

Share reform and the performance of China's listed companies

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Abstract

The latest round of share reform in China, which began in 2005, sets two related processes in motion: it increases the tradable share proportion and signals the start of a decline in the government-owned share proportion. This paper considers the effect these processes might have on firm performance in the future by analysing the impact the above share proportions had on firm performance immediately prior to reform commencing. The government-owned share proportion is found to exert a linear and positive impact on firm performance. Further, it is revealed that this impact is best explained by the high ownership concentration of government shareholdings. The policy implication is that simply making all shares tradable need not lead to better firm performance. Rather, a more pertinent consideration is whether shareholdings become more or less diffuse, and this highlights the importance of non-government institutional investors playing a more prominent role than they currently do.

JEL classifications – G38

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1. Introduction

The period 2001-2005 was a dismal period for China's stock markets. Despite the domestic macro-economy performing strongly and emerging markets booming globally, the benchmark Shanghai Stock Exchange Composite Index (SHCI) fell by more than one half. In seeking to explain this state of affairs, most market economists pointed to the non-tradable share problem, a peculiarity of the Chinese markets that until recently saw only around one-third of the shares in listed companies being legally tradable in the market. Nearly all of China's listed companies are ex-state-owned enterprises in which the Chinese government has been unwilling to give up a controlling stake during the listing process. At the time of conversion to a shareholding enterprise, various share ownership types were created; amongst them state shares, legal person shares and A shares are most prominent. State and legal person shares have several commonalities. Firstly, unlike A shares, they are not legally tradable. Secondly, they are usually government owned. This is exclusively so with respect to state shares, which are managed by government asset management bureaus. Legal person shares, on the other hand, are held by domestic institutions such as other stock companies, state-private mixed enterprises and non-bank financial institutions (Qi, et al., 2000). In a dataset assembled by Delios and Wu (2005), which consists of listed companies over the period 1991-2001, government-related institutions owned 81.5 per cent of total legal person shares. Thirdly, state and legal person shares comprise a majority of shares in most companies. In the dataset assembled for this paper, which covers firms listed on the Shanghai Stock Exchange at year-end 2004, state and legal person shares account for 60 per cent of total shares in an average company. Finally, the holdings of state and legal person owners are highly concentrated compared with A shares. In our dataset, the top five shareholders account for 60 per cent of total shares on average, compared with just 2.5 per cent for the top five A shareholders.

The existence of state and legal person shares has created two major problems. Firstly, because they are mostly government owned, the standard principal-agent problem is compounded by a multiple-principal problem as government owners might pursue objectives that do not necessarily relate to profit maximization and that are in conflict with minority shareholders. Secondly, because state and legal person shares comprise

the majority of total shares and they are non-tradable, an outside market in corporate control (i.e., takeovers) has been precluded. Such problems triggered the latest round of share reform. In April 2005, the government initiated a program that eliminated the various share ownership types and made all shares legally tradable. By mid-year 2006, this conversion process had been completed by 94 per cent of listed companies (People's Daily, 2006b). The short-term investor response has been extremely positive amidst expectations of improved corporate governance and a greater focus being placed on profit maximization. By early 2007, the SHCI had rebounded to reach all time highs.¹

Notwithstanding the buoyant short-run market reaction, the expected longer-run impact of share reform on the performance of listed companies is less clear. The share reform has set in motion two related processes. The first is, most obviously, to increase the tradable share proportion. On the one hand, this might better facilitate the development of an outside market in corporate control, as market regulators are hoping. On the other hand, since non-tradable shareholders are unable to engage in short-run speculation and their holdings are highly concentrated relative to tradable shareholders, they are likely to have a stronger incentive and ability to exercise effective corporate governance (Grossman and Hart, 1980). The literature on corporate governance emphasises that effective governance can also be exerted from within the firm via large owners, as is the case in the German model (Mayer, 1994). Individual retail investors, which account for two-thirds of trading in China's markets compared with only 38 per cent in the US, are well known for making trading decisions based on speculative motivations. This is reflected in the 300 percent annual turnover rate of tradable shares in the Shanghai Stock Exchange, as compared with 125 per cent and 140 per cent in the New York Stock Exchange and the London Stock Exchange, respectively (Farrell, et al., 2006). Accordingly, if share reform results in a greater proportion of shares being held by a diffuse group of short term investors, corporate governance in listed companies could actually worsen. The second process is that the reform signals the start of a decline in the government-owned share proportion. This is for several reasons. Firstly, as part of share conversion process,

¹ Another prominent reason for the rebound has been the domestic listing of blue-chip Chinese companies such as the Bank of China, which had previously only been available to overseas investors in Hong Kong and New York.

non-tradable shareholders were required to compensate tradable shareholders for the effective dilution of their holdings. The most commonly adopted approach has been to issue tradable shares to non-tradable shareholders with additional shares. As non-tradable shareholders are overwhelmingly government owned and tradable shareholders are not, this has already resulted in a fall in the proportion of government-owned shares. Secondly, prior to the reform, regulators did on occasions give permission for non-tradable shares to be sold from one party to another outside the market. On these occasions, non-tradable shares sold at sharp discounts to the going tradable share price (Walter and Howie, 2003). Government owners will now more readily be able to cash in their holdings at an attractive price. Thirdly, selling their holdings is one of the quickest ways for governments to raise capital (Walter and Howie, 2003). Finally, gradually unloading government owned shares would be consistent with the overall trend of moving the Chinese economy toward one based on private ownership. While a reduction in government ownership might alleviate the multiple-principal problem, there are again some potentially offsetting considerations. In China, close government ties can provide firms with numerous benefits such as preferential access to production inputs and a smoothing or even a bypass of regulatory processes (Sun, et al., 2002). If the reform results in a loss of any such “helping hand”, the financial performance of listed companies could be adversely affected.

Undertaking reforms that raise the status of direct capital markets and improve the performance of listed companies is vital in China where the bank-based financial system continues to seriously misallocate the country’s capital resources. China’s equity and corporate debt markets are small by world standards, accounting for just 18 per cent of GDP in 2004. In contrast, the comparative figure for India is 58 per cent. When referenced against international benchmarks, Farrell, et al. (2006) estimate that if the various deficiencies in China’s financial sector were addressed, including elevating the role played by direct capital markets, GDP could be raised by 13.4 per cent.

Against the above background, the objective of this paper is to consider the impact on firm performance that might be expected from an increase in the tradable share proportion and a decrease in the government owned share proportion. This is done by analysing the impact these share proportions had on firm performance immediately

prior to the latest round of reform commencing. This paper contributes to a growing literature that considers the impact the various share proportions have had on firm performance. Section 2 summarizes the findings of previous studies and critically comments on the methodologies used. Section 3 outlines the methodological approach taken in this paper and explains how it can address many of the major weaknesses found in the existing literature. The section also briefly explains the dataset used. Section 4 presents the results based on this approach, which shows that the proportion of government-owned shares displays a linear and positive, albeit modest, relationship with firm performance. There are several possible explanations for this finding and the relative importance of each is subsequently tested for. Section 5 concludes by way of drawing policy implications.

2. Previous literature

A number of previous studies have examined the relationship between the various share ownership types and firm performance. The major findings of these studies are summarised in Table 1². Striking amongst them is that little consensus has been reached regarding the signs of estimated coefficients, their statistical significance and the functional form of the relationship. Contributing to this outcome are differences and deficiencies in their methodologies.

Firstly, some studies such as Qi, et al.(2000) do not include higher power terms of the share ownership proportions and as a result do not allow for the possibility that their impact on firm performance might be non-linear. In raising the potential for non-linearities, Sun, et al. (2002) suggest, for example, that too much government ownership might result in a lack of focus on profit maximisation and excessive bureaucratic interference, while too little government ownership might result in a loss of the government's "helping hand". Others such as Wei and Varela (2003) allow for non-linearity with respect to the state share proportion but not the legal person share proportion.

² Apart from the studies summarised in Table 1, two other related studies include Wang, et al. (2004) and Wang (2005). These studies are chiefly concerned with performance changes surrounding a firm's IPO. As this study is more concerned with the longer-term impact of the share reform, they are not included in the review of literature.

Secondly, some studies such as Sun, et al. (2002) include the state share proportion and the legal share proportion in the same regression equation. Xu and Wang (1999) point out that including both in the same regression is problematic because these share proportions are highly negatively correlated with one another. Most studies deal with this multicollinearity problem by including either the state share proportion or the legal share proportion in a given regression. This approach, however, also has the drawback of complicating the interpretation of the coefficient to the state share proportion as capturing only the effect of itself but not that of the legal share proportion, and vice versa. Aggregating the two share proportions, as Sun, et al (2002) subsequently do, is another approach to dealing with the multicollinearity problem. This does not, however, allow for the possibility that the state and legal person share proportions might affect firm performance in different, perhaps even opposite, ways.

Thirdly, some studies such as Qi, et al. (2000), Delios and Wu (2005) and Wei, et al., (2005) do not include a measure of the concentration of share ownership alongside the various share ownership proportions. This makes interpreting the estimated coefficients difficult because they not only reflect the impact these ownership types might have on firm performance but also any impact the concentration of these holdings might have.

Finally, the interpretation attached to some of the empirical results is reasonably the subject of conjecture. For example, Wei, et al., (2005) interpret the U shape relationship between the legal share proportion and firm performance as meaning that below the turning point, legal person owners do not have sufficient incentive to monitor management but they acquire this incentive as their holdings increase. This does not explain however why an increase in the legal share proportion initially results in a decline in firm performance.

In view of the problems in the existing literature, the next section proposes a new methodology that borrows some desirable features from previous approaches yet avoids their major weaknesses. The general approach taken in this paper to considering the expected longer-term effects of share reform is to examine the impact that the government-owned share proportion and the tradable share proportion had on firm performance at year-end 2004, which was immediately prior to reform

commencing. If the notions underlying the reform are valid then, other factors held constant, firms with a higher tradable share proportion and a lower proportion of government ownership should have performed relatively better. An alternative approach might have been to do an event study comparing the before and after performance of firms that have gone through the share conversion process. There are several problems with such an approach, however. Firstly, share reform was not an event conducted neatly at a particular point in time. For each company, the resolution of its non-tradable shares was a result of protracted negotiations between non-tradable and tradable shareholders. For the market as a whole, the process was staggered over the course of one year, which makes it difficult to accurately and unbiasedly compare the outcomes in one company with that of another. Secondly, an event study would require that changes in firm performance be measured by share price returns and it is questionable to what extent share price movements in China actually reflect changes in firm performance. The penchant of tradable shareholders for speculation was noted in section 1. This has been observed most recently in the share price movements of companies that have their shares listed both domestically and overseas. For example, at the start of 2007 when China Life, the country's largest life insurer, undertook a Shanghai IPO its shares more than doubled in price on their first day of trading. The company's shares in Hong Kong meanwhile, the so-called H shares, which are identical to those traded in Shanghai in terms of the ownership rights they afford the holder, moved in the opposite direction and left those trading in Shanghai at a 50 per cent premium. The concept of even valuing a company in China based on its share price is awkward given that tradable and non-tradable shares have in the past sold at vastly different prices. Even now, mandated lock-up periods are in place for newly converted tradable shares. No such shares can be sold in the first 12 months following conversion and no more than five per cent can be sold in the following 12 months. Therefore, while all shares might now be legally tradable, the reality is that they are still not available to be traded for sometime after the conversion.

3. Methodology & Data

3.1 Methodology

The base model is specified as follows:

$$Performance_i = \alpha_0 + \alpha_1(State + LP)_i + \alpha_2 State / (State + LP)_i + \alpha_3 H_Share_i + \alpha_4 Size_Sales_i + \alpha_5 Location_i + \alpha_6 Industry_i + \varepsilon_i \quad (1)$$

where:

- i is the firm index;
- *Performance* is a firm performance measure based on various accounting ratios, which are discussed in detail below;
- *State+LP* is the sum of the state share proportion and the legal person share proportion as at year-end 2004;
- *State/(State+LP)* is the ratio of state shares divided by the sum of state and legal person shares at year-end 2004;
- *H_Share* is a dummy variable that takes the value of 1 if a company has issued H-shares and 0 otherwise;
- *Size_Sales* is the size of the company as at year-end 2004, measured by the log of total sales;³
- *Industry* is a vector of dummy variables (21 in total) that take the value of 1 if the company operates in a particular industry and 0 otherwise;
- *Location* is a dummy variable that takes the value of 1 if the company is headquartered in one of China's coastal provinces and 0 otherwise; and
- ε is an error term.

The base model shares some similarities with earlier studies. For example, the aggregation of the state share and legal person share proportions is taken to be a proxy for the government-owned share proportion, as in Sun, et al. (2002). The state share proportion captures the share proportion directly owned by governments. The legal person share proportion captures the share proportion owned indirectly by governments through government-related institutions. As noted in section 1, while it is known that a minority of legal person shares are owned by non-government-related institutions, limitations in the data prevented the extraction of this component and so this becomes a necessary caveat. The base model represents an improvement on those used in previous studies in several important ways. By combining the state and legal person share proportions to form a single variable, *State+LP*, the multi-colinearity

³ We have also used the log of total assets as a measure of firm size and it gives similar results.

problem that arises when these variables are included separately in the same regression equation is avoided. At the same time the model allows for the possibility that state ownership and legal person ownership might impact on firm performance differently via the variable, $State/(State+LP)$. If the coefficient to this variable is found to be significant and negative, it implies that for a given government-owned share proportion, increasing the proportion of state shares at the expense of legal person shares will lower firm performance⁴. It is recognized that because measures of ownership concentration and the tradable share proportion are not explicitly included in the base model, any statistical significance that emerges with respect to the government-owned share proportion could have multiple interpretations. These issues are explicitly tackled in section 4.2.

With respect to the dependent variable of firm performance, an array of accounting ratios is used, including the return on assets (*ROA*), return on sales (*ROS*) and return on equity (*ROE*). For reasons outlined above, ascertaining firm performance using measures that incorporate share price information such as price returns, the market to book ratio (*MBR*) or Tobin's *Q*, are problematic in the case of China. Of course, accounting measures also suffer from well-known shortcomings, particularly that they might be subject to manipulation on the part of firm management. Several steps are taken in response. Firstly, all performance measures are calculated as an average of year-end 2002, 2003 and 2004 observations. This not only reduces the noise that might be present in individual annual observations, but more importantly it is harder for management to systematically manipulate earnings over a multi-year period. Year-end 2005 data cannot be used since the share reform began in this year and hence a substantial proportion of companies would have no non-tradable shares. Secondly, a fourth accounting measure is used as a robustness test - the ratio of earnings before interest minus taxes to assets (*REITA*). Due to the exclusion from the numerator of extraordinary income and income from non-core operations, this measure is considered to be more robust against manipulation than more commonly used measures of performance such as the *ROA* and *ROE*.

⁴ This need not necessarily imply that the state share proportion exerts a negative impact on performance, only that it exerts a smaller impact than the legal person share proportion.

Turning to the control variables, *H_Share* is intended to capture the possibility that foreign investors might exert a unique corporate governance impact over and above domestic investors. Bai, et al. (2004), for example, finds that issuing shares to foreign investors helps to improve a firm's valuation. Their impact is explained by the relatively more sophisticated monitoring they provide, as well as the more transparent financial disclosure requirements necessary for cross-border listings. *Size_Sales* is included to allow for the fact that larger firms might be better placed to exploit economies of scale and to access capital on more favourable terms. However, their large scale might also make them more vulnerable to meddling by government bureaucracies. The industry sector dummies, *Industry*, are included to reflect the fact that firm performance can be impacted upon differently across the various sectors by, for example, government regulations. In China, the central government continues to control the domestic prices of price of gasoline, diesel and other refined oil products. Last year, this forced the government to make a direct budgetary transfer of RMB10 billion to Sinopec, China's biggest oil refiner, in an attempt to compensate the company for the effects of this price control. The geographical dummy, *Location*, intends to capture the numerous spatial factors within China that might have an effect on firm performance. The coastal provinces are known to have a more marketized economy (Fan, et al., 2001), business friendly institutions (Qian and Stiglitz, 1996) and better infrastructure (Démurger, 2001).

Before moving on to a discussion of the data and results, previous literature raises the possibility that there might be an endogeneity problem regarding the independent variable *State+LP*. This is concerned with the possibility that the government, in the process of listing a reforming SOE, might choose to hold onto a larger share proportion in better performing firms. Hence, rather than the ownership structure affecting performance, it may be that past performance determines the current ownership structure. There are sound reasons, however, to believe that endogeneity will not be a serious concern in our dataset. Firstly, studies that document the mechanics of the listing process note that the government's share retention decision is based chiefly on the strategic status of the firm such as its size or the industry it belongs to, and not its financial performance (Sun and Tong, 2003; Wei, Xie and Zhang 2005). Secondly, the majority of firms included in our dataset are not recently listed. Even if profitability was an important factor determining the proportion of

government-owned shares at the time of IPO, over time the causality would reverse, if indeed there were a relationship between the two.⁵ Thirdly, for studies that have tried to account for reverse causality from firm performance to ownership structure, such as Qi, et al. (2000) and Wei, et al. (2005), and they do not find any evidence to that effect.

3.2 Data

This paper uses a sample consisting of 794 out of the total 821 listed companies on the Shanghai Stock Exchange as at year-end 2004. The excluded companies have either incomplete financial data or a negative equity or asset value. Cross-sectional data is sufficient because while the state and legal person ownership proportion differs substantially across firms, it changes little, if at all, from year to year with respect to the same firm (Huang and Fung, 2005). The sample is limited to companies listed on the Shanghai Stock Exchange because some data must be hand collected. There is no reason to think that the relationship between dependent and independent variables will differ between the exchanges in Shanghai and Shenzhen and a sample of 794 companies is more than sufficient for the purposes of determining statistical significance.

Financial statement data are extracted from the Datastream database. Data relating to the share ownership proportions are collected from the www.cninfo.cn website. To ensure the reliability of the data, we randomly compared the compiled data with that of the companies' annual reports. The industry and location data are obtained from the www.hkex.com.hk website. Data for the proportion of shares held by the top five shareholders, which is a variable that will be introduced into the regression analysis in the following section, are collected from the <http://finance.sina.com.cn> website.

Table 2 shows the descriptive statistics for the key variables used in the analysis and Table 3 shows the correlation coefficients amongst these variables. High correlations exist between the various measures of firm performance. The fact that the *REITA*, which is less susceptible to manipulation, correlates well with the other performance

⁵ In theory, firm performance could also affect the government's future ownership. For instance, if the firm performs better after listing, the government might seek to buy back some shares. However, we are not aware of many such precedents in reality.

measures also gives us some confidence in these other measures. The variables $State+LP$ and $State/(State+LP)$ have a correlation of only 0.11 and hence no multicollinearity problems are expected in the base model. The variables $Tradable$, $(State+LP)/Nontradable$ and $Concentration$ will be elaborated upon in section 4.2.

4. Results

4.1 Base model results

The base model is first estimated assuming a linear relationship. It is then run again including a square term of $State+LP$ to allow for the possibility that government ownership might have non-linear effects on firm performance. The results of both linear and non-linear regressions are reported in Table 4, under the label of models A and B, respectively. Since the coefficients for the 21 industry dummies are not directly related to the study, they are not reported here⁶. The regressions using $REITA$ as a performance measure have a slightly different number of observations because of the availability of data. For model A, $State+LP$ is highly significant for all performance measures except ROE ; whereas for model B, $(State+LP)^2$ is significant at the 5 percent level for all performance measures except ROS . The signs of the coefficients for both the linear and non-linear models are consistent across all four measures of performance. In particular, in model A the sign of $State+LP$ is positive, whereas in model B the sign of $State+LP$ becomes negative and that of $(State+LP)^2$ is positive. These findings point to the government owned share proportion having a U-shape impact on firm performance. The turning points are also calculated and shown in Table 4. Except for ROS , in which $(State+LP)^2$ is insignificant, the turning points are estimated to be where $State+LP$ is around 0.4.

The apparent non-linear relationship, however, is found to be very sensitive to changes in the sample. As a robustness test, the two models are re-estimated using a sub-sample of $0.95 > State+LP > 0.05$. Although cutting off the top and bottom 5 percent of the sample may appear to be substantial, it actually only excludes three firms out of nearly 800. Nevertheless, this small change in the sample leads to a large change in the result. Results in Table 5 show that with the restricted sample, $(State+LP)^2$ becomes insignificant across all performance measures at standard levels.

⁶ Any results commented upon but not presented in this paper can be obtained from the authors upon request.

The estimation results for the linear model, however, remain largely the same, except that now *State+LP* also becomes highly significant with respect to *ROE*. These findings suggest that the relationship between the government-owned share proportion and firm performance is more accurately characterized as being linear⁷ and that outliers might have been the cause of previous findings of non-linearity. Accordingly, the discussion that follows focuses on the linear specification and the full sample only.⁸

Although Table 4 shows that the government-owned share proportion has a positive impact on firm performance, this impact is modest in absolute terms. The coefficients of *State+LP* indicate that an increase in the proportion of government-owned shares from 0 to 1 (i.e. from wholly non-government-owned to wholly government-owned) would only increase the performance of firms by 4 to 15 basis points, depending on the measure of performance (e.g. for *ROS*, the mean value will increase from 0.05 to 0.19). The coefficient to *State/(State+LP)* is also found to be significant at standard levels across performance measures, with the exception of *ROS*, indicating that state shares and legal person shares exert a different impact on firm performance. The negative sign of the coefficient implies that for a given combined proportion of state and legal person shares, increasing the proportion of state shares at the expense of legal person shares will lower firm performance. Comparing the coefficients of *State+LP* and *State/(State+LP)* across different measures of firm performance excluding *ROS*, where the coefficient to *State/(State+LP)* is insignificant, the impact of state shares is found to be about one-fifth to two-fifths smaller than that of legal person shares.⁹

Furthermore, amongst the results of model A in Table 4, *H_Share* is only significant at the 10 percent level with respect to *ROE* and *REITA*. However, contrary to prior expectations, the variable has a negative sign in both cases. *Size_Sales* is found to be highly significant for all four measures of performance and has a positive sign. Lastly,

⁷ This conclusion is robust to further restriction of the sample to $0.9 > \textit{State+LP} > 0.1$.

⁸ The results reported in the rest of this section are robust to the restricted sample and therefore not discussed separately.

⁹ The regression results suggest that if the proportion of government-owned shares increased from 0 to 1 wholly through legal person shares, firm performance as measured by, for example, *ROE* will increase by 6.25 basis points. If the increase is wholly through state shares, *ROE* will increase only by 3.66 (=6.25–2.59) basis points.

Location returns a positive sign as expected, albeit it is significant only with respect to *ROA* and *REITA*. This reaffirms the fact that firms in coastal regions tend to have better performance outcomes than their inland counterparts.

4.2 Extensions to the base model

The previous section found that the proportion of government-owned shares exhibited a linear and positive relationship with firm performance. However, the reasons underlying this result remain unclear. On a theoretical level, there are at least three possible explanations. The first is related to the impact of government ownership as a specific ownership type in that the government could be offering a “helping hand” to firms in proportion to the number of shares that it owns. The second is related to the incentives that government owners have as non-tradable shareholders to exercise effective corporate governance. Being unable to sell their shares, non-tradable shareholders might be forced to focus on longer-term returns and pressure firm management accordingly. The third is related to the ability of government owners to effectively monitor management as the concentration of their holdings affords them representation on the firm’s board of directors and supervisory committee. Hereafter, these potential explanations are referred to as the *helping hand*, *monitoring incentive* and *monitoring effectiveness* arguments, respectively. While these three factors are not necessarily mutually exclusive, their prevalence may be different and this becomes an empirical question.

The helping hand argument is first considered versus the monitoring incentive argument. The helping hand argument states that governments will provide more assistance to firms in which they hold a larger ownership stake. Government assistance may take many forms and is difficult to quantify. In contrast, the monitoring incentive argument states that holders of non-tradable shares, irrespective of their public or private background, have a stronger incentive to monitor management than holders of tradable shares. Fortunately, data on the tradable share proportion is available and this provides a means by which the relative importance of the two arguments in practice can be gauged. Model A is modified to form model C by including the proportion of tradable shares, *Tradable*, and replacing *State+LP* with its share in all non-tradable shares, $(State+LP)/Nontradable$:

$$\begin{aligned}
Performance_i = & \beta_0 + \beta_1 Tradable_i + \beta_2 (State + LP) / Nontradable_i + \\
& \beta_3 State / (State + LP)_i + \beta_4 H_Share_i + \beta_4 Size_Sales_i + \quad (2) \\
& \beta_5 Location_i + \beta_6 Industry_i + e_i
\end{aligned}$$

where e is an error term.

The variable, *Tradable*, can be used to verify the importance of the monitoring incentive argument. The variable, $(State+LP)/Nontradable$, can be used to verify the importance of the helping hand argument in that if it is valid, then amongst firms of the same non-tradable share proportion, since non-tradable shares can be owned by governments or non-government holders, those that have a greater proportion owned by the government should have received more assistance and thus record better performance. Aside from state shares and legal person shares, there are other non-tradable share types that are clearly not government owned such as natural person shares, employee shares and high-level management shares. While in most companies these other types of non-tradable shares are extremely small, it can be seen in Table 2 that the minimum value for this variable in the dataset is 0.04 and the standard deviation is 0.12, which are on par with *State+LP* and *Tradable*. It should also be pointed out that although Table 3 shows that *State+LP* and *Nontradable* (i.e., $1 - Tradable$) are quite highly correlated (correlation coefficient = 0.74), their ratio still has a sufficient degree of variation to prevent a multicollinearity problem with the constant term. Table 3 also shows that the correlation coefficient between *State+LP* and $(State+LP)/Nontradable$ is only 0.62, which alleviates any multicollinearity concerns between these variables. In total, model C presents three possible scenarios. If only the helping hand argument is valid, then $(State+LP)/Nontradable$ should be significant and positive and *Tradable* should be insignificant. Secondly, if only the monitoring incentive argument is valid, then *Tradable* should be significant and negative and $(State+LP)/Nontradable$ should be insignificant. Thirdly, if both arguments are valid, then both variables should be significant and with the right signs.

The estimation results of model C are presented in Table 6. It can be seen that the coefficient to *Tradable* is negative and highly significant across all performance measures. On the contrary, $(State+LP)/Nontradable$ is only significant at the 10 percent level for *ROE* and it has the wrong sign. Therefore, once the tradable proportion is controlled for, the size of the proportion of government-owned shares

does not appear to have any significant impact on firm performance. This finding lends support to the monitoring incentive argument but not that of the helping hand argument.

In contrast to the size of the government-owned share proportion, there is some evidence that the composition of government ownership has an effect on firm performance. This is reflected in the coefficient to $State/(State+LP)$ being significant for *ROA*, *ROE* and *REITA* at the 5, 1 and 10 percent levels, respectively, although the magnitude of its coefficient is only about one-tenth that of *Tradable*. The coefficient to $State/(State+LP)$ retains a negative sign, as in model A, indicating that state shares do not help firms perform better when compared to legal person shares. To the extent that a helping hand is expected to be more strongly associated with state ownership than with legal person ownership, this finding further diminishes the helping hand argument.

The monitoring incentive argument is now considered against the monitoring effectiveness argument. The monitoring effectiveness argument states that a higher concentration of ownership, regardless of whether shares are government-owned or tradable, will make the monitoring process more effective. Accordingly, model C is modified by adding a measure of the combined share of the top five shareholders of each firm, *Concentration*. The subsequent model is labeled model D and is also presented in Table 6. The coefficients to *Concentration* are positive and highly significant across all performance measures. It can also be seen that once the concentration of share ownership is controlled for, *Tradable* becomes marginally insignificant for *ROE* and highly insignificant for the other performance measures. The results for $(State+LP)/Nontradable$ and $State/(State+LP)$ remain largely intact. These results thereby suggest that the monitoring effectiveness argument is the most compelling explanation of the positive relationship between the government-owned share proportion and firm performance. It appears that in some previous studies the state and legal person share proportions have unwittingly been used as a proxy for the concentration of these holdings.

In the final model D, *H_Shares* continues to exhibit a negative sign but becomes highly significant for three out of four performance measures. *Size_Sales*, on the other

hand, remains highly significant for all performance measure and retains a positive sign. *Location* becomes marginally significant for only one measure of performance – *REITA*.

Lastly, model D is subjected to a number of robustness tests. First, a squared term of *Concentration* was also added to model D, following Delios and Wu (2005). The squared term emerged as being insignificant. Secondly, from Table 2 it can be seen that some companies in the full sample have very poor returns. For instance, the poorest performing company records a loss almost as large as its sales. Companies having exceptionally good or bad performance may well be outliers and model D is therefore re-estimated excluding these companies. Based on the different distributions of the performance measures, we restrict the sample to $ROA > -0.25$, $0.65 > ROS > -0.65$, $ROE > -0.45$ and $REITA > -0.25$, respectively. The sample is truncated only on the lower side of the distribution for *ROA*, *ROE* and *REITA*, because there are no outliers on the upper side. The size of the sub-samples ranges from 785 to 790. It is found that the findings in Table 6 remain valid in that the coefficients only change marginally in magnitude and, most importantly, their signs and level of significance/insignificant remain intact. Thirdly, we truncate these sub-samples further by restricting $0.95 > State+LP > 0.05$ and $0.9 > State+LP > 0.1$, respectively. Once again, the main findings in Table 6 remained intact.

5. Conclusion

The objective of this study was to consider the expected longer-term impact of share reform on firm performance. Underpinning China's recent reform is the notion that making all shares tradable will promote an outside market in corporate control, reduce conflicting objectives amongst different types of owners and promote a greater focus on maximizing profits. A broader body of theory, however, suggests that the impact of these reforms is ambiguous. While government ownership might detract firms from the sole pursuit of profit maximization, it might also benefit firms through the provision of various types of government assistance. The fact that government owners as non-tradable shareholders cannot easily sell their shares might also provide them with a greater incentive to pressure management to focus on longer-term returns, and the concentration of their holdings might afford them the capacity to effectively do so.

The first major contribution of this study was to show that the government-owned share proportion was related to firm performance in a linear and positive manner. This immediately raises concerns regarding the degree of effectiveness that can be expected from the reform program. The second major contribution was to discriminate amongst the various possible explanations of the positive relationship between the government-owned share proportion and firm performance. The most convincing explanation was not related to government ownership as a specific ownership type but rather the fact that these shareholdings tends to be highly concentrated. This yields two policy implications. Firstly, simply making all shares tradable need not lead to better corporate governance and firm performance. This is because large owners can exert effective corporate governance from within the firm, irrespective of a functioning outside market for corporate control. Secondly, the more pertinent consideration is in ensuring that shareholdings do not become increasingly diffuse. As governments and government-related institutions reduce their share holdings in the future, what is needed are other large-scale non-government shareholders to take their place. Although non-government institutional investors are growing rapidly in the Chinese markets, they have only a short history and their overall level of participation remains limited. At the start of 2007, the assets of domestic equity funds only accounted for 10 per cent of market capitalisation (Financial Times, 2007). Farrell, et al (2006) observe that in 2003 the assets of mutual funds, insurance companies and pension funds only accounted for 6 per cent of GDP in China. This compared with 160 per cent in the US and 41 per cent in South Korea. Some domestic institutional investors are prohibited from being more active in the markets. Insurance companies, for example, cannot hold more than five per cent of their assets in the form of equities. Foreign institutional investors remain severely hamstrung by the Qualified Foreign Institutional Investor (QFII) scheme, which hands them a meagre quota of \$US10 billion to invest in domestic equities at a time when market capitalization exceeds \$US1.4 trillion. This is also in spite of the fact that a recent study by the stock market regulator found that foreign institutional investors were the most stable of all institutional investors in the China's markets (People's Daily, 2006a). Abolishing the split share ownership structure was an important step in the development process of China's stock markets and brings them more into line with international practice. Nevertheless, the analysis undertaken in this study suggests that this reform as a single-pronged strategy is insufficient and that

complementary reforms, notably to increase the participation of non-government institutional investors, will be much needed if better performance from listed companies is to be expected in the longer run.

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Table 1. Major findings of previous studies

Study	Time period	Firm performance measure	Major findings
Xu and Wang (1999)	1993-1995	MBR, ROA, ROE	<ul style="list-style-type: none"> * Linear model: State share proportion negative, sometimes significant. * Legal share proportion positive and significant * Non-linear model: U shape relationship between the legal person share proportion and firm performance.
Qi, et al. (2000)	1991-1996	ROE, MBR	<ul style="list-style-type: none"> * Linear model: State share proportion negative and significant * Legal share proportion positive and significant
Sun, et al. (2002)	1994-1997	MBR, ROA, ROE	<ul style="list-style-type: none"> * Linear model: State share proportion positive and significant * Legal person share proportion positive and significant * Non-linear model: Inverted U shape relationship between the combined state and legal person share proportion and firm performance
Wei and Varela (2003)	1994-1996	Tobin's Q, share price returns	<ul style="list-style-type: none"> * Non-linear model: U shape relationship between the state share proportion and firm performance * Legal person share proportion negative and significant (impact assumed to be linear).
Delios and Wu (2005)	1991-2001	Tobin's Q	<ul style="list-style-type: none"> * Linear model: Legal person share proportion positive and significant * Non-linear model: U shape relationship between the legal person share proportion and firm performance
Wei, et al. (2005)	1991-2001	Tobin's Q, ROS	<ul style="list-style-type: none"> * Non-linear model: U shape relationship between the state and legal share proportions and firm performance

Table 2 Descriptive Statistics

	<i>ROA</i>	<i>ROS</i>	<i>ROE</i>	<i>REITA</i>	<i>Tradable</i>	<i>State+LP</i>	<i>State/(State+LP)</i>	<i>(State+LP)/Nontradable</i>	<i>Size_Sales</i>	<i>Concentration</i>
Mean	0.03	0.05	0.06	0.04	0.39	0.60	0.36	0.97	13.52	0.60
Median	0.03	0.06	0.07	0.05	0.37	0.62	0.09	1	13.41	0.62
Maximum	0.15	0.88	0.43	0.17	0.77	0.91	1	1	19.87	0.96
Minimum	-0.45	-0.92	-0.59	-0.82	0.09	0.03	0	0.04	10.19	0.23
Std. Dev.	0.06	0.15	0.11	0.07	0.11	0.13	0.41	0.12	1.20	0.13
No. of observation	794	794	794	791	794	794	794	794	794	794

ROA is the ratio of return to assets, *ROS* the ratio of return to sales, *ROE* the ratio of return to equity, *REITA* the ratio of earnings before interest minus taxes to assets;, *Tradable* is the proportion of tradable shares, *State+LP* is the proportion of state and legal person shares, *Nontradable* = 1 – *Tradable*, *Size_Sales* is the log of total sales, and *Concentration* is the proportion of total shares owned by the top five share holders.

Table 3 Correlation Coefficients

	<i>ROA</i>	<i>ROS</i>	<i>ROE</i>	<i>REITA</i>	<i>Tradable</i>	<i>State+LP</i>	<i>State/(State+LP)</i>	<i>(State+LP)/Nontradable</i>	<i>Size_Sales</i>
<i>ROS</i>	0.72								
<i>ROE</i>	0.70	0.56							
<i>REITA</i>	0.88	0.63	0.61						
<i>Tradable</i>	-0.18	-0.18	-0.19	-0.16					
<i>State+LP</i>	0.11	0.14	0.09	0.10	-0.74				
<i>State/(State+LP)</i>	-0.01	0.05	-0.03	0.00	-0.03	0.11			
<i>(State+LP)/Nontradable</i>	-0.05	-0.01	-0.08	-0.04	0.10	0.62	0.12		
<i>Size_Sales</i>	0.22	0.13	0.26	0.22	0.03	0.05	0.16	0.12	
<i>Concentration</i>	0.24	0.25	0.20	0.22	-0.71	0.62	0.13	0.08	0.11

Table 4 Government ownership and performance - full sample

Model	ROA		ROS		ROE		REITA	
	A	B	A	B	A	B	A	B
<i>Constant</i>	-0.1514 (0.00)	-0.1080 (0.02)	-0.2448 (0.01)	-0.1531 (0.15)	-0.3055 (0.00)	-0.2130 (0.01)	-0.1532 (0.00)	-0.0963 (0.04)
<i>State+LP</i>	0.0441 (0.02)	-0.1230 (0.18)	0.1404 (0.00)	-0.1664 (0.43)	0.0625 (0.12)	-0.2933 (0.13)	0.0463 (0.02)	-0.1728 (0.07)
$(State+LP)^2$		0.1613 (0.05)		0.2927 (0.12)		0.3437 (0.04)		0.2116 (0.02)
$State/(State+LP)$	-0.0115 (0.02)	-0.0110 (0.03)	-0.0003 (0.98)	0.0001 (0.99)	-0.0259 (0.00)	-0.0248 (0.00)	-0.0101 (0.06)	-0.0095 (0.08)
<i>H_Share</i>	-0.0128 (0.21)	-0.0101 (0.32)	0.0388 (0.38)	0.0440 (0.34)	-0.0380 (0.08)	-0.0323 (0.14)	-0.0184 (0.07)	-0.0151 (0.14)
<i>Size_Sales</i>	0.0114 (0.00)	0.0112 (0.00)	0.0138 (0.02)	0.0137 (0.02)	0.0255 (0.00)	0.0250 (0.00)	0.0124 (0.00)	0.0121 (0.00)
<i>Location</i>	0.0076 (0.10)	0.0062 (0.17)	0.0161 (0.17)	0.0098 (0.4)	0.0025 (0.77)	-0.0004 (0.96)	0.0124 (0.03)	0.0106 (0.05)
Turning point		0.38		0.28		0.43		0.41
No. of observations	794	794	794	794	794	794	791	791
R-squared	0.14	0.14	0.12	0.13	0.13	0.14	0.15	0.16
Adjusted R-squared	0.11	0.11	0.09	0.10	0.10	0.11	0.12	0.13

Figures in parentheses are p-values.

The value of the turning point is equal to the minus of the coefficient of $STATE+LP$ times 0.5 divided by the coefficient of $(STATE+LP)^2$.

Table 5 Government ownership and performance – restricted sample (0.95 > State+LP > 0.05)

Model	ROA		ROS		ROE		REITA	
	A	B	A	B	A	B	A	B
<i>Constant</i>	-0.1617 (0.00)	-0.1449 (0.01)	-0.2497 (0.00)	-0.2123 (0.07)	-0.3252 (0.00)	-0.2811 (0.00)	-0.1632 (0.00)	-0.1271 (0.02)
<i>State+LP</i>	0.0591 (0.00)	-0.0029 (0.98)	0.1614 (0.00)	0.0234 (0.93)	0.0917 (0.02)	-0.0711 (0.77)	0.0610 (0.00)	-0.0726 (0.54)
$(State+LP)^2$		0.0583 (0.54)		0.1298 (0.57)		0.1531 (0.46)		0.1256 (0.25)
<i>State/(State+LP)</i>	-0.0111 (0.03)	-0.0110 (0.03)	-0.0001 (0.99)	0.0002 (0.99)	-0.0251 (0.00)	-0.0247 (0.00)	-0.0097 (0.06)	-0.0094 (0.07)
<i>H_Share</i>	-0.0119 (0.24)	-0.0110 (0.28)	0.0406 (0.38)	0.0425 (0.35)	-0.0363 (0.10)	-0.0340 (0.12)	-0.0177 (0.08)	-0.0159 (0.12)
<i>Size_Sales</i>	0.0115 (0.00)	0.0114 (0.00)	0.0143 (0.02)	0.0141 (0.02)	0.0256 (0.00)	0.0254 (0.00)	0.0125 (0.00)	0.0123 (0.00)
<i>Location</i>	0.0073 (0.11)	0.0069 (0.13)	0.0116 (0.32)	0.0105 (0.36)	0.0022 (0.80)	0.0009 (0.91)	0.0122 (0.03)	0.0112 (0.03)
No. of observations	791	791	791	791	791	791	788	788
R-squared	0.14	0.14	0.13	0.13	0.14	0.14	0.16	0.16
Adjusted R-squared	0.11	0.11	0.10	0.10	0.11	0.11	0.13	0.13

Figures in parentheses are p-values.

Table 6 Government ownership, tradability, concentration and performance - full sample

Model	ROA		ROS		ROE		REITA	
	C	D	C	D	C	D	C	D
<i>Constant</i>	-0.0870 (0.04)	-0.1594 (0.00)	-0.0768 (0.40)	-0.2740 (0.01)	-0.1526 (0.04)	-0.2310 (0.00)	-0.0812 (0.06)	-0.1610 (0.00)
<i>Tradable</i>	-0.0847 (0.00)	-0.0050 (0.84)	-0.2220 (0.00)	-0.0049 (0.95)	-0.1671 (0.00)	-0.0809 (0.12)	-0.0919 (0.00)	-0.0030 (0.91)
<i>State/(State+LP)</i>	-0.0104 (0.04)	-0.0117 (0.02)	0.0018 (0.89)	-0.0016 (0.90)	-0.0229 (0.00)	-0.0243 (0.00)	-0.0088 (0.10)	-0.0102 (0.05)
<i>(State+LP)/Nontradable</i>	-0.0160 (0.52)	-0.0256 (0.32)	-0.0106 (0.82)	-0.0367 (0.45)	-0.0812 (0.07)	-0.0916 (0.05)	-0.0214 (0.37)	-0.0321 (0.20)
<i>Concentration</i>		0.0965 (0.00)		0.2628 (0.00)		0.1044 (0.02)		0.1072 (0.00)
<i>H_Share</i>	-0.0108 (0.29)	-0.0367 (0.00)	0.0433 (0.35)	-0.0272 (0.57)	-0.0330 (0.14)	-0.0610 (0.01)	-0.0163 (0.11)	-0.0447 (0.00)
<i>Size_Sales</i>	0.0121 (0.00)	0.0116 (0.00)	0.0157 (0.01)	0.0142 (0.02)	0.0275 (0.00)	0.0269 (0.00)	0.0133 (0.00)	0.0126 (0.00)
<i>Location</i>	0.0049 (0.28)	0.0055 (0.22)	0.0064 (0.58)	0.0082 (0.48)	-0.0047 (0.58)	-0.0040 (0.63)	0.0093 (0.08)	0.0101 (0.06)
No. of observations	794	794	794	794	794	794	791	791
R-squared	0.15	0.17	0.14	0.15	0.16	0.17	0.17	0.18
Adjusted R-squared	0.12	0.13	0.11	0.12	0.13	0.14	0.14	0.15

Figures in parentheses are p-values.