i.e., set equal to 0), which pre-

vented them from subsequently being estimated. The sequence of nested models was determined by eliminating the least significant parameter (setting the path equal to 0). Following the procedure that Anderson and Gerbing (1988) suggested, we computed the Chi-square differences between each nested model and tested them for significance by taking into account the difference in the degrees of freedom. As a rule, if change in the Chi-square is not significant, the model with the constrained path is a better fit (Anderson & Gerbing, 1988). A significant change in the Chi-square indicates that the constrained path should not be removed. We continued this process until no further improvements could be made and the model was the most parsimonious. This analysis produced the following modified hypothesized model (shown with the solid lines in Fig. 2). The goodness-of-fit indexes (e.g. AGFI = 0.918, RMSR = 0.032, IFI = 0.885, CFI = 0.878) indicated that the modified model fitted the data very well.

The main-effect hypotheses (H1) proposed a positive and direct association between liberalization forces and each of the organizational design components. Only one (export sales and delegation) out of 12 possible associations was significant and positive (H1.2a, $\beta = 0.23$, $p = 0.001$). The remaining hypotheses (H2 and H3) predicted that the main influence of liberalization forces on organizational design would be indirect via political constraints. For these indirect relationships, the signs and significance levels of the parameter estimates provided support for five out of the six sub-hypotheses. Three of the four causal paths between liberalization forces and political constraints were negative and significant. These were industry growth and competition (H2a, $\beta = -0.17$, $p = 0.013$), joint venture experience (H2c, $\beta = -0.36$, $p = 0.000$) and stock exchange listing (H2d, $\beta = -0.14$, $p = 0.014$). Finally, hypotheses three predicted that political constraints would be negatively related to each of the organizational design components. In results not presented in Fig. 2, the path between size and political constraints was positive and significant ($\beta = 0.23$, $p = 0.000$), while the path between size and incentives was negative and significant ($\beta = -0.38$, $p = 0.001$). And when size was controlled, there remained sig-

¹⁵ We made several adjustments to the parameters in fitting the nine factor CFA model. We fixed the covariance in error terms for several items that had similar face validity and the same response scale. We fixed the error term for all items for political constraints and delegation. We applied the same constraint to two objective performance measure items (OBJ2 and OBJ3) and three incentives items (REW1, REW2 and REW3).

¹⁶ To control for size, the paths between size and political constraints and each of the organization design variables were included in all of the models.

nificant effects of political constraints on organization design components. While the negative paths that linked political constraints and delegation (H3a, $\beta = -0.30$, $p = 0.007$) and objective performance measures (H3b, $\beta = -0.29$, $p = 0.001$) were consistent with expectations, the positive path between political constraints and incentives (H3c, $\beta = 0.30$, $p = 0.032$) was opposite to expectations.¹⁷

The importance of political constraints as a mediating variable is further illustrated by examining the bi-variate associations between liberalization forces and organizational design components (see Table 3), in which there is a significant direct relation in six out of twelve cases. In four of these significant relations (excluding export sales) most of the observed correlation is explained due to the indirect effect via political constraints. As predicted in H2, political constraints form an important mediating factor in these relationships. For the six non-significant bi-variate associations, our findings indicate that the increased use of delegation and objective performance measures arises solely due to the lower political constraints in response to liberalization forces (industry, joint venture experience, and stock exchange listing), after controlling for size. The strength of the political constraints-organizational design links relative to the liberalization forces links for delegation and objective performance measures is consistent with our hypothesis

that political constraints and not liberalization forces are dominant in organizational design in Chinese SOEs.

In focusing on the endogenous influences between the components, the partial results—three of the six paths (OBJ to DEL, OBJ to INC, and DEL to INC) were significantly ($p < 0.05$) and positively related—indicate that while the choice of delegation is a function of objective performance measures, the choice of incentives is a function of both delegation and objective performance measures. This evidence suggests the existence of some *heterogeneity* among the organizational design components. That is, not each of these components is associated with political constraints and liberalization forces in the same or equal manner. Indeed, the absence of a significant relationship pertaining to the influence of incentives on both the level of delegation or objective performance measures in the indirect model might reflect the transitional economy context, where the level of risk that is borne by the agent might not be a primary organizational design criterion.¹⁸

Overall, the strength of the political constraints-organizational design links relative to the liberalization forces-organizational design links is consistent with our hypothesis that it is political constraints and not efficiency that is the dominant imperative driving organizational design in the China reform setting.

Conclusion

The model that we develop in this paper provides a general theoretical framework to explain the determination and evolution of Chinese SOE organizational design. The model relates the use of three organizational design components to five

¹⁷ While the SEM approach was chosen to analyze the data, we also tested the same relationships with a series of regression models, one for political constraints and for each of the organizational design components. The signs and significance of the expected associations were consistent with the SEM model in most of the cases. Consistent with the SEM, the regression model for political constraints was significant (Adj R -square = 0.19) with the estimated coefficient for size ($p < 0.01$) and three out of the four liberalization forces (JV, STOK and COMP) being significant ($p < 0.05$). Similarly, in the regressions for both DEC and OBJ, the estimated coefficient for PC was negative and significant ($p < 0.05$). For DEC, SIZE and EXP were also positive and significant ($p < 0.05$), while for REW, the coefficient for OBJ was positive and significant. Contrary to the SEM, the estimated coefficients for JV and REW in the regression model for OBJ were significant. Finally, in the regression of REW, the coefficient for EXP (but not DEC) was positive and significant ($p < 0.05$).

¹⁸ In a test of the clustering effect of the three organizational design components we compared the fit of the final model in Fig. 2 with the fit of a model in which the joint paths between the three components were allowed to be freely estimated. The new model had a better fit with a Chi Square of 386.651, which was a difference of nine for the extra three degrees of freedom given. While this indicates a possible clustering effect, our data is limited in verifying the assumption that the three components are jointly determined.

determinants: liberalization forces (industry, export sales, joint venture experience, stock exchange listing) and political constraints over labor decision-making in the SOE. This model is helpful in understanding variations in the organizational design among Chinese SOEs. Various market liberalization forces have proved to be a determinant factor in the structuring of SOEs. Liberalization forces stimulate SOEs to search for more efficient management control forms, which include the delegation of decision authority to division-level managers, and the more extensive use of objective performance measures such as budgets and (indirectly) the provision of incentives. In contrast, political constraints slow down the transition of SOEs toward a more efficient enterprise. As Chen (2000, p. 47) points out, "the government has strong incentives to deviate from the profit maximization objective to pursue its own goals, such as employment provision, material balance in input-output, trade promotion, political constraints and stabilization, etc., at the cost of firm efficiency."

Three key findings and contributions have emerged. First, we found stronger support for the indirect path associations in which political constraints mediate the relationship between liberalization forces and the use of three organizational design components. Within this model our finding that political constraints are a direct negative determinant of delegation and objective performance measures supports our argument that such components have the potential to dilute political constraints. The direct positive influence of political constraints on incentives might be because incentives have the potential to support the status quo if the basis for incentive determination is consistent with the objectives of the political constraint.

Second, the results extend the findings of Firth (1996) and O'Connor et al. (2004) on the influence of liberalization forces on the SOE adoption of Western management controls. While both previous studies found linear relationships between aspects of market liberalization (market competition and joint venture experience, Firth, 1996; stock exchange listing and joint venture experience, O'Connor et al., 2004) and the adop-

tion of management accounting mechanisms, this study found that the level of political constraints mediates the influence of these three factors. The negative mediating influence of political constraints appears to be consistent with our theory that such interference imposes additional costs on senior management to delegate more and to implement more objective performance measurement. Such interference also imposes costs on divisional managers due to the limited transparency and scope for action required to meet certain performance targets.

Third, the results contribute to the China management literature (Goodall & Warner, 1999; Groves, Hong, McMillan, & Naughton, 1994; Li, 2000; Shirley & Xu, 1998; Xu et al., 2002). In particular, our results are consistent with the findings of Shirley and Xu (1998) and Xu et al. (2002), who suggest that the government delegation of human resource decisions is important to the continued pace of Chinese state-owned enterprise reform.

For policy makers and others with an interest in China, and perhaps other command economies, these findings suggest that industry growth, foreign competition, joint venture experience and stock exchange listing can be powerful forces in the adoption of Western organizational design components. However, they also suggest that the change process can be hampered by institutional factors such as government involvement in management. This finding significantly adds to our understanding of the transitional economy context, whereby the state retains significant influence in enterprises that are deemed to have been privatized. The process of transition of SOEs contrasts with the privatization first strategy followed in other transitional economies such as Eastern Europe and the former republics of the Soviet Union. According to McMillan and Naughton (1992), one of the unique features of China's reform strategy lies in its slow development of institutions (including markets) that lead to greater competitive pressure.

While the current study has contributed insights into the move of Chinese SOEs toward the use of Western organizational design components, several limitations are acknowledged. First, the study of the design of control systems as a dependent

variable is justified on the basis that the economy is in equilibrium and all forms are performing optimally. In the China reform context where firms are in a constant state of flux, this assumption is less realistic.

Second, the findings are mainly based on managers' perceptions as reflected in their responses to a survey, thus posing common method bias. The nature of this bias also precluded us from effectively examining the influences of other potential endogenous variables such as strategy and task uncertainty (Fisher & Govindarajan, 1992); and personal factors (e.g., skills and aspirations) or even cultural factors (e.g., traditional beliefs about management). There is a need to triangulate with other data collection techniques, such as examining the enterprises' procedure and policy manuals and other internal documents. Third, the use of a convenience sample jeopardizes the extent to which the sample is random, and the resulting inferences that can be made about the generalization of the results.

Finally, although our structural equation estimates have confirmed the validity of our model in which the organizational design components are simultaneously included as the dependent variables, our data (based on cross-section approach) is limited in verifying the causal order with respect to the sequential path linking political or industrial forces and each organizational design component. Future research may more thoroughly verify this simultaneity or causal order by collecting and utilizing time series data that reflects longitudinal pattern of organizational design components as well as political and industrial changes. Such refinements can shed light on the relative importance of different organizational design components by which the Chinese government imposes political constraints, and how this may differ across enterprises with different environments and characteristics.

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