

The Effects of Privatization on Industrial Performance in Chinese Economic Transition^{*}

----- **Analysis of the 2001 National Industrial Census data**

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The marketization and privatization reform of China during the past 25 years has brought about tremendous changes to its social and economic life. With the rapid growth of the economy, the proportion of private ownership in the national economy is also growing very rapidly. At the beginning of the 1980s, state ownership dominated the national economy absolutely; then the private ownership phased in, and is superseding state ownership. At the beginning of the 21st century, the private ownership has become an indispensable and significant part of the whole national economy.

The nature of economic transition is by resorting to privatization to promote the economic development, and thus realize the transition from planned economy to market economy. Therefore, a very important determinant of economic performance is the ownership of enterprises. Then, in the Chinese economy, is there any performance differences among different ownership or organizations with different property rights arrangements? What effects of the privatization on economic performance and to what extent? And how large the development potential and room of privatization? This study will give corresponding answers to these questions by testing the empirical data. The result will be relevant to the issue that how to evaluate the privatization effect of the Chinese industrial sector, and to the issue that how to understand the development trend of the privatization in China, thus it has significant policy and practice implications.

The 2001 National Basic Unit Census provides us with relatively good data, which enables us to examine the performance difference and related determinants from the scope of the whole nation and perspective of the whole industrial sector. Consequently, our empirical study has a more comprehensive perspective than some studies based on partial sample investigations, and our analysis result has more general significance.

This study utilized the data of the Second National Basic Unit Census (2001), and the census data provide the basic information of all legal person units. Although the information contained is limited, the number of units contained is the most complete, and it almost includes all the legal person units of the whole country. In this huge database, the nature of different sectors varies. It includes such sector as agriculture, geology and water resources, transportation, post and telecommunications, finance and insurance, real estate, culture, health, and sports etc.. Among

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these, some sectors still remain high proportion of state ownership and have not experienced (or just experienced in a limited scope) marketization or privatization reform due to the nature of these sectors. Therefore, according to the main purpose of our research, we select the industrial sector as our study object, which has experienced the most extensive privatization reform.

We start the concrete analysis from the ownership classification of enterprises. We adopt the current enterprise registration classification stipulated by the State Statistical Bureau as the ownership type, based upon it, we can get enterprises with different types of ownership, and construct an empirical model on Chinese economy, then test the different effects of ownership on efficiency.

In this paper, we classified the ownership types as follows. (1) state-owned enterprises (including state-owned firm, state-owned jointly operated, and wholly state-owned company); (2) collective enterprises (including collective, and collective jointly operated); (3) cooperative share-holding company; (4) limited liability company; (5) Share-Holding Corporation; (6) private enterprises (including whole private owned, private partnership, private limited liability, and private joint stock companies); (7) Hong Kong, Macao and Taiwan cooperative enterprises and joint ventures; (8) Hong Kong, Macao and Taiwan wholly owned enterprises; (9) foreign cooperative enterprises and joint ventures; (10) wholly foreign owned enterprises; and (11) other enterprises (including jointly operated enterprises between state and collective, other kinds of joint operation, and other domestic invested enterprises).

I. Distribution in Sales, Employment and Capital among Different Ownership Group of Enterprises

(1) The shares of sale revenue of different ownership enterprises

From the general distribution of sale revenue of different ownership enterprises (Table 1), we can see that the sale revenue of state ownership enterprises accounts for approximately one third of the total market sales if we include the state share control firms. The sale revenue of other non-state ownership enterprises accounts for two thirds.

Table 1 Distribution of Sale Revenue of Enterprises with Different Ownership Types (2001)

ENTERPRISES TYPES	PROPORTION OF TOTAL SALE REVENUE %	TOTAL SALES VOLUME (RMB 1,000)
State-owned	22.70%	2,596,510,926
Collective	10.66%	1,219,136,933
Cooperative Share-holding Company	2.93%	335,215,888
Limited Liability Company	10.18%	1,164,612,947
Share-holding Company	12.20%	1,395,327,218
Private	14.29%	1,633,944,509
Hong Kong, Macao and Taiwan Cooperative and Joint Ventures	7.05%	805,983,823

Wholly Hong Kong, Macao and Taiwan Owned	4.97%	1,062,512,526
Foreign Cooperative and Joint Ventures	9.29%	568,396,221
Wholly Foreign-owned	5.13%	586,953,861
Others	0.59%	68,002,507
Total	100%	11,436,597,359

Source: Database of the Second National Basic Unit Census.

(2) The distribution of employment of different ownership enterprises

By and large (Table 2), the employment proportion of SOEs accounts for less than one fourth of the total employment of all industrial enterprises, while the employment proportion of private enterprises has been approaching that of SOEs. If we include state holding enterprises like joint stock companies in the SOEs group, then the employment proportion of such state-holding enterprises accounts for approximately only one third of the total employment.

Table 2 Distribution of Employment of Enterprises with Different Ownership Types (2001)

ENTERPRISES TYPES	PROPORTION OF TOTAL EMPLOYMENT %	TOTAL EMPLOYMENT (PERSON)
State-owned	24.15%	22,460,127
Collective	17.65%	16,409,813
Cooperative Share-holding Company	3.88%	3,605,909
Limited Liability Company	9.52%	8,857,511
Share-Holding Company	5.88%	5,649,715
Private	22.60%	21,015,900
Hong Kong, Macao and Taiwan Cooperative and Joint Ventures	4.50%	4,180,651
Wholly Hong Kong, Macao and Taiwan Owned	4.96%	4,615,393
Foreign Cooperative and Joint Ventures	3.56%	3,307,836
Wholly Foreign-owned	2.55%	2,367,690
Others	0.76%	707,007
Total	100%	92,997,552

Source: Database of the Second National Basic Unit Census.

From the perspective of employment proportion, the employment proportion of private enterprises has been very close to that of SOEs, thus has become an important channel in absorbing employment. And enterprises with other registration types are also playing an important role in bearing the burden of employment. Therefore, multiple channels for absorbing employment have come into being, which means the function of SOEs in absorbing employment is becoming weaker and weaker.

(3) The distribution of different ownership enterprises according to capital invested

From the perspective of total capital, we can see the capital proportion of different ownership (Table 3). This kind of capital distribution is dispersed among different ownership, thus it cannot represent directly the ownership of specific enterprises. However, the ownership of enterprise is determined by the control power of capital share. Therefore, the higher the proportion of a certain kind of invested capital, the higher is its status in the national economy.

From the perspective of capital structure, we can see that the capital proportion of non-state enterprises has begun to exceed that of SOEs, that is to say, non-state enterprises have held a dominant position in industrial sectors in general. A situation emerges, that is, (1) state-owned enterprises, (2) private enterprises and foreign invested enterprises, and (3) corporation and collective enterprises, each accounts for about one third of the capital share. Such three general kinds of ownership jointly dominate the whole economy, and form the typical characteristics of the Chinese transition.

Table 3 Distribution of Capital Invested (2001)

CAPITAL TYPES	PROPORTION	TOTAL AMOUNT (RMB 1,000)
State Capital	35.61%	1,992,470,635
Collective Capital	9.19%	514,129,557
Legal Person Capital	20.59%	1,151,974,856
Individual Capital	13.74%	768,604,862
Hong Kong, Macao and Taiwan Capital	9.85%	551,099,921
Foreign Capital	11.03%	617,189,123
Total	100%	5,595,468,954

Source: Database of the Second National Basic Unit Census.

From the perspective of enterprises with different registration types, we can see the distribution of capital invested (Table 4).

Table 4 The Distribution of Capital with Respect to Enterprise Types (2001)

ENTERPRISES TYPES	PROPORTION OF INVESTED CAPITAL %	TOTAL VOLUME OF CAPITAL (RMB 1,000)
State-owned	29.25%	1,636,633,720
Collective	7.81%	436,782,063
Cooperative Share-Holding Company	1.87%	104,659,052
Limited Liability Company	10.67%	597,021,678
Share-Holding Company	10.80%	604,448,768
Private	10.31%	576,814,406
Hong Kong, Macao and Taiwan Cooperative and Joint Ventures	7.16%	400,541,512
Wholly Hong Kong, Macao and Taiwan Owned	5.85%	327,127,103

Foreign Cooperative and Joint Ventures	9.99%	559,403,087
Wholly Foreign-owned	5.70%	319,016,130
Others	0.56%	31,473,363
Total	100%	5,595,468,954

Source: Database of the Second National Basic Unit Census.

From Table 4, we can see that, from the perspective of all enterprises, the capital proportion of SOEs is less than 30 per cent; the capital proportion of Hong Kong, Macao and Taiwan Cooperative Enterprises and Joint Ventures and Foreign-Invested Enterprises is also less than 30 per cent, the capital proportion of private enterprises is a little bit more than 10 per cent, and the rest are stock company and collective enterprises, whose capital proportion is also less than 30 per cent.

Table 5 provides the following information about enterprises with a specific registration type. In Table 5, we can see that, for enterprises with a certain registration type, which capital share has the actual control right. Especially for stock companies, which have a mixed ownership, we should examine in greater detail what is the capital structure of stock companies.

Table 5 The Proportion of Capital Share of Different Ownership Types of Enterprise

Enterprises type	CAPITAL SHARE, %						
	State Capital	Collective Capital	Legal person Capital	Individual Capital	Hong Kong Macao and Taiwan	Foreign Capital	Total
State-owned	81.61%	0.46%	16.70%	0.77%	0.03%	0.26%	100%
Collective	3.17%	78.89%	10.21%	6.38%	0.98%	0.38%	100%
Cooperative Share-holding Company	6.73%	18.75%	24.79%	48.85%	0.46%	0.41%	100%
Limited Liability Company	30.56%	7.71%	44.55%	16.48%	0.21%	0.49%	100%
Share-Holding Company	47.38%	3.46%	31.05%	16.24%	1.34%	0.53%	100%
Private	0.53%	1.80%	20.04%	77.33%	0.22%	0.09%	100%
HK, Macao and Taiwan Cooperative & Joint Ventures	14.24%	8.36%	21.09%	3.32%	52.64%	0.36%	100%
Wholly HK, Macao and Taiwan Owned	2.07%	0.22%	2.54%	0.94%	94.08%	0.15%	100%
Foreign Cooperative & Joint Ventures	15.00%	4.15%	21.83%	1.99%	1.77%	55.25%	100%
Wholly Foreign-owned Enterprises	1.49%	0.11%	4.81%	0.61%	1.12%	91.87%	100%
Other	28.31%	22.51%	32.85%	14.50%	1.27%	0.56%	100%

Source: Database of the Second National Basic Unit Census.

Note: The contributor of most capital is highlighted.

From Table 5 we can see that there is always an owner with the largest share in enterprises with a certain registration type. For example, in the group of SOEs, the share of state capital amounts to 81 per cent; in the group of collective enterprises, the share of collective capital is almost 79 per cent; in the group of private enterprises, the share of individual capital is 77 per cent; in groups of wholly Hong Kong, Macao and Taiwan owned enterprises and wholly foreign-owned enterprises, the share of Hong Kong, Macao and Taiwan capital and foreign capital respectively both account for more than 90 per cent; and even in joint ventures, the share of foreign capital or Hong Kong, Macao and Taiwan capital accounts for more than 52 per cent, which means they are in a dominant position. Therefore, we can say that the registration types of enterprises can demonstrate their ownership nature. That is, the ownership characteristics of different groups of enterprises are clear and explicit.

For all stock companies groups above, however, there is no ownership capital that has an absolutely dominant share, but only has a relative dominant share. That is because most of the restructured enterprises have belonged to the scope of these three kinds of stock company (namely, Cooperative Share-holding Company, Limited Liability Company, and Share-Holding Company). This special ownership arrangement results from the multiple stock characteristics of the restructured enterprises in the transition period.

The Cooperative Share-holding Company is purely a new type of enterprise, it came into being as a result of public enterprise restructuring. Individual capital dominates with its capital proportion approaching 50 per cent. We can say that Cooperative Share-holding Company has basically had the characteristics of private ownership. The share of state capital in Cooperative Share-holding Company is only 6.73 per cent, which demonstrates that SOEs have almost exited this kind of enterprises. Moreover, in Cooperative Share-holding Company, the proportion of collective capital is 18.75 per cent, which is probably the result of collective enterprise restructuring.

In Limited liability Company, corporate capital has the largest proportion, which is 44.55 per cent, next comes state capital, which is 30.56 per cent, and individual capital proportion is 16.48 per cent. This type of enterprises mainly consist of reorganized multiple share holding enterprises based upon original SOEs. A great portion of the corporate capital of the restructured enterprises is composed of legal persons like employee-share-holding-committee. For Limited liability Company, since the company law have registration stipulations concerning the number of stockholders, the restructured enterprises generally put all employees into one legal person share, for example, to register in the form of employee-share-holding-committee corporate or trade union legal person. This legal person capital of employee share generally accounts for a large proportion in restructured enterprises. Moreover, there are also some corporate stockholders come from the original state parent companies. Although the proportion of individual capital in the total capital is moderate, yet most of the individual capital is owned by managers of the restructured enterprises, and the managers have control rights and usually have a relative large share that could be powerful in the enterprises. The state capital still accounts for one-third or so in this kind of enterprises, although the state capital has exited many restructured enterprises. In some multiple share holding enterprises, there are still some state-holding enterprises, and they are very similar to the general

SOEs, no essential difference between them. Therefore, owing to Limited Liability Company have such capital share mixed, we could not give a clear definition about its ownership.

Most of Share-Holding Companies are restructured from medium and large-sized SOEs, and also they are listed companies with the state share controlling, or they are large-sized SOEs that are going to be listed on the stock market. In this type of enterprises, there are also some small number of successful joint ventures, private enterprises or township and village enterprises (TVEs). Therefore, in the total capital volume of Share-Holding corporation, state capital accounts for 47.38 per cent, and corporate capital accounts for 31 per cent. Most of corporate capital is owned by original parent company (SOEs), and some one else are owned by small number of relative enterprises or investment companies. Individual shares of Share-Holding corporation are mainly dispersed current public shares, which account for more than 16 per cent. Since the proportion of state capital in this type of enterprises is quite large, therefore we can say that most Share-Holding corporation possess the nature of state ownership.

Here, private enterprises are formed spontaneously by private investment, which is different from those stock company that are formed by enterprise restructuring. In the total capital of private enterprise, individual capital accounts for more than 77 per cent, while state capital accounts for almost nothing, just like the case that in the total capital of SOEs, individual capital accounts for almost nothing. Here, the boundary is very clear, there is almost no overlapping or mixed part. Therefore, state-owned enterprises and private enterprises have apparent feature, which is different from those mixed ownership with both private and public components. However, there is still a 20 per cent corporate capital in private enterprises, whose ownership is a little bit ambiguous. But generally speaking, the corporate capital in private enterprises, which is not in a dominant position, cannot exert essential influence on enterprise performance.

In joint ventures, no matter are they Hong Kong, Macao and Taiwan capital, which accounts for 52.64 per cent, or other foreign capital, which accounts for 55 per cent. It is very clear that they are in a dominant position. In joint ventures, state capital only accounts for 15 per cent or so, and corporate capital accounts for 21 per cent or so, it shows that these two types of capital are not in a dominant position. For wholly foreign-owned enterprises including Hong Kong, Macao and Taiwan enterprises, foreign capital accounts for more than 90 per cent, so it should be unquestionable to declare that they are in an absolutely dominant position. Therefore, joint ventures and wholly foreign-owned enterprises can both be classified as one type of private ownership.

To sum up, we find that all private enterprises invested spontaneously in the market economy (including domestic private enterprises, FIEs and Hong Kong, Macao and Taiwan invested enterprises), no matter are they corporations or non-corporations, have very explicit ultimate ownership. Traditional public-owned enterprises, which were established in the planned economy, also have unambiguous owners. Enterprises with typical transition characteristics are those formed after public enterprise restructuring, and they are belonged to the share-holding corporation. From view of the whole corporation, these transitional enterprises have a common feature, that is, they have no explicit ultimate ownership.

II. The Effects of Ownership on industrial efficiency

Due to limitations of data, we cannot conduct efficiency testing by using data at firm level; instead, we use data at industry level. The database of the Census Center of the State Statistical Bureau provides us with cross section data (2001) at industry level, which include all the 605 industries (four-digit industries). The database is our principal data source for estimating the production functions of the industries.

The purpose of our analysis is actually to find the determinants of industrial efficiency, with an emphasis on the effects of different ownership structures on industrial efficiency. According to the theories of industrial economics, scale has a significant effect on industrial performance. Therefore, we must control this kind of variables in our analysis in order to get accurate results. In order to separate accurately the effects of different factors on efficiency, and in order not to confuse the effect of ownership and the effect of scale, we should add a size variable in the estimation formula of the production function. Thus we can guarantee that the important variables are not neglected and ensure that our analysis is to a great extent reliable and accurate.

Based on the Cobb-Douglas production function, we introduce the variable of ownership structure as an explanatory variable, to find how the economic efficiency will change under different ownership systems. The variable of ownership structure is measured with the proportion of paid-up capital of enterprises with different registration types in the total capital of a specific industry. The variable of size, which needs to be controlled, can be measured with the market share of large-sized and middle enterprises or small firms in a specific industry. The dependent variable is the sales revenue of an industry, which is treated as the output variable. The inputs variables are labor and capital, which are measured with the number of employee and the amount of net assets respectively.

In this way, we get the estimating model for determinants of industrial efficiency:

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L + \gamma(OW) + \delta(LA) + \varepsilon .$$

Where Y is the output variable, K and L are capital input variable and labor input variable, measured by net value of fixed assets and number of employee respectively. OW is the ownership structure variable, and LA is the size variable. Since both OW and LA are percentages, we do not need to take logarithms on them.

According to the enterprise classifications based on different ownership, we get the proportions of capital of enterprises with different ownership in the total capital of a specific industry. Therefore, in the above estimation equation, we put these ownership variables, i.e., state, collective, private, share-holding cooperative, limited liability, share-holding, Hong Kong, Macao and Taiwan joint ventures, foreign joint ventures, wholly foreign owned, into our model, and get the estimated parameter of these ownership variables.

Table 6 The Effects of State Enterprises on industrial efficiency

EXPLANATORY VARIABLE	INTER-CEPT	LK	LL	LARGE	MIDDLE	STATE-OWNED	R ² = 0.9413 F = 1936 N=605
PARAMETER (T-value)	2.699 (14.36)	0.424 (12.56)	0.577 (16.44)	0.801 (6.93)	0.566 (3.21)	-0.555 (-8.37)	

Table 7 The Effects of Other Ownership Enterprise on industrial efficiency

EXPLANATORY VARIABLE	PARAMETER ESTIMATE	T-VALUE
Intercept	0.7424	3.94
LK	0.6182	20.28
LL	0.3996	12.56
Large	0.9251	8.82
Middle	0.8846	5.52
Collective	0.6676	3.60
Cooperative share-holding	0.8341	2.03
Limited liability	0.5905	3.66
Share-Holding	0.4458	3.09
Private	1.1338	7.79
Joint ventures of HK, Ma, TW	1.1818	5.32
Wholly owned of HK, Ma, Tw	0.8082	5.53
Foreign joint ventures	0.7918	7.05
Wholly foreign owned	0.8885	5.28
R ² = 0.9595 F = 1102 N = 605		

Source: Database of the Second National Basic Unit Census.

Note: The dependent variable is logarithm of sales revenue, the explanatory variable LK is logarithm of net assets, LL is logarithm of number of employees, and LARGE and MIDDLE is the market share of large-sized and middle-sized enterprises respectively. Sample number N (4-digital industries) is 605.

From the above production function analysis, we can find that the result is very consistent with the theory of property right. That is, the ownership variable plays a vital role in affecting industrial efficiency, in which state share have significant negative effect on industrial efficiency. When the state capital proportion increases each percentage point, the output will decrease 0.555 percentage points. The negative effects on performance show that state enterprises not only fail to promote economic development effectively, but result in a negative effect on economic growth.

Most of other ownership factors, except state ownership, all have significant active roles on efficiency, but they are in different ranking levels. Comparatively speaking, the first level are private enterprise and HK/TW joint ventures, they have most strong positive effects. Secondly, the Cooperative share-holding companies and other FIE enterprises also have strong positive impacts. And third level are collective enterprises, Limited liability and Share-Holding Corporation, in which former two firms have approximately same effects but the Share-Holding Corporation have less positive effects on efficiency. In short, these ownership variables show the different degree of the significant increased effects of output efficiency.

In FIE enterprises, Hong Kong, Macao and Taiwan joint venture enterprises generally have the typical features as same as the private firms. In fact, many such joint ventures are false ones (假合

资) . Therefore they exhibit a significant positive effect on efficiency that is approximately the same as private firms. For other FIE enterprises, their effect is also very significant. This fact implies that enterprises with explicit private ownership, superior size or technology advantage, and thus with a certain market power will inevitably exhibit a higher positive effect on efficiency.

From above two tables we also can see, the large and medium sized enterprises have significant effects on efficiency. No matter how the explanatory variables changed, large and medium sized enterprises always keep a very stable and unchanged positive relation with efficiency. Therefore, the scale and technical advantage of the enterprises is important factor to promote the efficiency, which is already controlled by our models.

We can clearly find, from the above analysis, the different firm pattern in specific property right form, has different feature for efficiency determined. We also prove that private ownership has a positive effect on efficiency and the marginal productivity is increasing obviously. State ownership, however, has a negative effect on efficiency and the marginal productivity is decreasing obviously. Therefore, the ownership has the key important role in determining enterprise efficiency.

III. The Effects of Capital Share on industrial efficiency in Gaizhi Enterprises

In the transition process of China, almost all the Gaizhi public enterprises are transformed into stock companies. According to the definition of the State Statistical Bureau, the stock companies here can actually represent those Gaizhi enterprises. It is our emphasis in the research to evaluate the performance of those restructured enterprises under the Chinese reform policy. Therefore, we will focus on analysis of the stock company in more details.

From the perspective of ownership distribution in Chinese industries, we find, apart from stock company, the other types of enterprises all have very explicit ultimate ownership. But unlike those enterprises with unitary and explicit ownership, stock companies contain multiple ownership, thus we cannot discern accurately the effect on efficiency. Therefore, it is necessary to conduct a analysis of stock company in order to find which ones in the contained ownership factor that may have positive effect on efficiency.

Now, we separate stock company from other types of enterprises, and then just test the effects of ownership capital inside. The ownership capital of stock company usually include 6 types, namely, state capital, collective capital, corporate capital, individual capital, HK/Ma/Tw capital, and foreign capital. In each group of three stock companies, we will directly utilize ownership capital variables to identify their effects on efficiency. In this way, we can separate the different ownership capital from the mixed ownership of enterprises and find which element has the key roles on efficiency.

According to the definition of the State Statistical Bureau, stock company include three categories, i.e., Cooperative Share-holding Company, Limited liability Company and Share-Holding Corporation, without private stock companies and foreign-invested stock companies. In these three types of stock company that have mixed ownership, which ownership factors on earth have significant effects on efficiency? In the following, we are to analyze the effects of different

ownership capital on efficiency in stock company.

By using the same production function model, and approximately the same theoretical assumptions and explanatory variables, our analytical results shown, no matter what types of stock company is, it is an obvious common feature for all stock company that the individual capital has very significant positive effect on efficiency. When the proportion of individual capital increases each percentage point, the output will increase 0.5 to 0.8 percentage point, comparing to state capital. No other elements of capital shares have such stable and significant effects. This result shows that the source of efficiency growth in stock company mainly depends on positive institutional changes, and latter comes from individual capital investment.

Table 8 The Effects of Different Shares Holder on Efficiency of Three Types of Stock Company

Var	COOPERATIVE SHARE-HOLDING		LIMITED LIABILITY		SHARE-HOLDING	
	Parameter	T value	Parameter	T value	Parameter	T value
Intercept	3.750	10.49	3.081	11.14	2.132	7.45
LL	0.697	16.77	0.731	17.41	0.559	12.08
LK	0.321	8.54	0.303	8.21	0.512	13.60
Middle	-0.556	-2.15	-0.032	-0.19	-0.221	-1.57
Small	-0.983	-4.32	-0.538	-3.79	-0.355	-3.02
Collective	0.166	0.71	0.025	0.12	-0.257	-1.16
Corporate	0.318	1.52	0.716	5.01	0.187	1.30
Individual	0.637	3.17	0.733	4.27	0.557	3.15
$R^2 = 0.9018$		$R^2 = 0.909$		$R^2 = 0.919$		

Source: Database of the Second National Basic Unit Census.

Note: The dependent variable, explanatory variables and number of samples are the same as Table 6. Collective, corporate and individual are shares of their owned respectively.

Table 9 The Effects of State Shares on Efficiency of Three types of Stock Company

Var	COOPERATIVE SHARE-HOLDING		LIMITED LIABILITY		SHARE-HOLDING	
	Parameter	T value	Parameter	T value	Parameter	T value
Intercept	3.318	21.13	3.121	18.04	2.070	12.47
LL	0.727	17.79	0.731	17.91	0.555	12.10
LK	0.292	7.92	0.306	8.49	0.511	13.87
Large	0.950	4.15	0.585	4.25	0.395	3.34
Middle	0.381	2.66	0.521	3.82	0.167	1.28
State-owned	-0.369	-1.80	-0.657	-5.00	-0.277	-1.97
$R^2 = 0.900$		$R^2 = 0.908$		$R^2 = 0.917$		

Source: Database of the Second National Basic Unit Census.

Note: The dependent variable, explanatory variables and number of samples are the same as Table 6.

State-owned is the share of state owned in the total capital.

In above stock companies, no matter which classification is, the state capital share always shown significant negative effects on efficiency. In contrast with it, private capital shares have stable positive roles. Also, the collective capital shares are irrelevant with efficiency in stock company.

In the Share-Holding Corporation, corporate capital and collective capital all exhibit irrelevant effect on efficiency. Therefore, the positive effect of Share-Holding Corporation on industrial efficiency can be attributed institutionally to the role of individual capital, instead of other types of capitals. Meanwhile, in Share-Holding Corporation, which mainly consisted of listed companies or enterprises prepare to be listed, they usually are large-sized state-owned, and have remarkable market power. So we could attribute the positive effects on efficiency to the congenital advantages of them, for example, return to scale, and some imported equipment and technology. Therefore, no matter where the state ownership exist in traditional state enterprises, or it exist in the modern form of corporate companies, they both have no any positive effects on efficiency. In the stock companies, the higher the individual capital share is, the more efficiency the industries are. It is the individual capital share could play the key roles.

In the Limited liability Company, apart from the positive effect of individual capital, corporate share also demonstrates significant positive effects on efficiency. Why did corporate shares in this type company have such effects that are approximately the same as that of private shares, unlike in other types of stock companies? We should look for its reasons.

Corporate share seems have ultimate control position in Limited Liability Companies. It has largest share, e.g. 44.55%, of all capital in the companies. So its positive roles are inevitable important. Generally speaking, according the regulation of Limited Liability Company, there is a limit for number of shares holder. As a result, most of employee share could only be incorporated in a legal community. Such legal persons, for example as employee share-holding committee, have the same nature as the individual share of cooperative share holding firms, but they are in form of legal person, instead of individual capital. Therefore, such employee shares occupy some large parts of legal person capital in many limited liability companies.

Some others legal person capital generally are indirectly investment from other firms, including state firms and non-state firms. Most of state investment in stock company are in form of state capital, instead of corporate capital, and the share in form of corporate capital are mainly indirectly investment from state firms and others. Therefore, indirect state investment is different from direct state investment, in former one there is diluted state capital. It formed the multiple corporate share holding system that actually include more employee legal persons, more multiple shares corporate, and less pure state corporate. In this meaning, the active effects of corporate capital in Limited Liability Company largely come from employee community legal person, or some multiple shares holding corporate.

In Cooperative Share-holding Company, individual capital, which accounts for near 50 per cent, contributes significantly to efficiency, and the corporate capital shares play the less significant positive roles, but collective capital exhibit the irrelevant effects. The individual of capital share

here is mainly consists of employees and managers. No doubt, they play the key important roles on enterprise performance. To large extend, the success of Cooperative Share-holding Firms could contributed to those share-holding capital, e.g. the shares of employee and managers, which produce the very active and incentive effects to promote efficiency.

Generally speaking, most of the Cooperative Share-holding Company are restructured public enterprises, or a part separated from public enterprises. Owing to the regulation for cooperative share holding without limited number of shares holder, it need not take the legal person capital for employee shares, but take individual capital forms. In this way, in the corporate capital composition of these enterprises there contains little individual capital, but mainly general corporate capital. As a result, compared to the limited liability companies, why did the legal person capital in cooperative share holding firms show the less positive effects on efficiency? It is because in which there is lack of effective individual capital to promote efficiency well.

Since the scale could play important roles on efficiency, we put the variables of scale into the regression above for controlling them. We found the analysis results are interesting. Although in three kinds of stock companies large firms all have significant positive effects, they show very clear difference among three groups. The scale effects vary from one specific share holding enterprises to another. Comparing each other, it is highest of large firm scale effects that come from cooperative share holding firms, moderate high scale effects from limited liabilities, and less high scale effects from Share-Holding Corporation.

How to explain such difference of scale effects in different groups of stock companies? Relatively speaking, there are fewest of state capital in group of Cooperative Share Holding Firms, and most of state capital in group of the Share-Holding Corporation. Therefore, the large scale is the results of competition in the case of Cooperative Share Holding, and the return to scale could be fully presented by the large firms active role in this group. Opposite to above situation, when the large scale is largely supported by government in the case of the Share-Holding Corporation, instead of the results from competition, the positive scale effects could not be fully played by large firms, and also be weakened by state ownership. We can get the conclusion from above analysis. Whether do the roles of return to scale play fully? It depends on ownership structure. We should pay enough attentions to such weakened effects of return to scale by state ownership.

From view of contributions of capital and labor to output efficiency, we can find, there is obvious difference among three types of stock companies. In the groups of Cooperative Share Holding and Limited Liability Company, the labor's contribution is highest, e.g. about 70% or more, but capital's contribution is only about 30%. In the Share-Holding Corporation, both two factors are roughly same level. It shows, in former condition, active roles or increased efficiency mainly depend on labor, instead of capital, but in latter situation, efficiency do not obviously depend on one input factor of them. We can see from analysis above, during the beginning period of privatization, most of Gaizhi firms mainly depend on investing more human capital and less physical capital, to increase efficiency. Such way of raise productivity is consistent with the potential of privatized firms. So many firms would like adopt it directly, because of lower cost for restructure at first period of privatization. Compared to the Share-Holding Corporation, the

privatized firms at beginning generally are lack of large amount of funds to input, and thus lack of capital inputs or advanced equipment. Therefore these firms' productivity largely improved will take properly long time to be carried out. But it is important that privatized enterprises have got a good path start, in this track they would have to follow in the future.

IV. Conclusions and Policy Implications

Through analyzing the industrial sectors of China 2001 Basic Unit Census and testing the related efficiency models, we have confirmed that the variable of ownership is a pivotally important determinant of efficiency. Meanwhile, our analysis has actually answered the two aspects of important questions. At first, is it necessary to do ownership restructure for public owned enterprise? Has it improved the efficiency? And whether did the efficiency increase for Gaizhi firms, compared with un-restructured ones? Secondly, whether are the ownership structure reasonable that emerging after privatization? Is there any potential improvement for more or further privatization?

After analyzing the input-output efficiency of all industrial sectors, we can find the effects of different ownership on efficiency. State ownership has obvious negative effect on efficiency. Private enterprises, stock companies and FIEs exhibit significant positive effect on efficiency. Therefore, our analysis shows that the direction of sustained privatization is correct during the past 25 years of economic transition, and the reform has achieved remarkable success. However, the negative effect of state ownership and positive effect of private ownership on efficiency demonstrate that China has great potential in its privatization process. The ownership structure change, especially more exit of state ownership, or more entry of private ownership can lead to significant efficiency enhancement.

Stock company is a type of enterprises that emerge in a large amount during China's transition, and most of them are Gaizhi firms coming from SOEs or collective enterprises. Since the original public-owned enterprises that have undertaken privatization are distributed among the three kinds of stock company, we can test the direct effect of privatization just in the three groups of firms, in order to get the result we are concerned.

As regards stock companies with mixed ownership, since they include the different pattern of ultimate share-holding control right, e.g. state shares dominated, corporate shares dominated, or individual shares dominated, the category of mixture makes the analysis on efficiency ambiguous, and we cannot get more meaningful conclusions. Therefore, it is necessary to separate each ownership type from the mixed ownership enterprise, in order to discover the specific effect of share control rights or ultimate ownership on efficiency.

Our analysis for stock company shows, no matter what they are in the form of the Limited liability Company, the Share-Holding Corporation, or the Cooperative Share-holding Company, individual capital all exhibits significantly positive effect on efficiency, while state capital exhibit significantly negative effect. But as for corporate capital, they have different effects among three types of stock company. In Limited Liability Company, there is more corporate capital than that in

other two share-holding firms. Owing to more individual capital inside, the corporate capital of Limited Liability Company thus have more significant efficiency effects than others. Meanwhile, as for the effects of return to scale, there is also some difference among three types of stock companies. The more state capital it have, the lower the scale efficiency there is.

Therefore, we can draw a conclusion from the analysis of stock company, the essential force to determine the enterprise performance is the share control rights. It is the different kinds of share control rights that result in different effects on efficiency. The more the individual share control rights, the higher is the efficiency. It demonstrates that individual capital has a positive effect on efficiency enhancement. On the contrary, the more the state shares control rights, the lower is the efficiency. It means that state capital has a negative effect on efficiency enhancement. Therefore, the positive effect of stock company on efficiency can be attributed institutionally to the role of individual capital entrance or privatization. Therefore, the ownership structure of stock company still has a lot of room for improving efficiency. From the view of government policy, it would be an important means to encourage individuals to invest and let state to exit from enterprises, so that the more reasonable ownership structure could be produced.

The foreign-invested enterprises and Hong Kong, Macao and Taiwan invested enterprises, which account for more than one fourth of the total market share and enterprise capital, have played an undeniable role in China's economic development, and they are also an important source of China's economic growth. In the present transition period, the most large-sized SOEs have not completed the transition successfully, and private enterprises have not mastered advanced technology and have not entered those industrial sectors with economies of scale. FIEs and Hong Kong, Macao and Taiwan invested enterprises just have both advantages, compared to state firms lacking institutional advantage and private enterprises lacking scale and technology advantage. However, in order to promote the development of Chinese national industry, the government should promote the transition and privatization of medium and large-sized SOEs, and spare no effort in supporting private enterprise to enter new industrial sectors. These are important policies that should be adopted by the government at present.

By and large, according to our empirical analysis, *relative to the original state ownership system, the widespread privatization and establishment for share-holding system have significantly improved the industrial performance. The direction of enterprise ownership restructuring is correct and the restructuring per se is successful if we judge it from its effect. But, no matter from the perspective of established ownership layout, or from the perspective of the ownership structure of the restructured enterprises, there still exist some unreasonable aspects. The fact that state ownership exhibits a negative effect on performance, corporate ownership exhibits an less significant positive effect on performance, and individual capital has a great potential role in enhancing efficiency shows that further privatization has huge room for performance improvement. This is an emergent problem to be tackled in the present restructuring, and it is also the tendency of future development.* The direct policy implication from the above analysis is as follows: given the fact that there are still a large number of SOEs, state ownership needs to exit in order to reduce the negative effect, and correspondingly increase the positive effect of private ownership. As for the stock company with mixed ownership, we need to adjust their ownership

structure, that is, to lower the state shares, and increase the individual shares or ultimate private ownership control right. This is an important means to form a reasonable ownership structure, and is also a source of enterprise efficiency enhancement.