

# The Puzzle of Firm Performance in China: An Institutional Explanation

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**Abstract.** China has achieved phenomenal economic growth in an institutional environment that defies conventional economic rationales. Researchers offer different theories to explain this puzzle. But so far, due to the lack of data, little effort has been made to test these theories at the firm level. We develop a framework of endogenous institutional change to explain this puzzle and we test our framework with firm-level data. We argue that the decentralization from the central to the local governments and from government to firms are the driving forces behind China's institutional changes that have shaped the roles of government and market, which in turn significantly affect firm performance. We then submit our theory to a vigorous empirical test using data from China's industrial census, covering all 2000 counties and over 500 manufacturing industries. The test shows that two results of decentralization, the involvement of low-level governments in business and the process of privatization, positively affect firm performance.

**JEL Classification Numbers:** D23, H70, L13, P21

**Key words:** China, economic transition, firm performance, institutional change

## 1. Introduction

China's economic performance poses an intriguing puzzle in transition economies: Since the beginning of the economic reform in 1978, the Chinese economy has been growing at an average of 10% annually. Its greatest growth rate was achieved during the first half of the 1990s, averaging 12% per year (NBS, 1995a: 21; 1999a: 21). Yet such remarkable performance has been achieved under an institutional arrangement that does not appear to support efficient economic activities. There is no effective mechanism to insure that the government cannot suddenly reverse the reform process or impose exactions on successful enterprises. Communism is still the official ideology. Most of all, a clearly demarked property rights system and a corresponding legal system, the central elements of a sound free market system, are not well established. Given these institutional impediments, how has it been possible for China to achieve such remarkable economic growth?

The reasons behind this anomalous phenomenon have been the subject of intense debate among researchers. Various frameworks have been proposed to understand China's economic success. At the heart of these discussions lies the effect of the institutional arrangement on economic performance during China's transition (e.g., Nee, 1992; Walder, 1995; Boisot and Child, 1996; Qian and Weingast, 1997; Jin and Qian, 1998; Li et al., 2000). These studies have found that institutional arrangements, particularly the relationship among the government, market, and firms, are central to the economic performance in China. However, most of these studies are theoretical discussions without rigorous empirical verifications. Those studies with empirical tests largely rely on aggregate data and thus are unable to examine performance at the firm level. This deficiency leaves the puzzle of firm performance unsolved: little is known about how institutional arrangements affect firm performance in China's transition.

Our study addresses this issue. Drawing on institutional theory (North, 1990) and the institutional explanations for China's economic performance (Walder, 1995; Qian and Weingast, 1997; Li et al., 2000), we argue that decentralization from the central to local governments and from government to firms is the driving force behind China's institutional changes that have shaped the roles of government and market, which in turn significantly affect firm performance. We use data from a census of over 400,000 manufacturing firms provided by China's National Bureau of Statistics (NBS) to test our theory with the firm as our level of analysis, thus addressing shortcoming in past studies that lack comprehensive firm-level data for empirical verifications.

## **2. Conceptual Framework and Hypotheses**

### **2.1. INSTITUTIONAL CHANGE AND FIRM PERFORMANCE**

The study of firm performance comes from two traditions: industrial organization economics and strategic management. Although different in perspectives, both traditions attempt to address the persistence of unequal returns across industries and firms (Schmalensee, 1985; Henderson and Mitchell, 1997). Their primary concerns are about how market systems and internal resources affect firm performance. However, they do not pay much attention to the effect of institutional factors on firm performance. Institutional factors are largely assumed to be constant in mature market economies, serving as the basis for the evolution of firm performance studies. However, in societies undergoing rapid economic and political changes such as China, institutions and institutional change appear to significantly affect firm performance. Recently management scholars begin to pay attention to the role of institutions on firm performance in transition economies such as China (e.g., Park et al., 1997; Li, 1998).

North's theory (1990) on institutions, institutional changes, and economic performance provides an appropriate theoretical framework for our analysis of firm performance during China's transition. According to North, institutions in a society are the rules of the game that govern the interactions between organizations, whereas organizations are the players in the game trying to use the opportunities created by the institutions to maximize their welfare. Competition among organizations is the key to institutional change and thus to economic performance. Qian and Weingast (1997) propose that market-preserving federalism provides a good political foundation for economic development. They argue that cross-regional competition played a central role not only in the rise of England's economic power in the 18th century and that of the United States in the 19th century, but also in the rise of the Chinese economy during the last two decades. More recently, Li et al. (2000) demonstrate how initial decentralization of economic authority from the central to local governments triggers cross-regional competition in the product market among regions and eventually leads to privatization. They show that in order to survive in a product market and to increase local revenue, each local government must provide strong incentives for competition to the managers of its enterprises. This leads to a second decentralization of economic authority: from the local government to firms. Once the managers have decision rights, in the absence of effective governance (by the local governments), an efficient way to ensure that managers make their best efforts to produce and compete is to allow them to claim a significant portion of what they produce. Competition among regions to provide more incentives to the managers of state-owned and collectively owned firms eventually leads to privatization. Li et al. (2000) provide empirical evidence to show that firms tend to privatize more rapidly if other firms in the same region are already privatized.

Such fundamental institutional changes raise several important questions about firm performance in China. How does decentralization impact on firm performance? What effects do local governments exert on the firms under their control? Do firms perform better in regions with high levels of privatization? In the remainder of this section we will examine how decentralization precipitates institutional changes, and how these institutional changes in turn affect firm performance. First, we need to briefly review some unique features of the ownership structure of Chinese firms.

## 2.2. FIRM OWNERSHIP STRUCTURE

Ownership has been recognized as one of the most important institutional arrangements in an economy because it represents different incentive structures, which, in turn, determine firm performance. There are three types of Chinese enterprises based on the mode through which transactions are

coordinated and property rights are embodied: (1) state-owned enterprises (SOEs), (2) collectively owned enterprises (COEs), and (3) privately owned enterprises (POEs).

SOEs are owned and operated by the state. Originally, SOEs by definition were owned by “the whole people” (CNPC, 1982: 8), which is an abstract concept and not a legal entity. This ill-defined ownership structure is the fundamental reason for the poor performance by SOEs. Through the reform, the definition of SOEs has been changed to “owned by the state.” Although the change more clearly defines the relationship between the government and the SOEs, it does not solve the fundamental problem of poor performance. As we will discuss later, the owner of the SOEs, “the state,” is not one entity; it has different levels. SOEs owned by different levels of governments are subject to different institutional arrangements, and, consequently, they perform differently.

COEs, by definition, are owned by all workers working in them. In reality, the property rights are unclear and fuzzy. COEs appeared in the first decade of China’s socialist economy in the 1950s as a second-class, less attractive alternative to shoulder the burden of the SOEs, by employing millions of people whom the SOEs simply could not absorb. The COEs did not enjoy as many privileges as the SOEs in terms of receiving subsidies, bank loans, and scarce resources from the state, but they were subject to all state controls and regulations. Naturally, they were poor performers. The reforms granted greater freedoms to COEs (as compared to SOEs), partly because the state could no longer afford to take care of them. Most were “passed down” to be run by local governments. Both SOEs and COEs are publicly owned firms with an inherently inefficient property right structure.

POEs, broadly defined to include all non-SOEs and non-COEs, are primarily market-driven, with hard budget constraints and more clearly defined property rights. They include privately owned companies, foreign-invested firms, joint ventures between domestic firms, limited companies, and joint stock companies. POEs were almost entirely repudiated in China during Mao Zedong’s rule from 1949 to 1976 (NBS, 1995a). They reappeared after the start of the reform in the late 1970s. The survival and operational decisions of POEs depend largely on market performance. However, as discussed below, POEs are also subject to state interference through *lishu* relations.

Studies have shown that SOEs in China performed poorly (Park et al., 1997; Li, 1998), for apparent reasons – lack of incentives and of hard budget constraints (Kornai, 1980). POEs performed better than SOEs. An interesting finding by Park et al. (1997) and Li (1998) is that in the early 1990s COEs had the best performance in terms of profitability, probably reflecting their better institutional advantages at that time (better state protection than that of POEs and greater freedoms than those of SOEs).

### 2.3. GOVERNMENT CONTROL OVER THE FIRM: *LISHU* RELATIONS

China has 31 provinces and municipalities, 334 prefectures (*diqu*), 2143 counties, and 47,806 towns (*xiang* and *zhen*) and city districts (*qu*) (NBS, 1996a: 3, 19 and 1999a). Correspondingly, there are five levels of hierarchically structured governments: (1) the central government, (2) provincial governments, (3) prefecture governments, (4) county governments, and (5) township governments. By regulation, all enterprises are directly subordinate to (*lishu*) one of these five levels of government (NBS, 1994c: 998).

Due to the totalitarian ideology of the Chinese Communist Party and China's legal origins in continental law,<sup>1</sup> the government substantially interferes in firm activities through *lishu* relations (CNPC and CSC, 1994: 1201–1214; 1574–1575). An extensive *lishu* relationship covers all firms, including POEs. From a free market perspective, it is hard to comprehend what *lishu* means to private firms. This warrants additional explanation. As specified earlier, POEs include an assortment of firms that have more clearly defined property rights and hard budget constraints, and thus are more market-oriented (such as privately owned, foreign owned, and joint stock companies). Government control of POEs through *lishu* includes the naming of firms, regulating their structures (such as appointments of directors, chairmen of the board, and general managers), reviewing their feasibility studies and business plans, approving their licenses, determining the amount of taxes and fees they should pay, approving major projects, making major operations decisions (such as profit distribution and investment), issuing bank loans, and monitoring bank transactions (CNPC, 1993, 1994).<sup>2</sup> Thus, unlike private firms in mature market economies, POEs in China do not have complete property rights due to the heavy interference from the government.

A *lishu* relation for SOEs includes all control rights, the most important of which are the distribution of profits, personnel decisions, major business decisions, and decisions or activities affecting the external environment (CNPC and CSC, 1994: 1247–1248). For COEs, the *lishu* relation includes the distribution of profits, protection of government interests in the firm, decisions or activities affecting the external environment, and other major decisions such as appointment of the firm head (CNPC and CSC, 1994: 1256–1263).

The level of government to which an enterprise is subordinate depends on the nature of operations, location, and scale. SOEs tend to belong to higher levels of government and POEs tend to belong to lower levels of government. As one moves down the government hierarchy from central to township, the proportion of SOEs decreases from nearly 100% to nearly zero; most public firms at the bottom of the government hierarchy are COEs.

#### 2.4. THE FIRST DECENTRALIZATION: FROM THE CENTRAL GOVERNMENT TO LOCAL GOVERNMENTS

In December 1978, 2 years after the death of Mao Zedong, the Chinese Communist Party held the historic Third Plenum of the Eleventh Party Congress, which embarked on the economic reforms. The original goal of the reforms was to make SOEs and COEs more efficient, not to privatize them. In order to achieve this goal, the central government realized that it had to give more incentives to both the firms themselves and the local governments that monitor them. Thus a two-pronged process of decentralization of authority was initiated: decentralization from the central government to the local governments, and decentralization from the government to the basic economic units (enterprises and households) (Boisot and Child, 1996; Qian and Weingast, 1997). However, the impact of the decentralization was far more profound than the central government had originally intended. It eventually evolved into what is now called the economic transition from communism to capitalism.

The first decentralization policy had two major components. The first was a fiscal revenue-sharing system (*caizheng baogan*) between adjacent levels of governments, under which lower-level governments had an obligation to hand over a fixed amount or a fixed proportion of their revenues to the superior government, while retaining the remainder. The second major component was the delegation of control over enterprises to local governments (*qiye xiafang*) (Chinese Communist Party, 1993). From 1994 to 1995, the share of industrial output controlled (*lishu*) by the central government declined by 5.8%, while the share of industrial output controlled by township governments increased by 36.1% (NBS, 1994b, 1995b). Not only is the central government downloading its firms to local governments, but the upper-level local governments are also downloading their firms to lower-level local governments. For example, Wuhan, the capital city of Hubei, recently downloaded 244 firms to its districts (the equivalent of townships), in the hopes of improving efficiency (*Hubei Daily*, 2002).

The number of firms controlled by governments of different levels varies. The higher the level of government, the more firms each government controls. According to the 1995 NBS census of industrial firms registered with governments at township level and above, the central government directly controlled 4381 firms. The average number of firms controlled by each provincial government was 435; the average number of firms controlled by prefecture and county governments was 116 and 41, respectively. The township governments, the lowest in the hierarchy, controlled merely five firms on average (NBS, 1995b, 1996a: 3 and 9).

Before the reforms, the budgets of the local governments were decided upon through bargaining between the local and central governments, with the central government having ultimate authority to decide the former's

budget. As a result, local governments did not have a strong incentive to increase output, since it would mean fewer allocations from the central government and more contributions to the central government in the following years. The institutional changes under the decentralization from the central to the local governments resulted in fiscal responsibility and rights being more clearly defined and better separated. According to the fiscal reform of 1994, tax revenues are divided into central, local, and shared taxes (Liu, 1996: 192). These new rules of the game have completely changed local government behavior: they have shifted the focus of local government activity from bargaining with higher levels of government to generating more revenue within their jurisdictions. As a result, local governments compete in product markets by helping local firms and offering attractive policies to lure investment. In essence, the decentralization has made the local governments at each level “owners” of their own economies. Thus, each region acts as a conglomerate or as a holding company. This system boosted the local governments’ incentives to make their firms profitable.

Since the 1994 fiscal reform, the majority of the central government’s revenue comes from national taxes, such as custom duties and consumption taxes; its income from the profits of firms under its direct control has been reduced to an insignificant amount. Thus, the central government’s interest in the profitability of the firms reporting to it has been substantially reduced. Instead, the central government now attempts to maximize the total taxes from the local governments.

The consequences of the decentralization are far reaching. First, local governments are more interested than the central government in the performance of the firms under their jurisdiction. Second, the arrangement that lower-level governments hand over a portion of their revenues to the superior governments requests that the township governments, the lowest level of government, be self-reliant. This implies that township governments have the strongest incentives to improve the performance of the firms under their control. Third, because governments at lower-levels control fewer firms, they can devote more time and resources to each of their firms. This implies that lower-level governments tend to govern their firms better.

Walder (1995) makes similar observations. He argues that “local governments with smaller industrial bases have clearer financial incentives and constraints, fewer non-financial interests in enterprises, and a greater capacity to monitor them.” The fastest growth in output was achieved in local regions “where government ownership rights are clearest and most easily enforced.”

Countervailing the incentives for local governments to compete cross-regionally is the protectionism by governments of different levels. Depending on industry, size, and strategic importance, the Chinese government designates firms into five different classes (NBS, 1994c: 998–1014). Firms with

higher statuses enjoy more privileges and better protection from the government, such as access to export/import licenses, favorable bank loans, and low-priced supplies. The government has developed an elaborated system to classify the statuses of each firm and tightly control its ranking power (NBS, 1994c: 998). This classification encourages firms to compete for top status.<sup>3</sup> The central government is best able to protect the firms under its direct control by giving them exclusive licenses in lucrative sectors (such as the telecom, auto, aviation, and petroleum refinery industries) and scarce resources (such as electricity and raw materials). Many local governments attempt to protect their enterprises from competition with other regions by erecting trade barriers. However, as the level of government goes down, the size of the local economy decreases, as does the number of firms the local government controls. Thus, erecting trade barriers by the local government becomes more costly and less feasible. As specialization deepens, local economies gain more from trade than from protection.<sup>4</sup>

In sum, during transition, the government–firm relationship is shaped by the decentralization from the central government to the local governments. The decentralization provides lower-level governments with greater incentives to help their firms compete in the market. At the same time, governments of different levels still try to use trade barriers, monopolistic positions, and administrative policies to protect their firms from competition. Due to its monopolistic power, the central government provides the most protection to the firms under its direct control. We thus expect that the relation between firm performance and government control (*lishu*) is U-shaped. Specifically, we expect that:

- H1a*: Due to the strongest economic incentives and ability to govern, firms controlled by the lowest level of government – townships – perform the best.
- H1b*: Due to the central government’s power to protect, firms under the central government’s control perform better than firms controlled by intermediate (provincial, prefecture, and county) governments.
- H1c*: Firms assigned higher statuses (more protection) by the government tend to perform better than firms assigned lower statuses, *ceteris paribus*.

## 2.5. THE SECOND DECENTRALIZATION: FROM GOVERNMENT TO FIRMS

The effect of the second decentralization, namely, the shift of authority from government to the firm, is also fundamental and far-reaching. While the local governments are evolving into active players in business activities, market forces are emerging in China and exerting an effect on firm performance. Interestingly, the “invisible hand” (market competition) was initiated by the



“visible” hand. In the following we will argue that it is the government reform policy of decentralization that has stimulated cross-regional competition, eventually affecting firm performance.

When the central government decentralizes control rights over publicly owned firms, such as SOEs, to regional governments, these firms must compete in the product market against their counterparts from other regions. To succeed in such competition, these firms need to improve their efficiency, which is a function of the efforts by their managers. Given that the efforts of managers are hidden, it is virtually impossible for a regional government to monitor a manager’s effort efficiently in every enterprise; the government must give sufficient incentives to managers so they perform. Thus, market competition becomes institutional competition among regions: regions with an institutional arrangement that can provide the highest incentives win. An institutional arrangement that provides efficient incentives is one that ensures that the person who makes the effort decision (the manager) is the residual claimant to the output (Varian, 1996: 644). When the manager holds all the residuals of the firm and the control rights, he/she has the highest incentive to perform well and becomes the de facto owner of the firm, which implies privatization (Grossman and Hart, 1986; Li et al., 2000). Therefore, as a result, the government reform effort in China created regional competition in the product market, which, in turn, led to the second decentralization and eventually to privatization.

Privatization has been spreading rapidly in China since the early 1990s. Before 1980, privately owned industrial firms were virtually nonexistent. From 1992 to 1995, industrial output by private firms increased 57% annually, while industrial output by SOEs only grew 13% per year. During the same period, the share of private firms in China’s economy increased 16%, while the share of SOEs shrank by 15% (NBS, 1993b–1996b).

As a result of the second decentralization from government to firms, SOEs and COEs are being privatized and newly privatized firms are being established. Private firms have stronger incentives to perform than publicly owned firms. Thus we hypothesize that

*H2a: POEs perform better than both SOEs and COEs.*

Past studies show that COEs have greater incentives and policy advantages to perform than SOEs (Park et al., 1997; Li, 1998), thus we hypothesize that

*H2b: COEs perform better than SOEs.*

### *2.5.1. Competition, Privatization, and Performance*

Due to the effect of path-dependence, which describes the consequences of events and chance circumstances that can lead a region to a particular path of evolution (North, 1990: 94), government efforts to reform (privatize) vary

widely by region, reflecting the particular history of each region. Regions that were overdeveloped under the planned economy (such as the Northeast) tended to be privatized slowly because of strong opposition by vested interests and burdens resulting from the old system, as evidenced by the recent mass protests by laid-off SOE workers in the Northeast (*Business Week*, 2002); whereas industries and regions that were neglected in the planning era (such as the southern regions) had fewer vested interests in the old system and thus were opened and privatized more quickly. A more privatized industry or region implies a higher degree of competition, which, in turn, will improve firm efficiency.

Summarizing the above discussion, we argue that the decentralization from the central government to regional governments stimulates regional competition in the product market, which, in turn, becomes competition among the regional incentive systems. Since private ownership provides the strongest incentive to perform well, regions compete to privatize their firms and industries as market competition intensifies. In order to survive the competition, firms must improve their efficiency. Thus we have

*H3*: The higher the share of POEs in a region, the higher a firm's productivity in that region.

## 2.6. OTHER FACTORS THAT AFFECT FIRM PERFORMANCE

In addition to the institutional change (local government influence, privatization and competition) precipitated by the two decentralizations, we need to control for other industry- and firm-level factors that significantly affect firm performance. It has been found that industry concentration (Schmalensee, 1989; Jeong and Masson, 1990) and scale economies (Comanor and Wilson, 1967; Khalilzadeh-Shirazi, 1974) exert positive effects on firm profitability. To keep the model parsimonious, based on past studies (Park et al., 1997; Li, 1998), we include the following three variables that are believed to have significant effects on firm performance in China and thus should be controlled for.

### 2.6.1. *Industry Concentration*

Past studies have identified industry concentration as a significant factor influencing firm performance (see the following model specification). We thus control for industry concentration in our model.

### 2.6.2. *Input Factors of Production*

We control for two input factors in our model: physical capital investment (both fixed capital and working capital) and the labor force (see the following model specification).

### 2.6.3. Firm age

Firms founded before and after the beginning of the reforms (1978) differ from one another substantially. The former have to deal with the legacies of the central planning system while the latter tend to be more market-oriented. Thus we control for firm age in our analysis.

## 2.7. PERFORMANCE MEASURE

During China's economic reform, even though the economy has achieved phenomenally high growth, the profit level of Chinese industrial firms is very low. For example, in 1995 the average profit per sales revenue for industrial firms was 0.031. Return on assets was 0.022 (NBS, 1996a: 411–413). This is consistent with a pattern of economic liberalization, which is commonly characterized by rapid growth in output and low profitability. Therefore, conventional measures of performance, such as returns on assets, may not reflect the high economic growth China has achieved and thus are inappropriate to solve the growth puzzle. Since economic growth at the aggregate level is the sum of output at the firm level, we maintain that using firm output (sales) productivity is the most direct measure of performance. Studies have shown that a major factor in China's economic growth has been the improvement in labor productivity (*The Economist*, 1993). We thus use labor productivity (sales per employee) to measure firm performance.

## 3. Method

### 3.1. DATA

The data for the study are from China's Database of Industrial Firms (DIF) developed by China's National Bureau of Statistics (NBS, 1994b–1996b). The database includes all manufacturing firms that are registered with township governments or above. This means that all manufacturing firms are included except extremely small, often family-run, businesses. The DIF is the basis for all industrial statistics in the *China Statistical Yearbook*, an official publication of the NBS.

For each enterprise, the database contains the following information: geographic location, the Chinese industry classification (CIC) code, scale, ownership type, relations with the government (“*lishu*,” or “subordinate to”), age, number of employees, fixed assets, current assets (working capital), revenues, profits, and taxes. The variables used in this study are described later in this section. We focus our study on the mid-1990s, a period of rapid institutional change and high economic growth in China. We have 3 years of the DIFs, from 1994 to 1996, to conduct our empirical test. The 1994 DIF has 372,296 firms. The 1995 and 1996 DIFs have 391,654 and 184,972 firms,

respectively. All the firms in the DIF account for 90–95% of total industrial sales of all firms with independent accounting systems (NBS, 1996a: 417, 1997a: 423). This indicates that our data set represents almost all major industrial activities in China. We compiled the DIFs of the 3 years and examined the distribution of each study variable to identify entry errors and extreme outliers, which were subsequently deleted from the database. After data cleaning, the final sample includes approximately 900,000 observations from 1994 to 1996.

### 3.2. MODELS

Our model is developed based on the Cobb-Douglas production function.<sup>5</sup> *Sales per Employee* (SPE) is used as the dependent variable to measure firm productivity. Our model specifies that firm productivity is determined by the institutional change caused by the two decentralizations specified in our hypotheses, and the controlled factors (industry structure and firm resources):

$$\text{Firm productivity} = f(\text{decentralization effects and controlled factors}).$$

(See endnote 5 for detailed model specification.)

### 3.3. INDEPENDENT VARIABLES MEASURING GOVERNMENT INTERFERENCE AND PRIVATIZATION

Data that measure the role of government in firm performance are difficult to collect on a large scale. We use the indicator that records the level of government a firm reports to, or *lishu*, as a proxy to measure the involvement of governments at different levels in firm operations. As for government protection, we use the classification of statuses by the central government as a proxy to measure the degree of government protection. Both measures are at the firm level in the DIFs (NBS, 1994c: 998–1014).

#### 3.3.1. *Level of Government to which a Firm is Subordinate (lishu)*

This is a proxy to measure the involvement of the different levels of government in a firm's operations. We create five dummy variables to represent the five levels of governments: (1) central, (2) provincial, (3) prefecture, (4) county, and (5) township (omitted category in the model). These variables are used to test *H1a* and *H1b*.

#### 3.3.2. *Firm Status Assigned by the Government*

Firm status is assigned by the central government (NBS, 1994c: 998). The hierarchy has five classes: I-1 (highest), I-2, II-1, II-2, and III (lowest). We

create five corresponding dummy variables with class III omitted in the model. These variables are used to test *H1c*.

### 3.3.3. *Ownership*

This is measured by three dummy variables: (1) SOE, (2) COE, and (3) POE (omitted in the model). These variables are used to test the effects of ownership on firm performance (*H2a* and *H2b*).

### 3.3.4. *Degree of Privatization in a Local Economy*

This is the percentage of total industrial revenue contributed by POEs in a region (county). There are more than 2000 counties in China. This variable is created by aggregating industrial revenue by private firms by county from the DIFs. The higher the share of POE revenue in a county's industrial sector, the more intense the competition. This measure assesses the degree of competition in a county on firm profitability and productivity (*H3*).

## 3.5. CONTROLLED FACTORS

### 3.5.1. *Industry Concentration*

We use the Herfindahl Index<sup>6</sup> (H-index) at the industry level to control the impact of industry concentration on firm performance. There are 590 industries in our sample. They correspond to the four-digit product/industry classification, the most detailed categorization in China. This variable is created based on the DIFs.

### 3.5.2. *Fixed Capital, Working Capital, and Number of Employees*

These firm-level variables are used as control variables in the model.

### 3.5.3. *Firm Age*

Firm age is a dummy variable that takes the value of 1 if a firm is founded after 1978 and zero if it was founded before 1978. Previous studies show that firms founded after 1978 performed better (Park et al., 1997; Li, 1998).

## 4. Findings and discussion

We first construct a Pearson correlation coefficient matrix of all variables that will be used in the later regression analysis (see Table I below). To assess potential biases due to multicollinearity, we examine the correlation coefficient between each pair of variables. None of the pairs of variables have a

Table I. Correlation coefficients of variables in the regression model

| Variables          | Mean  | Std. dev. | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     |
|--------------------|-------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 Central          | 0.012 | 0.11      | -0.022 | -0.038 | -0.060 | -0.124 | 0.121  | 0.120  | 0.058  | 0.060  | -0.156 | 0.174  | -0.136 | -0.014 | 0.012  | 0.061  | 0.063  | 0.063  | -0.058 |
| 2 Provincial       | 0.037 | 0.19      | -0.067 | -0.106 | -0.220 | 0.071  | 0.108  | 0.081  | 0.090  | 0.090  | -0.169 | 0.214  | -0.202 | 0.033  | 0.093  | 0.022  | 0.060  | 0.095  | -0.088 |
| 3 Prefecture       | 0.105 | 0.31      |        | -0.185 | -0.384 | 0.055  | 0.125  | 0.115  | 0.149  | 0.149  | -0.230 | 0.250  | -0.277 | 0.095  | 0.109  | 0.036  | 0.106  | 0.150  | -0.134 |
| 4 County           | 0.226 | 0.42      |        |        | -0.607 | -0.022 | -0.023 | 0.007  | 0.042  | 0.042  | -0.015 | 0.360  | -0.284 | -0.025 | -0.059 | -0.003 | 0.124  | 0.115  | -0.181 |
| 5 Township         | 0.558 | 0.50      |        |        |        | -0.065 | -0.116 | -0.111 | -0.158 | 0.232  | -0.523 | 0.551  | -0.158 | -0.109 | -0.049 | -0.193 | -0.265 | 0.222  |        |
| 6 Class I-1        | 0.004 | 0.06      |        |        |        |        | -0.007 | -0.007 | -0.011 | -0.235 | 0.086  | -0.088 | 0.023  | 0.020  | 0.028  | 0.086  | 0.068  | 0.068  | -0.051 |
| 7 Class I-2        | 0.013 | 0.11      |        |        |        |        |        | -0.013 | -0.020 | -0.437 | 0.158  | -0.150 | 0.024  | 0.027  | 0.021  | 0.130  | 0.100  | 0.100  | -0.102 |
| 8 Class II-1       | 0.013 | 0.11      |        |        |        |        |        |        | -0.021 | -0.444 | 0.148  | -0.135 | 0.015  | 0.024  | 0.010  | 0.118  | 0.085  | 0.085  | -0.092 |
| 9 Class II-2       | 0.032 | 0.17      |        |        |        |        |        |        |        | -0.697 | 0.213  | -0.179 | 0.002  | 0.020  | 0.008  | 0.147  | 0.110  | 0.110  | -0.152 |
| 10 Class III       | 0.937 | 0.24      |        |        |        |        |        |        |        |        | -0.315 | 0.281  | -0.025 | -0.041 | -0.031 | -0.243 | 0.142  | 0.142  | 0.212  |
| 11 SOE             | 0.179 | 0.38      |        |        |        |        |        |        |        |        |        | -0.716 | -0.172 | -0.054 | 0.031  | 0.238  | 0.142  | 0.142  | -0.314 |
| 12 COE             | 0.702 | 0.46      |        |        |        |        |        |        |        |        |        |        |        | -0.564 | -0.213 | -0.044 | -0.379 | -0.311 | 0.134  |
| 13 POE             | 0.119 | 0.32      |        |        |        |        |        |        |        |        |        |        |        |        | 0.363  | 0.026  | 0.254  | 0.271  | 0.182  |
| 14 Privatization   | 0.185 | 0.19      |        |        |        |        |        |        |        |        |        |        |        |        |        | 0.032  | 0.155  | 0.244  | 0.098  |
| 15 Concentration   | 0.007 | 0.02      |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 0.045  | 0.077  | 0.015  |
| 16 Log(Fcap/L)     | 2.395 | 1.39      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 0.549  | -0.006 |
| 17 Log(Wcap/L)     | 2.819 | 1.29      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 0.011  |
| 18 Age $\geq$ 1978 | 0.676 | 0.47      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

*Descriptions of the variables (by number)*

(1)-(5) Dummy variables indicating the subordination relationship of firms to government (firm level). (6)-(10) Dummy variables measuring a firm's assigned status by the government. (11)-(13) Dummy variables measuring ownership. (14) Privatization (regional level). (15) Concentration index (industry level). (16) Log(fixed capital/employee) (firm level). (17) Log(working capital/employee) (firm level). (18) A dummy variable measuring age (before 1978 = 0, after 1978 = 1, firm level).

correlation that is high enough (e.g., greater than 0.9) to cause concerns about collinearity (Green et al., 1988: 456).

We then estimated the regression model with *Sales per Employee* as the dependent variable. Table II summarizes the results of the regression model. The model is highly significant with an  $R^2$  of 38.2%.

#### 4.1. THE FIRST DECENTRALIZATION EFFECT

The first decentralization, the shifting of authority from the central government to local governments, is measured by the dummy variables representing the five *lishu* (the firm to government subordination relation) levels. They are *Central*, *Provincial*, *Prefecture*, and *County* (*Township* is the omitted category). All the dummy variables have high statistical confidence levels ( $<0.0001$ ), suggesting that the *lishu* relations significantly affect firm performance during the reforms. All the dummy variables representing governments, from the central to county levels, have negative coefficients (as compared to the omitted category, township). Firms that report to the township governments (the omitted category) outperformed firms that report to higher-level governments. *H1a* is strongly supported. The coefficient of *Central* is greater than those of the intermediate governments. Firms that report to the central government performed better than firms that report to the mid-level local governments, especially the provincial and prefecture governments, suggesting that the relationship between *lishu* and firm performance is indeed a U shaped curve, as we predict in *H1b*.

The relationship between government assigned status and firm productivity shows a clear pattern that the higher the government-assigned class status, the better a firm performs, confirming *H1c*. As mentioned earlier, a higher status entitles a firm to certain privileges, such as soft loans, policy investments, exclusive licenses, and access to scarce resources. In addition, firms controlled directly by the central government tend to be larger and more capital intensive, and have a higher status. Also, the central government has more resources to protect the firms under its direct control. Thus, as we expected, firms with a high status assigned by the government and firms that are directly controlled by the central government tend to perform better.

The remarkable performance of township firms warrants additional discussion. First, unlike the higher level governments, the township governments have no subordinate governments from which to extract revenues, and their share of tax revenue is very low (*168lunwenwang*, 2004; Heilongjiang Economic Net, 2004). Thus, the main source of revenue for township governments is the firms under their control. As a result, township governments have the strongest incentives to help their firms succeed. As the level of government decreases, the line between government and firm becomes fuzzy (Walder, 1995). This is especially true at the township level. Township

Table II. Regression results of the productivity model

|   | Hypothesis tested                  | Parameter estimate | t-Value   | Pr >  t  |          |
|---|------------------------------------|--------------------|-----------|----------|----------|
| Dependent variable: log(sales/employee) |                                    |                    |           |          |          |
|   | Intercept                          | 1.876              | 371.54    | < 0.0001 |          |
| <i>Lishu level</i>                      |                                    |                    |           |          |          |
|   | Central                            | H1a & H1b          | -0.373    | -39.3    | < 0.0001 |
|   | Provincial                         | H1a & H1b          | -0.459    | -80.3    | < 0.0001 |
|   | Prefecture                         | H1a & H1b          | -0.459    | -122.39  | < 0.0001 |
|   | County                             | H1a & H1b          | -0.366    | -129.39  | < 0.0001 |
|   | Township                           | H1a & H1b          | (Omitted) |          |          |
| <i>Status assigned by government</i>    |                                    |                    |           |          |          |
|   | Class I-1                          | H1c                | 0.376     | 22.94    | < 0.0001 |
|   | Class I-2                          | H1c                | 0.260     | 28.59    | < 0.0001 |
|   | Class II-1                         | H1c                | 0.205     | 23.17    | < 0.0001 |
|   | Class II-2                         | H1c                | 0.110     | 18.86    | < 0.0001 |
|   | Class III                          | H1c                | (Omitted) |          |          |
| <i>Ownership</i>                        |                                    |                    |           |          |          |
|   | SOE                                | H2a & H2b          | -0.158    | -37.06   | < 0.0001 |
|   | COE                                | H2a & H2b          | -0.060    | -17.35   | < 0.0001 |
|   | POE                                | H2a & H2b          | (Omitted) |          |          |
| <i>Privatization/competition</i>        |                                    |                    |           |          |          |
|   | Level of privatization in a region | H3                 | 0.197     | 35.9     | < 0.0001 |
| <i>Controlled variables</i>             |                                    |                    |           |          |          |
|   | Industry concentration             | Controlled         | -0.284    | -5.44    | < 0.0001 |
|   | Log(fix capital/workers)           | Controlled         | 0.180     | 205.02   | < 0.0001 |
|   | Log (working capital/workers)      | Controlled         | 0.423     | 449.32   | < 0.0001 |
|   | Age $\geq$ 1978                    | Controlled         | 0.189     | 83.43    | < 0.0001 |
|   | Number of firms                    | 903,462            |           |          |          |
|   | $R^2$                              | 0.382              |           |          |          |
|   | $F$                                | 37152              |           |          |          |
|   | Pr > $F$                           | < 0.0001           |           |          |          |

governments evolved from the communes that existed under Mao, an integrated government, production, and consumption unit. Many township heads are chairmen of the boards of local firms.<sup>7</sup> Second, township govern-



ments control substantially fewer firms than higher-level governments. The average number of firms controlled by township governments is less than five.

The relatively poor performance of firms controlled by upper-middle level governments (provincial and prefecture governments) may reflect the fact that they do not have the monopoly power and resources that the central government has to protect its firms; at the same time, they do not have the incentives and resources to provide the kind of “micro management” that lower-level governments can afford.

To sum up our empirical examination on the effect of the first decentralization on firm performance, we found that the level of control by governments of different levels has affected firm performance during China’s transition. The involvement of low-level governments (township and county) positively affects firm performance, providing evidence to support our argument about the effect of the first decentralization on firm performance. At the same time, the old legacy of the planned economy is still exerting an influence: the monopolistic and powerful protection of the central government and the privileges assigned by the government to certain firms give those firms (unfair) advantages.

#### 4.2. THE SECOND DECENTRALIZATION EFFECTS

##### 4.2.1. *The Effect of Ownership on Performance*

The effect of ownership on firm productivity is very clear as predicted. The descending order in terms of productivity is POE, COE, and SOE, supporting both *H2a* and *H2b*. The newly established private and privatized firms showed the highest productivity. This confirms the findings of most economists and what the reform is all about: private ownership is the most efficient production arrangement.

##### 4.2.2. *The Effect of Regional Privatization and Competition on Performance*

Our main interest in the second decentralization is how the decentralization-induced competition, measured by the degree of privatization in a region, affects firm performance. The regression result shows that the regional privatization level had a positive effect on productivity with a high level of significance, strongly supporting *H3*.

## 5. Conclusion

China’s economy has been growing very fast and is poised to become one of the world’s largest. It has already surpassed the United States as the world’s largest FDI recipient. Understanding firm performance in China is important for business executives, policy makers, and academic researchers.

In this article we have tackled the puzzle of how China has achieved such remarkable economic performance despite the absence of well-developed market rules and an impartial and efficient legal system. Using an institutional framework, we have argued that the two fundamental reform measures, the decentralization from the central government to the local governments and the decentralization from the government to firms, led to two institutional changes. The first was the involvement of government in business, and the second was privatization. In lieu of a well-developed property rights system and a corresponding legal system, these two institutional changes precipitated market competition between regions and drove firms to improve their performance.

Our analysis demonstrates that the “visible hand” – government policy – initiated the creation of the “invisible” hand – market competition and privatization. Our empirical test indicates that both forces have a significant positive impact on firm performance.

Our findings have several implications that may be of interest to business executives, policy makers, and scholars.

Macro privatization and competition as market forces were triggered by the government’s decentralization policy. The fact that competition and market forces may stimulate privatization and shape firm performance in China shows that the “invisible hand” is not only efficient in allocating resources among firms, but also a driving force behind China’s institutional changes.

The fact that private firms and firms in highly privatized regions perform better implies that once decentralization begins, market competition may precipitate a self-enforcing privatization process. Firms that do not privatize may not survive the competition. Competition and privatization may mutually reinforce each other. They will exert an effect on firm performance with their own logic and vigor. Such a self-enforcing process, once started, is very difficult to be stopped. In this sense, China has reached a point of no return on the road to capitalism. Such a conclusion may answer the question of why there has not been any sudden reverse in course by the Chinese government, which is subject to few checks and balances. Competition and privatization may be the unintended results of the Chinese government’s initial reform effort. But for government policy to intentionally put a stop to them is already impossible.

The fact that governments at different levels have different effects on firm performance in China has several strategic implications for firms. First, any company that considers entering China should be prepared to deal with not only one government, but at least five vertical layers in the government hierarchy. Second, companies should select investment locations where government policies are most favorable. Third, given that a major task of China’s reform is to divest governments from business, governments in China

will gradually be separated from business. The unique phenomenon of “local government as corporations” (Walder, 1995) eventually will no longer exist. Thus firms should maintain a dynamic perspective and a balanced relationship with governments in China.

The fact that the level of regional privatization affects firm performance suggests that firms must pay attention to the degree of privatization at the regional level and formulate their strategies accordingly. This is especially important for firms contemplating an entry strategy or organizational changes (such as privatization). Firms that are more aggressive and have experience in a changing external environment may gain first-mover advantages by selecting regions where the privatization level is low and market development is primitive. In contrast, conservative firms that have tremendous capabilities (such as superior technology, marketing, and financial resources) may want to enter regions that are highly privatized and have a relatively established market structure, since they are capable of catching up with the first movers.

While our study provides a picture of how institutional change affects firm performance in China’s transition based on a comprehensive empirical test, it is by no means exhaustive. We recognize that the institutional changes discussed here are only part of the broader social network and institutions that shape firm behavior in China’s transition. Our study is also limited by the number of available variables. In-depth studies using survey data and case analyses are needed to understand how institutional changes are taking place and how they are affecting firm structure, resources, and strategy. In short, the detailed operations of these institutions and the mechanisms of organizational change at both the macro and the firm level need to be further examined.

## Notes

1. Continental law is based on a very detailed set of laws that are organized into codes, which define the laws that govern business activities. In contrast, the common law system is based on tradition, precedent, and custom.
2. Based on interviews with Bi Zili, general manager of Shenzhen iEast.com, Hong Kong, June 2002.
3. Based on interviews with Gao Yuxian, director of the Information Center of China’s National Bureau of Statistics, Beijing, May 1995.
4. This can be supported by evidence that since the late 1980s local governments have begun to sign treaties pledging to protect one another’s enterprises as their own (Clarke, 1996). The 1993 Law of Anti-Unfair Competition also helped bring down regional trade barriers.
5. For the productivity model, a linear regression is developed based on the Cobb-Douglas production function.

$$Y = AK^\alpha L^\beta W^\gamma, \quad (1)$$

where  $Y$  is total sales revenue,  $K$  is fixed assets,  $L$  is labor (number of employees),  $W$  is working capital (representing material input), and  $A$  represents the sum of the institutional, environmental, and other firm-specific factors. Dividing both sides of (1) by  $L$ , we get sales per employee:

$$Y/L = AK^{\alpha}L^{\beta-1}W^{\gamma}, \quad (2)$$

Taking log at both sides, the following model is estimated:

$$\log(Y/L) = \log(A) + b_1 \log(K) + b_2 \log(L) + b_3 \log(W) + \varepsilon, \quad (3)$$

$$\log(A) = a + b_4x_4 + \dots + b_ix_i, \quad (4)$$

where  $x_4, \dots, x_i$  are the factors influencing  $A$ ,  $a, b_1, \dots, b_i$  are coefficient estimates, and  $\varepsilon$  is the residual error.

6. The H-index is defined as follows:

$$\text{H-index}_j = \sum_{i=1}^n [(\text{rev}_{ij})/(\text{rev}_j)]^2$$

where  $\text{H-index}_j$  is the H-index of industry  $j$ ,  $\text{rev}_{ij}$  is the revenue of firm  $i$  in industry  $j$ , and  $\text{rev}_j$  is the total revenue of industry  $j$  (Hay & Morris, 1986: 104).

7. One of the best illustrative cases is that of Shunde, a region in China's affluent province of Guangdong. Shunde is known for its efficient business environment. Its evolution from "government as corporation" to "government as government" can be clearly seen in the governing philosophy of its mayor, Mr. Feng Runsheng (1997):

Before, I was actually the chief representative of all factories in Shunde. Or you could call me the biggest CEO of all city enterprises... Now, the government and enterprises are separate. As mayor, I have only two responsibilities: to develop the city's infrastructure and services, and to maintain law and order... All investors—domestic and foreign—can easily learn and understand our policies and regulations. We welcome everyone to invest, but we will not break the rules for anyone.

## References

- 168lunwenwang (2004). China's tax system. <http://www.lunwen168.com/2004/5-15/04722-2.html>, July 15, 2004.
- Boisot, M. & Child, J. (1996). From fiefs to clans and network capitalism: Explaining China's emerging economic order. *Administrative Science Quarterly*, 41, 600–628.
- Business Week (2002). China's angry workers. April 8.
- Chinese Communist Party (1993). Guanyu jianli shehuizhuyi shichang jingji tizhi ruogan wenti de jue ding (Decisions on several issues in establishing a socialist market economy). November 14. sina.com.cn.
- Clarke, D.C. (1996). The creation of a legal structure for market institutions in China. In J. McMillan & B. Naughton, (Eds.), *Reforming Asian Socialism: The Growth of Market Institutions*. Ann Arbor, MI: University of Michigan Press.
- CNPC (China's National People's Congress) (1982). *Zhonghua renmin gongheguo xianfa* (The Constitution of the PRC). Beijing: Zhongguo Minzhu Fazhi Chubanshe, 1990.
- CNPC (China's National People's Congress) (1993). *Zhonghua renmin gongheguo gongsi fa* (Company law of the PRC). Beijing: Zhongguo Fazhi Chubanshe, 1997.
- CNPC (China's National People's Congress). (1994). *Zhonghua renmin gongheguo gongsi dengji guanli tiaoli* (Company registration regulations of the PRC). Beijing: Zhongguo Fazhi Chubanshe, 1997.

- CNPC & CSC (China's National People's Congress and China State Council). (1994). Collections of laws. In: J. Xu, ed. *Zhongguo qiye falu shiwu quanshu* (China firm law collection), Beijing: Zhongguo Wujia Chubanshe.
- Comanor, W.S. & Wilson, T.A. (1967). Advertising, market structure and performance. *Review of Economics and Statistics*, 49, 423–440.
- Feng, R. (1997). Wo zhege shizhang xianzai mang xie shenmo? (As A Mayor, What am I Busy with Now? *Juece cankao* (Policy References) (Beijing), (28), 27–28.
- Green, P.E., Tull, D.S., & Albaum, G. (1988). *Research for marketing decisions*. Englewood Cliffs, NJ: Prentice Hall.
- Grossman, S. & Hart, O.D. (1986). Cost and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy*, 94, 691–719.
- Hay, D.A. & Morris, D.J. (1986). *Industrial economics*. Oxford: Oxford University Press.
- Heilongjiang Economic Net. (2004). Township governments in heavy debts: Hands off from upper level government is key. [http://www.hljjc.gov.cn/hgjj/hjw\\_arti.asp?Index=1329](http://www.hljjc.gov.cn/hgjj/hjw_arti.asp?Index=1329), July 15.
- Henderson, R. & Mitchell, W. (1997). The interactions of organizational and competitive influences on strategy and performance. *Strategic Management Journal*, 18, 5–14.
- Hubei Daily*. (2002). Wuhan xiafang 244 jia zhongxiao qiye (Wuhan downloaded 244 small and medium-sized firms). August 2. sina.com.cn.
- Jeong, K.Y. & Masson, R.T. (1990). Market structure, entry, and performance in Korea. *Review of Economics and Statistics*, 72(3), 455–462.
- Jin, H. & Qian, Y. (1998). Public versus private ownership of firms: Evidence from rural China. *Quarterly Journal of Economics*. August, 773–808.
- Khalilzadeh-Shirazi, J. (1974). Market structure and price-cost margins in U.K. manufacturing industries. *Review of Economics and Statistics*, 56, 67–76.
- Kornai, J. (1980). *The economics of shortage*. 2 Vols. Amsterdam: North-Holland.
- Li, S. (1998). Success in China's industrial market: An environmental and institutional approach. *Journal of International Marketing*, 6(1), 56–80.
- Li, S., Li, S., & Zhang, W. (2000). The road to capitalism: Competition and institutional change in China. *Journal of Comparative Economics*, 28, 269–292.
- Liu, Z. (1996). *Zhongguo shuizhi gailan* (China's tax system). Beijing: Jingji Kexue Chubanshe.
- NBS (National Bureau of Statistics). (1992a–1999a). *China statistical yearbook*. Beijing: Zhongguo Tongji Chubanshe.
- NBS (National Bureau of Statistics). (1993b–1996b). Database of Industrial Firms. Beijing.
- NBS (National Bureau of Statistics). (1994c). *Guojia tongji diaocha zhidu* (State statistical survey and report systems). Beijing.
- Nee, V. (1992). Organizational dynamics of market transition: Hybrid forms, property rights, and mixed economy in China. *Administrative Science Quarterly*, 37, 1–27.
- North, D.C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
- Park, S.H., Li, S., & Tse, D.K. (1997). Determinants of firm performance in a transition economy: Institutional vs. economic effects in China. Academy of International Business Annual Meeting, November, Monterey, Mexico.
- Qian, Y. & Weingast, B.R. (1997). Federalism as a commitment to preserving market incentives. *Journal of Economic Perspectives*, 11(4), 83–92.
- Schmalensee, R. (1985). Do markets differ much? *American Economic Review*, June, 341–351.
- Schmalensee, R. (1989). Inter-industry studies of structure and performance. In: R. Schmalensee & R.D. Willig, (Eds.), *Handbook of industrial organization*, Vol. 2. New York: Elsevier Science.
- The Economist* (1993). Why it happened. October 30.

- Varian, H.R. (1996). *Intermediate microeconomics: A modern approach* (4th Ed.). New York: Norton.
- Walder, A.G. (1995). Local governments as industrial firms: An organizational analysis of China's transition economy. *American Journal of Sociology*, 101(2), 263–301.