

## **Chinese corporate profitability performance following the Split-share Structure Reform**

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### **ABSTRACT**

This paper examines how China's split-share structure reform, taking effect in April 2005, affects the corporate profitability performance. Before such a reform, the ownership structure of Chinese listed corporations remains very unbalanced with an overwhelming governmental ownership concentration. The purpose of split-share structure reform is to make all corporate shares tradable in the open market and thus to dilute government holdings. By using panel data and searching for the most appropriate modeling method, this study examines whether the split-share structure reform program can effectively help Chinese corporations to improve their operating performance afterwards. The results indicate that not only the government's ownership concentration is negatively related to corporate profitability, but also the tradable shares proportion is negatively associated with corporate profitability. A firm's net sales and financial leverage are also influential to its post-reform profitability. It is concluded that the "split-share structure reform" improves the profitability performance but not necessarily benefits the corporate governance of Chinese listed companies; and as such, additional structure changes for the enhancement of stakeholders' motivations will be needed.

Keywords: Chinese Stock Market, Split-share Structure Reform, Corporate Profitability, Accounting Performance, State Ownership

## 1. INTRODUCTION

In April 2005, the central government of China initiated a program of “split-share structure reform” in Chinese stock markets, in order to allow governmental shareholders of listed corporations to trade their restricted shares in the open market. Prior to this program, Chinese listed companies issued two types of share: tradable shares and non-tradable (restricted) shares. For instance, A-shares and B-shares are tradable shares. Both of them are traded in the domestic market, but A-shares are traded in local currency “renminbi” (RMB) while B-shares are traded in either US- or Hong Kong dollars. Moreover, A-shares are traded on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE), and only Chinese citizens can trade them. Non-tradable shares are owned by central/local governments (as “state shares”) or state-owned enterprises (as “legal person shares”) and cannot be traded in the stock market without official approval. It is reported that before the 2005 split-share structure reform, the proportion of non-tradable shares accounts for 60%~80% of the total shares of listed companies (Delios and Wu, 2005). The non-tradable shareholders have the same voting rights and receive the same dividends as the holders of tradable shares.

The overwhelming governmental ownership can result inefficiencies such as a lack of innovation and cost that has no incentive to minimize (Shleifer, 1998). Such a structure of pre-reform stock market could cause severe agency problems, due to the “economic vs. political” goal conflicts between private investors and government owners. The investing public is put in an inferior position, compared with the actual controllers in making corporate policies and disposing of the firms’ profits and assets.

Some studies attribute the poor market performance of Chinese corporations to the “non-tradable shares” problem (Ang and Ma, 1999; Green and Ho, 2004; Kato and Long, 2005). And some other studies argue that privatization can (i) improve corporate management, (ii) make decision more efficient, (iii) promote corporate performance, (iv) control risks (Megginson and Netter, 2001; Bortolotti and Siniscalco, 2004).

The Chinese government did notice such inefficiency problems, and started her plan of a split-share structure reform program as early as in 1999. Transfer of non-tradable shares has been allowed since mid-1990s through irregularly scheduled auctions and over-the-counter transactions. In the years of 1999 and 2001, two projects attempted to sell off state-owned shares but both eventually failed, because investors feared that the abrupt oversupply of shares at that time would flood the stock market and hurt prices badly (Kwan, 2005; Bortolotti and Beltratti, 2006).

In 2005, the “split-share structure reform” re-started, which was conducted batch by batch this time. On April 29, 2005 the China Securities Regulatory Commission (CSRC) announced a pilot program to transform non-tradable shares into tradable shares. There were 2 pilot batches and 66 regular batches from 2005 to 2007. The initial batch included four companies only. On June 17, 2005, the China Securities Regulatory Commission (CSRC) initiated the second round of the program, which involved 42 companies. On August 19, this second round was accomplished. Then on August 24, the government issued guidelines to extend the reform project to the rest of the stock market, setting a deadline as the end of 2006.

To obtain tradable rights and prevent unfairness on the market, shareholders who hold the non-tradable shares are responsible for paying consideration to shareholders who hold tradable shares. The methods of consideration include share compensation (the most commonly used method), call or put options, cash, and asset

reorganization. In addition are the regulations: no shares at all can be sold and transferred in the first 12 months of the reform period; and no more than 5% can be sold within the following 12 months, no more than 10% can be sold within the following 24 months. In the period of lockups, the non-tradable shares turned into restricted shares. And after the lockup period is over, the first batch of restricted shares were permitted to sell on June 19, 2006, and the total quantity was 11,409 million shares. The quantity of restricted shares which are permitted to sell was 30,267 million shares during 2007, and thus 124,597 million shares during 2008.

After split-share structure reform, a large volume of corporate shares have become privatized. However, the main purpose of Chinese split-share structure reform is to make companies to operate more efficiently. Both the Chinese government and the investing public have been watching the long-term economic impact of China's each specific financial reform as the key indicator of the possibility and sustainability for further reforms of the next round (as the Chinese official slogan claims, "touching stones to cross the river"). It is important for the academia and practitioners to examine: to what extents may such changes in ownership structure affect the operating decision-makings and performances of corporations?

## 2. LITERATURE REVIEW

Most of the published studies use the event-study method to compare abnormal stock returns during China's split-share structure reform period (Bortolotti and Beltratti, 2006; Beltratti and Caccavaio, 2007, Feng and Xu, 2007), generally finding significant short-term event-window gains which tend to decrease while the tradable-share proportions increase.

Some empirical works examine the relationship between Chinese corporate performance and ownership structure, and their results vary across different sample periods, data sets and methodologies. Using linear models, Xu and Wang (1999) and Qi *et al.* (2000) find that Chinese corporate performance is negatively associated with the proportion of state-owned shares but positively related to the proportion of legal person shares. Using non-linear models, Xu and Wang (1999) identify a U-shaped relationship between the proportion of legal person shares and firm performance, while Tian (2001) argues that the proportion of state-owned shares has a positive relationship with corporate value *when* the government is a large shareholder. In addition, Sun *et al.* (2002) find that both state shares and legal person shares have a positive linear relationship with firm performance, but the combination of such two share types has an inverted U-shaped relationship with firm performance. State shares and legal person shares are also found to have a U-shaped relationship and a positive relationship, respectively, with firm performance (Wei and Varela, 2003; Delios and Wu, 2005), while Wei *et al.* (2005) report both state shares and legal person shares are U-shaped associated with firm performance. According to Jiang *et al.* (2008), the positive correlation between government-owned shares and firm performance is due to the high concentration level of government-owned shares.

It has been long argued that "oversized" government ownerships in corporations lead to the absence of focus on profit maximization and excessive bureaucratic interference, particularly in those developing countries (Megginson *et al.*, 1994; Frydman *et al.*, 1999; Gupta, 2005). On the other hand, "too little" government ownership might incur a loss of the governmental supports to those corporations. For example, Chen *et al.* (2006) find that the profitability and efficiency of Chinese listed companies worsen after the partial privatization, due to the incompleteness of the enterprise reform and lack of good corporate management structures. Their findings support Grossman and Hart (1980)'s point of view that non-tradable shareholders might have a stronger incentive and ability to exercise effective corporate governance because their holdings are highly concentrated relative to tradable

shareholders. As the results, researchers also find significant price discounts in non-tradable “restricted” shares relative to tradable shares surrounding the split-share deregulation short horizons (Chen et al. 2008; Huang and Xu, 2009).

Unlike most of the previous studies which have concentrated on the short-term stock price reactions to the Chinese split-share reform, this empirical work focuses on the post-reform change of Chinese corporate profitability performance in the long term (from 2005 to 2008). The only few published journal articles (e.g., Hou et. al., 2013; Hou and Lee, 2014; Chen et. al., 2015) examining the long-term impact of China’s split-share reform so far limit their research scopes to the linkage of corporate executive compensations with the reform. This study, by comparison, covers a broader scope for the association between the reform and corporate performance.

### 3. METHODOLOGY, HYPOTHESES AND DATA

#### 3.1. Methodology

The panel data is used, rather than the cross-sectional data which is used in previous studies. Panel data, which allow time-series and cross-sectional data together, can reduce the bias from ordinary least square estimation. The two main approaches to the fitting of models using panel data are known as “fixed effects regressions”, and “random effects regressions”. A time-series cross-section regression is made to examine the relationship between corporate performance and possible explanatory variables after the split-share reform. The explanatory variables do not include managerial share proportion because it is negligibly low. Wei *et al.* (2005) report an average stock holding of merely 0.015% by senior managers and directors, insufficient to cause ownership effects. Prior studies have also ignored managerial share in their modeling (Qi *et al.*, 2000; Sun *et al.*, 2002; Wang *et al.*, 2004).

Explanatory variables include  $\left(\frac{ST + LP}{TopTen}\right)$ ,  $\left(\frac{ST + LP}{TopTen}\right)^2$  and TS. Among them,

$\left(\frac{ST + LP}{TopTen}\right)$  is the sum of state-share and legal-person-share proportions divided by the top-

ten-shareholders’ proportions. It represents the stock concentration owned by the Chinese government herself and her agent institutions. Combining these two ownership proportions into one variable can prevent the multi-collinearity problem existing in previous literature

(Jiang et al, 2008).  $\left(\frac{ST + LP}{TopTen}\right)^2$  reflects the possible non-linear relationship between the

government’s stock ownership concentration and corporate performance. TS abbreviates the “tradable shares” proportions, i.e., the quantity of tradable shares divided by total shares.

Corporate net sales are controlled for, as it has no clear prediction about corporate performance. Firms with larger sales might have more market power and enjoy economies of scale, but they may also be subject to loss of managerial control over strategic and operational activities (Williamson, 1967). The leverage factor, which is the ratio of total debt to total asset, is also controlled for. The coefficient sign for leverage is also uncertain. A high leverage ratio could mitigate agency costs associated with free cash flows (Grossman and Hart, 1980), but high leverage might also induce managers to reject projects with positive net present value (Myers, 1977). Furthermore, return on assets (ROA), return on equity (ROE), and return on sale (ROS) are employed as the performance measures, considering

such accounting performance have the advantage of being unaffected by equity market volatilities.

### 3.2. Hypotheses Formulation

H1. Governmental ownership concentration and corporate performance are negatively related. It implies that corporate performances improve if governmental ownerships get diluted, i.e., companies benefit from privatization. This hypothesis is suggested and supported by researchers such as Shleifer and Vishny (1986) and Shleifer (1998).

H2. There is a non-linear relationship between governmental ownership concentration and corporate performance. This hypothesis is based on the argument that privatization can help companies to raise performance, but too insignificant government ownership might incur a loss of governmental supports to the firm (Grossman and Hart, 1980; Chen et. al., 2006). The existence of a non-linear relationship implies that there is an optimal quantity of shares for the government and her agents to hold. If the coefficient signs of  $\left(\frac{ST + LP}{TopTen}\right)$  and

$\left(\frac{ST + LP}{TopTen}\right)^2$  are opposite in the nonlinear model, it implies that the governmental ownership concentration is non-linearly associated with corporate performance.

H3. Tradable-share proportion and corporate performance are negatively related. As implied by the convergence-of-interest hypothesis (Jensen and Meckling, 1976), prior to the split-share reform, non-tradable shareholders are unable to engage in short-run market speculations, and thus they have to focus on long-run performance and press for long-haul growth strategies. After the split-share reform, the non-tradable state- and legal-person shares become tradable. Despite the provision of lockup delays, investors' incentive of monitoring corporate governance could still diminish.

### 3.3. Data Description

The data series of this study, covering years 2005 through 2008, are obtained from the local data vendor Taiwan Economic Journal (TEJ). The initial sample data includes all SHSE- and SZSE-listed companies which have experienced the 68 batches of split-share structure reform. The sample firms exclude companies which have incomplete information, and also exclude "special treatment" (ST) companies which are under the asset restructuring process. The final samples are summarized into 22 CSRC-categorized industries in Table 1 (Appendix). The largest number of sample firms is from the machinery industry, and the smallest number is from the timber and furnishings.

Table 2 (Appendix) presents the descriptive statistics for the key variables used in the analysis, whereas Table 3 (Appendix) states the Pearson correlation coefficients between these pair-wise variables, which indicate no abnormally high correlations, and thus are not supposed to cause serious regression problems in this study.

## 4. EMPIRICAL RESULTS

### 4.1. The Appropriate Model to Use

Results in Table 4 (Appendix) indicate the rationales for us to settle for the appropriate regression model to employ in this study. The combined results from F-test (for the equality of all cross-sections' intercepts), LM test (for the possible randomness in

intercepts) and Hausman test (for comparing the estimator consistency) indicate that the fixed effect model is superior to both the random effect model and the classical regression model, no matter when ROA, ROE or ROS is used as the proxy for corporate operating performance in this study. It is thus decided to employ the fixed effect model in regressions, as follows:

Model 1a:

$$ROA_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 TS_{it} + \beta_4 Sales_{it} + \beta_5 Leverage_{it} + \varepsilon_{it} \quad (4.1.1)$$

Model 1b:

$$ROA_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 \left( \frac{ST + LP}{TopTen} \right)_{it}^2 + \beta_4 TS_{it} + \beta_5 Sales_{it} + \beta_6 Leverage_{it} + \varepsilon_{it} \quad (4.1.2)$$

Model 2a:

$$ROE_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 TS_{it} + \beta_4 Sales_{it} + \beta_5 Leverage_{it} + \varepsilon_{it} \quad (4.1.3)$$

Model 2b:

$$ROE_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 \left( \frac{ST + LP}{TopTen} \right)_{it}^2 + \beta_4 TS_{it} + \beta_5 Sales_{it} + \beta_6 Leverage_{it} + \varepsilon_{it} \quad (4.1.4)$$

Model 3a:

$$ROS_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 TS_{it} + \beta_4 Sales_{it} + \beta_5 Leverage_{it} + \varepsilon_{it} \quad (4.1.5)$$

Model 3b:

$$ROS_{it} = \beta_{1i} + \beta_2 \left( \frac{ST + LP}{TopTen} \right)_{it} + \beta_3 \left( \frac{ST + LP}{TopTen} \right)_{it}^2 + \beta_4 TS_{it} + \beta_5 Sales_{it} + \beta_6 Leverage_{it} + \varepsilon_{it} \quad (4.1.6)$$

## 4.2. Model Results

Table 5 (Appendix) exhibits the regression analysis outcomes based on the employed models. Such results are for both linear and non-linear regressions with ROA, ROE and ROS, respectively, as the operating performance measures. Those regressions that use ROE to measure the corporate performance have a slightly different number of observations than the others, as the availability varies across specific TEJ data sets. As shown in Table 5, the intercept terms are negatively significant (at the 1% level) in all models. Such findings indicate that when all explanatory variables are controlled for, the sample Chinese firms, as a whole, have experienced a considerable decrease in post-reform operating performance measures such as ROA, ROE and ROS. This is quite a surprising observation to us. After adjusting for all those factor effects that have been considered, the operating performances of Chinese corporations still fail to improve but instead deteriorate in terms of ROA, ROE or ROS, at least within the years of 2005-2008 that closely follows the split-share reform.

Moreover,  $\left( \frac{ST + LP}{TopTen} \right)$  is negatively associated with ROA and ROE, significant at the 5% level for Models 1a and 1b, significant at the 10% level for Models 2a and 2b, but insignificant for Models 3a and 3b. Such results support hypothesis H1, suggesting that 1) the large stock ownership concentrated by the Chinese government have substantial influence

in the listed companies' operation strategies, and 2) corporate performance tend to improve as the levels of the governmental involvement decrease. Privatizations do seem to help Chinese listed companies to boost their operating performance.

However, hypothesis H2 is not supported by Table 5 results. Although the coefficient sign for  $\left(\frac{ST + LP}{TopTen}\right)$  is negative and for  $\left(\frac{ST + LP}{TopTen}\right)^2$  is positive in all non-linear models, their *p*-values are rather statistically insignificant (at the 10% level) to confirm the existence of a non-linear relationship. It seems to us that the association between governmental stock ownership concentration and corporate performance should be more suitably characterized as being linear, also suggesting that no "optimal" level of governmental ownership concentration can be found in the sample period of this study.

For hypothesis H3, Table 5 shows that the "tradable shares" (TS) effect is negatively significant across all models except for 3b. Largely, such results indicate that Chinese corporate performances decrease with the quantity of tradable shares increasing. As suggested by the convergence-of-interest hypothesis (Jensen and Meckling, 1976), those "no exit" non-tradable shareholders might hold relatively high incentives to closely monitor corporate governance, until the split-share reform causes such motivations to diminish after those shareholders find their relatively easy exits.

In addition, with respect to the other control variables included in such models, firm net sales is positively and significantly associated with all measures of profitability performance (ROA, ROE and ROS), while leverage is negatively and significantly related to those corporate performance measures. It appears to us that a Chinese listed company which has a smaller size of net sales amount and/or a higher level of financial leverage, her operating tends to underperform during the 2005-2008 period following the split-share structure reform. One possible explanation is that such types of Chinese corporations are under the most pressure and risk of losing governmental guidance and support after the "privatization" reform.

## 5. CONCLUSIONS

The 2005 split-share structure reform gives the way to rebalance the ownership structure of Chinese listed companies, and increase the liquidity of Chinese stock market. Before the reform, most of the corporate shares were owned and tightly controlled in terms of state shares and legal person shares, by the government and government-sponsored agent institutions, respectively. Such an intense concentration of governmental ownership is believed by many researchers to be the source of agency problems between private investors and the government, as these two groups may hold different or even conflicting perspectives of corporate development goals (e.g., "for profits" vs. "for economic growth" or even "for the national interest"). With the split-share deregulation, all shares of a listed company become tradable in the open market, the Chinese government and her legal-person agents from then on play the roles of western "insider shareholders" (subject to some lockup regulations before selling their holdings) and/or "institutional investors", thereafter reducing governmental ownership concentrations. Presumably, such a reform will help to boost corporate governance in listed companies, with a greater focus on corporate profit-maximizing efforts.

To test the validity of such presumptions, this study employs the cross-section time-series data to examine Chinese corporate performance during the post-reform years 2005-2008. By comparisons, the fixed effect model is considered the most appropriate for this study, superior to both the random-effect model and the classical regression model in terms of

model specification and estimation efficiency. The fixed-effect models produce some significant results: 1) Following the split-share reform, Chinese corporate profitability performances (such as ROA, ROE and ROS) are found to be negatively associated with the combination of state and legal person ownership concentration, suggesting that corporate operating performance should benefit from the spinoff of governmental ownership. 2) The post-reform corporate operating performance is also found to be negatively related to the tradable-shares proportion, which, in line with Grossman and Hart (1980)'s, suggests that shareholders' incentives to consistently monitor corporate governance have diminished after the split-share reform removes the restrictions on those previously non-tradable shares. As such, the split-share deregulation may benefit the corporate profitability performance at the expense of corporate governance consistency. 3) Those Chinese corporations with greater net sales amounts and/or less financial leverages tend to have better post-reform performance, suggesting that the ownership privatization benefits such kinds of Chinese firms by more. 4) Even after the effects of these aforementioned factors are adjusted for, the Chinese corporate performances still have shown significant decrease during the three years after reform.

According to public opinions, the split-share structure reform is an essential step in the development process of Chinese stock markets. Yet within the several years following the reform, the net impact on Chinese firm operating performance remains mixed. On one hand, large owners such as non-tradable shareholders are relatively more willing and able to exert effective corporate governance; on the other hand, corporate performance depends on governmental long-term supports as well, even after the government and her legal person institutions may have shifted from "shareholders" to "stakeholders". Therefore, in order to ensure the improvements in long-term Chinese corporate performance, it should remain very important for the reformers to further encourage the participation of non-governmental institutional investors, to establish the incentive schemes for corporate management, other shareholders, and other stakeholders.

Since the 2005 split-share structure reform, the Chinese stock market has undergone further developments and other deregulations, including the most-recent "Shanghai-Hongkong Express" reform which allows cross-border stock transactions for investors in either of those two stock exchanges. Just as the split-share reform, the "express" plan was initiated back in 2007, and was then delayed and modified, and eventually takes effect in mid-November 2014. To what extents such stock market reforms may benefit Chinese corporate performance remains to be seen, and thus worth closer investigations in the future.

## REFERENCES

- Ang, J. S., & Ma, Y. L. (1999). Transparency in Chinese stocks: A study of earnings forecasts by professional analysts. *Pacific-Basin Finance Journal*, 7, 129-155.
- Beltratti, A., & Caccavaio, M. (2007). Asset float and stock prices: Evidence from the Chinese stock market. [Online] <http://www.edge-page.net/jamb2007/papers/9.pdf>
- Bortolotti, B., & Beltratti, A. (2006). The nontradable share reform in the Chinese stock market. [Online] <http://ssrn.com/abstract=944412>
- Bortolotti, B., & Siniscalco, D. (2004). The challenges of privatization: An international analysis (pp. 48-60). Oxford: Oxford University Press.
- Chen, G., Firth, M., & Rui, O. (2006). Have China's enterprise reforms led to improved efficiency and profitability for privatized SOEs? *Emerging Market Review*, 7, 82-109.
- Chen, G., Firth, M., Xin, Y., & Xu, L. (2008). Control transfers, privatization, and corporate performance: Efficiency gains in China's listed companies. *Journal of Financial and Quantitative Analysis*, 43, 161-190.

- Chen, S., Lin, B., Lu, R., & Zhang, T. (2015). Controlling shareholders' incentives and executive pay-for-performance sensitivity: Evidence from the split share structure reform in China. *Journal of International Financial Markets, Institutions and Money*, 34, 147-160.
- Delios, A., & Wu, Z. J. (2005). Legal person ownership, diversification strategy and firm profitability in China. *Journal of Management and Governance*, 9, 151-169.
- Feng, L. C., & Xu, W. H. (2007). Has the reform of non-tradable shares raised prices? An event-study analysis. *Emerging Markets Finance and Trade*, 43, 33-62.
- Frydman, R., Gray, C., Hessel, M., & Rapaczynski, A. (1999). When does privatization work? The impact of private ownership on corporate performance in the transition economies. *Quarterly Journal of Economics*, 114, 1153-1191.
- Green, S., & Ho, J. (2004). Old stocks new owners: Two cases of ownership change in China's stock market. *Journal of Chinese Economic and Business*, 2, 267-280.
- Grossman, S., & Hart, O. (1980). Takeover bids, the free-rider problem and the theory of the corporation. *Bell Journal of Economics*, 11, 42-64.
- Gupta, N. (2005). Partial privatization and firm performance: Evidence from India. *Journal of Finance*, 60, 987-1015.
- Hou, W., & Lee, E. (2014). Split share structure reform, corporate governance, and the foreign share discount puzzle in China. *European Journal of Finance*, 20, 703-727.
- Hou, W., Lee, E., Stathopoulos, K., & Tong, Z. (2013). Executive compensation and the split share structure reform in China. *European Journal of Finance*, 19, [Online] <http://ssrn.com/abstract=2060942>
- Huang, Z., & Xu, X. (2009). Marketability, control and the pricing of block shares. *Journal of Banking and Finance*, 33, 8-97.
- Jensen, M., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency cost and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- Jiang, B., Laurenceson, J., & Tang, K. (2008). Share reform and the performance of China's listed companies. *China Economic Review*, 19, 489-501.
- Kato, T., & Long, C. X. (2005). Executive compensation, firm performance, and corporate governance in China: Evidence from firms listed in the Shanghai and Shenzhen stock exchanges. William Davidson Institute Working Paper No. 690, [Online] <http://ssrn.com/abstract=555794>
- Kwan, C. H. (2005). The reform of state-owned enterprises in China: The groundwork for privatization needs to be laid urgently. *Nomura Capital Market Review*, 8, 58-74.
- Megginson, W. L., & Netter, J. M. (2001). From state to market: A survey of empirical studies on privatization. *Journal of Economic Literature*, 39, 321-389.
- Megginson, W. L., Robert, C. N., & Matthias, V. R. (1994). The financial and operating performance of newly privatized firms: An international empirical analysis, *Journal of Finance*, 9, 403-52.
- Myers, S. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5, 147-175.
- Qi, D., Wu, W., & Zhang, H. (2000). Shareholding structure and corporate performance of partially privatized firms: Evidence from Chinese companies. *Pacific-Basin Finance Journal*, 8, 587-610.
- Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94, 461-488.
- Shleifer, A. (1998). State versus private ownership. *Journal of Economic Perspectives*, 12, 133-150.

- Sun, Q., Tong, W., & Tong, J. (2002). How does government ownership affect firm performance? Evidence from China's privatization experience. *Journal of Business Finance and Accounting*, 29, 1-27.
- Tian, G. (2001). State shareholding and the value of China's firms. Working Paper, Nankai University, [Online] <http://ssrn.com/abstract=275910>
- Wang, X., Xu, L., & Zhu, T. (2004). State-owned enterprises going public: The case of China. *Economics of Transition*, 12, 467-488.
- Wei, Z., & Varela, O. (2003). State equity ownership and firm market performance: Evidence from China's newly privatized firms. *Global Finance Journal*, 14, 65-82.
- Wei, Z., Xie, F., & Zhang, S. (2005). Ownership structure and firm value in China's privatized firms: 1991-2001. *Journal of Financial and Quantitative Analysis*, 40, 87-108.
- Williamson, O. (1967). Hierarchical control and optimum firm size. *Journal of Political Economy*, 75, 123-138.
- Xu, X., & Wang, Y. (1999). Ownership structure and corporate governance in Chinese stock companies. *China Economic Review*, 10, 75-98.
- Yang, Q., L. Shi, & Yurtoglu, B. B. (2010). The impact of the split-share structure reform on compensation incentive based on firm performance in China. Working Paper, Fudan University.

## APPENDIX

**Table 1. Classification of Samples**

Industry	# of listed companies	# of observations
Agriculture, forestry, livestock farming, fishery	27	108
Mining	22	88
Food and Beverage	45	180
Textiles and Apparel	48	192
Timber and Furnishings	3	12
Paper and Printing	18	72
Petrochemicals	110	440
Electronics	38	152
Metals and Non -metals	89	356
Machinery	167	668
Pharmaceuticals	74	296
Other manufacturing	12	48
Utilities	54	216
Construction	26	104
Transportation	46	184
Information Technology	60	240
Wholesale and retail trade	72	288
Finance and insurance	10	40
Real estate	60	240
Social Services	34	136
Communication and Cultural Industry	6	24
Comprehensive	54	216
<b>Total</b>	<b>1,075</b>	<b>4,300</b>

**Table 2. Summary Statistics**

Variable	ROA	ROE	ROS	$\left(\frac{ST+LP}{TopTen}\right)$	TS	Sales	Leverage
Mean	0.0426	0.0637	0.0391	11.7901	0.5335	14.0528	0.5074
Median	0.0379	0.0628	0.0427	4.5639	0.5105	13.9986	0.5182
Maximum	0.8757	1.6286	5.6940	220.0000	1.0000	21.0962	3.1355
Minimum	-0.3631	-1.7529	-69.6058	0.0000	0.0680	8.1590	0.0125
Std. Dev.	0.0590	0.1552	1.0942	18.0777	0.1701	1.3548	0.1916
Skewness	0.5074	-2.4960	-59.9896	3.2082	0.4801	0.2218	1.0060
Kurtosis	21.2840	33.7212	3818.0742	18.9604	2.8532	4.4318	17.6016
No. of listed companies	1075	1070	1075	1075	1075	1075	1075
No. of observations	4300	4280	4300	4300	4300	4300	4300

Notes: ROA, ROS, ROE is the ratio of return to total assets, to sales, to equity, respectively.

$\left(\frac{ST+LP}{TopTen}\right)$  represents the governmental stock ownership concentration, i.e., the sum of state share and legal person share proportions divided by the top ten shareholders proportions. TS represents the tradable shares proportion. Sales refer to the log of net sales amount. Leverage refers to the ratio of total debt to total assets.

**Table 3. Pearson Correlation Coefficients**

	ROA	ROE	ROS	$\left(\frac{ST+LP}{TopTen}\right)$	TS	Sales
ROE	0.8187					
ROS	0.5595	0.5238				
$\left(\frac{ST+LP}{TopTen}\right)$	-0.1739	-0.1420	-0.0766			
TS	-0.0217	-0.0029	-0.0238	-0.4746		
Sales	0.2160	0.2306	0.0507	-0.1434	0.0334	
Leverage	-0.2849	-0.1434	-0.1866	-0.0175	0.0272	0.2709

Notes: Same as the notes for Table 2.

**Table 4. The Appropriate Regression Model**

Fixed effect model versus Classical regression model			
Dependent variable	$Y_{ROA}$	$Y_{ROE}$	$Y_{ROS}$
F-test	2.9064***	1.2566***	1.1521***
Model choice	Fixed effect model	Fixed effect model	Fixed effect model
Random effect model versus Classical regression model			
Dependent variable	$Y_{ROA}$	$Y_{ROE}$	$Y_{ROS}$
LM-test	510.4191***	3.7859*	0.6094
Model choice	Random effect model	Classical regression model	Classical regression model
Fixed effect model versus Random effect model			
Dependent variable	$Y_{ROA}$	$Y_{ROE}$	$Y_{ROS}$
Hausman-test	216.5917***	184.786475***	103.5541***
Model choice	Fixed effect model	Fixed effect model	Fixed effect model

Notes: \*\*\*, \*\*, \* denotes the significance at the 1%, 5%, 10% level, respectively.

**Table 5. Regression Results with ROA, ROE and ROS as the Performance Measures**

	ROA		ROE		ROS	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Constant	-0.2537*** (0.0259)	-0.2467*** (0.0262)	-0.8014*** (0.0849)	-0.7873*** (0.0862)	-5.0058*** (0.6275)	-5.0431*** (0.6365)
$\left(\frac{ST+LP}{TopTen}\right)$	-0.0001*** (0.0000)	-0.0002*** (0.0001)	-0.0003* (0.0001)	-0.0005* (0.0003)	-0.0006 (0.0013)	0.0001 (0.0025)
$\left(\frac{ST+LP}{TopTen}\right)^2$	n/a	0.0001 (0.0000)	n/a	0.0000 (0.0000)	n/a	-0.0000 (0.0000)
TS	-0.0116* (0.0068)	-0.0152** (0.0072)	-0.0319 (0.0219)	-0.0391* (0.0231)	-0.3415** (0.1652)	-0.3217* (0.1746)
Sales	0.0276*** (0.0018)	0.0273*** (0.0018)	0.0777*** (0.0061)	0.0771*** (0.0061)	0.4358*** (0.0449)	0.4375*** (0.0451)
Leverage	-0.1657*** (0.0084)	-0.1650*** (0.0084)	-0.4114*** (0.0308)	-0.4095*** (0.0308)	-1.7544*** (0.2040)	-1.7583*** (0.2043)
# of listed companies	1075	1075	1070	1070	1075	1075
# of observations	4300	4300	4280	4280	4300	4300
Adj. $R^2$	0.4442	0.4444	0.1728	0.1728	0.0515	0.0513
F-statistic	4.1874	4.1878	1.8333	1.8324	1.2169	1.2155

Notes: In parentheses are  $p$ -values. The variables are defined as the same as in the notes for Table 2 and 3. The \*\*\*, \*\*, \* denotes the same significant level as in the notes for Table 4.