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Journal of Comparative Economics 32 (2004) 599–616
Journal of COMPARATIVE ECONOMICS
www.elsevier.com/locate/jce

Corporate governance and market valuation in China

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Received 15 April 2003

Bai, Chong-En, Liu, Qiao, Lu, Joe, Song, Frank M., and Zhang, Junxi—Corporate governance and market valuation in China

In this paper, we investigate empirically the relationship between governance mechanisms and the market valuation of publicly listed firms in China. We construct measures of corporate governance and market valuation for all publicly listed firms on the two stock markets in China from the firm's annual reports between 1999 and 2001. Using this three-year panel, we examine the effect of corporate governance variables on market valuation after controlling for factors commonly considered in market-valuation analysis. Our empirical results support several theoretical predictions; for example, we find that both high concentration of non-controlling shareholding and issuing shares to foreign investors have positive effects on market valuation, while a large holding by the largest shareholder, the CEO being the chairman or vice chairman of the board of directors, and the largest shareholder being the government have negative effects. *Journal of Comparative Economics* **32** (4) (2004) 599–616. Faculty of Business and Economics, The University of Hong Kong, Hong Kong, China; Tsinghua University, Beijing 100084, PR China.

JEL classification: G34; G32

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0147-5967/$ – see front matter
doi:10.1016/j.jce.2004.07.002

Keywords: Corporate governance; Market for corporate control; Ownership; Market valuation

1. Introduction

The emerging market crisis in 1997 and 1998 rekindled worldwide interest in the issue of corporate governance. In recent years, advocating higher governance standard has become a regular campaign with the participation of an increasing number of parties, namely, academics, media, regulatory authorities, corporations, institutional investors, international organizations, and shareholder rights watchdogs.[1] Numerous initiatives have been proposed and launched by Asian countries to enhance their corporate governance practice, for example, new listing and disclosure rules, mandatory training for board directors, and enforced codes of governance. International organizations are also very keen on governance issues. The International Monetary Fund has demanded that governance improvements be included in its debt relief program. In 1998, the Organization of Economic Cooperation and Development (OECD) issued an influential document (OECD, 1999), which is intended to assist member and non-member countries in evaluating and improving the legal, institutional and regulatory framework for better corporate governance. In addition, private companies, e.g., Standard & Poor, California Public Employees' Retirement Pension System (CaLPERS), CLSA, and McKinsey, are also calling for sweeping reforms of governance practice in emerging economies.

Corporate governance is paramount in China. The Chinese government opened stock exchanges in the early 1990s to raise capital and improve the operating performance of state-owned enterprises (SOEs). In less than twelve years, China's stock markets have grown to become the eighth largest in the world with a market capitalization of over $500 billion. Chinese companies, especially SOEs, have benefited substantially from the rapid growth in issuance and the general public's enthusiasm on equity market. Meanwhile, stock market regulations have been evolving to address the tradeoff between growth and control in which a liberal approach fosters fast growth while a controlled approach leads to slower growth. Even though issuance approval, pricing, and placement systems have been liberalized significantly, they are still controlled tightly compared to other Asian markets. Nonetheless, poor governance practices are rampant among the Chinese listed companies. In 2001, the largest shareholder of Meierya, which had been a profitable company, colluded with other related parties and embezzled $44.6 million or 41% of the listed company's total equity. In the same year, the largest shareholder of Sanjiu Pharmacy extracted $301.9 million or 96% of this listed company's total equity.[2] Although Chinese companies, especially SOEs, obtain considerable capital from the public through either the banking system or the

[1] Recent research by McKinsey finds that articles featuring the term corporate governance in major international economics and finance newspapers or magazines, e.g., the Financial Times, the Asian Wall Street Journal, and the Far-East Economic Review, have increased ten-fold from the pre-crisis period in 1996 to 1997 to the period from 2000 to 2001 (McKinsey & Company, 2002). In the academic literature, the crisis has spawned a voluminous body of research on governance related issues, especially in emerging markets.

[2] Liu and Lu (2002) find that most listed companies manage their earnings in response to a variety of regulatory loopholes. However, the incentives are stronger for firms with poorer governance practice.

capital market, they remain extremely inefficient. For example, recent official statistics suggest that about one-third of all SOEs are loss-makers, another third either break even or are plagued with implicit losses, while the remaining one-third are marginally profitable. Ineffective governance is widely believed to be the root cause of this lackluster performance so that improving corporate governance should be a crucial objective of China's further economic reform.

To improve corporate governance, the government must strengthen laws that protect shareholder interests and increase enforcement of such laws and regulations. Equally important, firms must also act to improve the situation. Corporate governance must provide the appropriate market incentives. For a firm's corporate governance practice to have a positive effect on its market value, two conditions must be satisfied. First, good governance must increase the returns to firm's shareholders; second, the stock market must be sufficiently efficient so that the share prices reflect fundamental values. These conditions are more likely to be satisfied in mature markets than in emerging markets. In fact, share prices on China's stock markets are often considered to be driven by purely speculative activities and to bear no relationship to fundamentals.

Practitioners believe that good corporate governance does increase the firm's market valuation. Recently, McKinsey conducted a series of surveys with institutional investors and private equity investors focusing on emerging markets (McKinsey & Company, 1999–2002). The evidence indicates 80% of these investors are willing to pay a premium to well-governed firms. Black (2001), Black et al. (2002), Gompers et al. (2003), and Joh (2003) find a positive correlation between performance measures and governance level.[3] In this paper, we investigate this issue systematically for publicly listed firms in China. We analyze empirically the effects of corporate governance practices on the market valuation of the firms based on a three-year panel data set collected from the firms' annual reports. Rather than rely on survey data, we use the actual corporate governance practices of all publicly listed firms in China between 1999 and 2001. Controlling for a number of variables that are typically included in studies of the firm market valuations, we use various measures of corporate governance to determine Tobin's q values for these firms. In our empirical analysis, we pay particular attention to an important characteristic of Chinese firms, namely the dominance of state-owned shares.

Regarding the literature, Qian (1995) provides a comprehensive discussion of corporate governance issues in China. Groves et al. (1994) and Li (1997) present evidence that improved incentives in the reform process increase the productivity of the firms. On the other hand, Xu (2000) and Shirley and Xu (2001) show empirically that performance contracts are relatively ineffective. Qian (1996) and Che and Qian (1988) emphasize the important role played by the Chinese government in corporate governance. Zheng et al. (1998), Xu and Wang (1999), Zhang et al. (2001), Li and Wu (2002), Sun and Tong (2003), and Tian (2002) investigate the impact of state-ownership on enterprise performance and generally find a negative effect. For example, Sun and Tong (2003) consider the impact of share issuance privatization (SIP) and legal person shares on firm performance. They find that SIP is effective in improving SOEs' earning ability, real sales, and workers' productivity but

[3] See also CLSA Emerging Markets (2001).

it does not improve profit returns and leverage. They also find state ownership to have a negative impact and legal-person ownership to have a positive effect on firm performance. Aharony et al. (2000) show how earnings management in the financial packaging of China's SOEs for public listing depends on the firm's relationship with the central government and on where the securities are listed. In this literature, the studies of Xu and Wang (1999), Tian (2002), and Sun and Tong (2003) are related most closely to our work because they are empirical studies using stock market data from China. Our contribution is to consider a comprehensive list of corporate governance mechanisms and to investigate their impacts on the market valuation of the firms. Hence, we assess the relative importance of various governance mechanisms in increasing the market valuation. Furthermore, in contrast to Xu and Wang (1999) and Tian (2002), our study is based on a panel data set, which allows us to mitigate a possible endogeneity problem by estimating fixed-effects models.

Most empirical studies of the relationship between corporate governance and firm performance in other countries focus on a particular aspect of governance, e.g., board characteristics (Millstein and MacAvoy, 1998, and Bhagat and Black, 1999), shareholders' activism (Karpoff et al., 1996, and Carleton et al., 1998), compensation to outside directors (Bhagat et al., 1999), anti-takeover provisions (Sundaramurthy et al., 1997), and investor protection (La Porta et al., 2002). Recently, several papers study the effects of general corporate governance practices on firm value, primarily in emerging markets. Most of these either use a small single-country sample (Black, 2001, and Gompers et al., 2003) or multi-country samples that contain only the largest firms in each country (Durnev and Kim, in press, and Klapper and Love, in press). Our paper is closest to the study by Black et al. (2002) on Korean firms in the sense that all listed firms in the respective market are included. However, these authors use a different method to control for the endogeneity, namely instrumental variables.

Our paper is organized as follows. Section 2 reviews the theoretical literature on corporate governance and summarizes major governance mechanisms. Section 3 discusses the variables used in our empirical study. Section 4 presents the econometric analysis and Section 5 concludes with a summary of the results and policy implications.

2. Corporate governance mechanisms

Over three hundred years ago, Adam Smith raised the issue of the separation of ownership and stewardship in joint-stock corporations. Hence, a set of effective mechanisms to resolve the conflict of interests between the firm's owners and its managers is necessary. The seminal work by Berle and Means (1932) argues that, in practice, managers of a firm pursue their own interests rather than the interests of shareholders. The contractual nature of the firm and the principal-agent problem highlighted by Berle and Means led to the development of the agency approach to corporate finance. Allen and Gale (2001) address the issue of shareholders ensuring that non-owner managers pursue the shareholders' interests. However, another conflict of interests arises as controlling shareholders take actions to benefit themselves at the expense of minority shareholders. La Porta et al. (1998) assert that the central agency problem in large corporations is to restrict expropriation of minority shareholders by controlling shareholders. This expropriation takes a variety of forms,

e.g., excessive executive compensation, loan guarantees for, and transfer pricing between, related companies, and dilution by new share issues. Johnson et al. (2000) use the term tunneling to describe the transfer of resources out of firms for the benefits of controlling shareholders. Evidence from the Asian financial crisis indicates that tunneling is a serious agency problem in emerging markets. The recent debacles of Enron, Worldcom, and Global Crossing suggest that tunneling is possible even in mature economies. Taking these various agency problems into account, Denis and McConnell (2003) consider corporate governance to be the set of mechanisms, both institutional and market based, that induce the self-interested controllers of a company to make decisions that maximize the value of the company to its owners. Practitioners share the view; e.g., TIAA-CREF defines corporate governance as the set of mechanisms that maintain an appropriate balance between the rights of shareholders and the needs of the board and management to direct and manage the corporation's affairs (TIAA-CREF, 2004).

In essence, good corporate governance consists of a set of mechanisms to ensure that suppliers of finance get an adequate return on their investment. There are two competing views of the appropriate type of corporate governance, namely the market-based approach used in the US and the UK and the control-based model found commonly in emerging economies and in continental Europe. The market-based governance model consists of an independent board, dispersed ownership, transparent disclosure, active takeover markets, and well-developed legal infrastructure. In contrast, the control model emphasizes an insider board, a concentrated ownership structure, limited disclosure, and reliance on family finance or the banking system. Academic research comes to mixed conclusions regarding the relative superiority of either type. Rather than rendering judgment on which of the two models is better suited for China, we focus on a particular set of corporate governance mechanisms and assess their impact on the market valuation of listed companies.

Broadly speaking, there are two classes of mechanisms to resolve the conflict between owners and managers and between controlling shareholders and minority shareholders.[4] The first type consists of internal mechanisms, e.g., the ownership structure, executive compensation, the board of directors, and financial disclosure. The second are external mechanisms, e.g., the external takeover market, the legal infrastructure, and product market competition. Of the four internal governance mechanisms, ownership structure is crucial to the firm's value maximization. Concentrated equity ownership gives the largest shareholders substantial discretionary power to use the firm's resources for personal gain at the expense of other shareholders. Claessens et al. (2000) find that cross-holding and pyramidal ownership are common in Asian economies. This ownership arrangement allows the controlling shareholders to obtain even more control for minimal capital expense so that tunneling becomes easier.

Although cross-holding, pyramidal schemes and deviations from one-share-one-vote are not common in China, listed companies usually have one major owner holding a significant percent of the shares.[5] Hence, the transfer of resources out of listed companies

[4] Although many different governance frameworks exist, our approach is similar to that used in recent research on corporate governance, e.g., CLSA Emerging Markets (2001), McKinsey & Company (2002), and Allen and Gale (2001).

[5] On average, the largest shareholder in listed companies holds 44.8% of the total shares.

into parent or other related parties' accounts is feasible. Several recently disclosed corporate scandals in China concern unconstrained large shareholders misusing firm resources.[6] On the other hand, ownership concentration may have a positive effect on corporate governance. If ownership is initially dispersed, the emergence of a large shareholder mitigates the free-rider problem among shareholders attempting to monitor the managers (Shleifer and Vishny, 1986). However, this effect is negligible in China because ownership is seldom dispersed. We posit a second salutary effect of ownership concentration, which becomes significant when the degree of concentration is high.

Tunneling is inefficient for the entire group of shareholders because it wastes resources. If the largest shareholder has a sufficiently big stake to align his interest with that of firm, the largest shareholder has no incentive to engage in inefficient tunneling. In summary, the relationship between firm value and ownership concentration is complex. At first, increasing ownership concentration from a low level addresses the free-rider problem among shareholders so that it has a positive effect. However, a further increase in ownership concentration has a negative effect if it reduces the constraint on tunneling from other shareholders. Finally, as ownership concentration approaches one-hundred percent, the effect becomes positive again because the incentive to tunneling is removed. Without the last effect, the relationship between firm value and ownership concentration would be inverse U-shaped, as Morck et al. (1988) find for US firms. In China, the second effect is likely to dominate and the first effect is negligible. Hence, we expect to find a U-shaped relationship between firm value and ownership concentration among Chinese firms. Such a result should hold even if the largest shareholder is the government because, contrary to the view of a benevolent government, agents who control the firm on behalf of the government have incentives to expropriate. Tian (2002) makes a similar argument for a U-shaped relationship by contrasting two characteristics of the government, namely, the grabbing hand and the helping hand.

The board of directors is a second instrument through which shareholders can exert influence on the behavior of managers to ensure that the company is run in their interests. However, this influence may be less effective when managers dominate the board. Nonetheless, empirical findings on the relationship between board composition and firm performance are mixed. First, firms with boards containing a majority of independent directors do not perform better than firms without such boards. Second, a moderate number of inside directors is associated with greater profitability. Third, although the presence of outside directors on the board has no effect on the sensitivity of Chief Executive Office (CEO) turnover to either earnings or stock-price performance in Japan, concentrated equity ownership and ties to a main bank do have a positive effect. Finally, a strong inverse relationship between CEO turnover and firm performance exists in some countries as Hermalin and Weisbach (2003) discuss in their survey. Therefore, we have no prior expectation on the effect of board composition on firm value.

The third mechanism to align the interests of managers and shareholders is appropriately structured managerial compensation, linked to both stock valuations and accounting-based

[6] A recent survey conducted by the Shanghai-based Shenying and Wangguo Securities Co., Ltd. finds that the controlling shareholders of 130 surveyed companies owe these companies $40 million, on average, in the form of accounts receivables or parent borrowing (*Caijing*, June 2002).

performance measures. Although most empirical studies are constrained by data availability, Murphy (1999) finds a positive relationship between executive pay and performance in the US, Germany and Japan. Finally, financial transparency and adequate information disclosure are crucial in developing countries. Sufficient, accurate and timely information regarding the firm's operations, its financial status, and the external environment is important for shareholders to be able to monitor the firm, to make investment decision affecting the firm, and to exercise control over the firm through other means. Bushman and Smith (2001) survey the relationship between financial accounting information and corporate governance. Therefore, we expect to see more value in firms that link managerial compensation to performance and pursue actively financial transparency and information disclosure.

Among the external mechanisms, an active market for corporate control is considered to be essential for the efficient allocation of resources. This market allows able managers to gain control of sufficient shares in a short period of time to remove inefficient managers. Proxy fights are not usually successful in deposing the existing board of directors because share holdings are often dispersed among small shareholders. Friendly mergers and takeovers occur in all countries and account for most of the transactions in the market for corporate control. In developed countries, the percentage of these activities ranges from 60 to 90. Hostile takeovers occur fairly frequently in the US and the UK, but much less so in Germany, France and Japan. Empirical studies suggest that takeovers increase significantly the market value of target firms, although the gain for bidding firms is zero and possibly even negative. Studies using accounting data find that changes and improvements in operations can explain partially takeover premiums (Shleifer and Vishny, 1997).

A series of studies by La Porta et al. (1997, 1998, 1999, 2002) emphasize the role played by the legal framework and legal foundation in disciplining managers and controlling shareholders' opportunistic behavior. These authors find that, in countries with common law tradition, governance standards are generally higher and minority shareholders are better protected. In contrast, countries pursuing continental law systems normally have poor minority shareholder protection and lower governance standards. Interestingly, they find that cross-country differences in equity valuation, the cost of capital, and the magnitude of external financing are explained by a country's legal origin. Obviously, legal infrastructure is an effective external mechanism to ensure that investors get a fair return on their investment. Chinese listed companies are regulated by a uniform legal system; hence, this external mechanism plays no role in explaining cross-sectional differences in governance practices. However, many Chinese companies do list shares on stock exchanges for which different jurisprudences prevail, e.g., H shares and ADRs.

Finally, competition in product market can be a powerful mechanism for solving agency problems. If the managers of a firm waste resources, the firm will eventually fail. Hence, increased competition reduces managerial slack and limits efficiency losses. Moreover, product market competition curtails the tunneling activities of the controlling shareholder. In summary, good corporate governance protects shareholders and ensures that investors get a fair return on their investment. In the next section, we investigate how these mechanisms promote good corporate governance and increase market valuation of listed firms in China.

3. Quantifying corporate governance mechanisms and market valuation

We begin this section by quantifying some measures of corporate governance. Starting with ownership variables, we denote the stake of the largest shareholder as *top1*. We use this variable to measure both the largest shareholder's interest in a company and also the largest shareholder's power on the board. As discussed above, we expect the relationship between a firm's market valuation and this variable to be U-shaped, although it should be negative if we restrict the relationship to be linear. In addition, we consider a dummy variable that equals 1 if a firm has a parent company and 0 otherwise and denote this as *parent*. If the largest shareholder of a listed company is a firm, the scope for tunneling is large because a company has more channels available than does an individual. The parent company can expropriate other shareholders through various business dealings with the firm or by connected transactions. Of these, the most commonly observed are loan guarantees for related companies, manipulated transfer prices, and the dumping of non-performing assets from the parent company to the listed company.

With respect to the board of directors, we create a dummy variable that equals 1 if the CEO is the chairman or a vice chairman of the board of directors and 0 otherwise and denote it *ceo_is_top_dir*. The monitoring role of board of directors is compromised when a CEO controls fully or partially the board. Therefore, we expect this variable to have negative impact on a company's market valuation. To measure the degree of outside control of the board, we take the ratio of the number of directors who are not members of the management team and denote it *out_ratio*. If the board is dominated by members of the management team, we do not expect it to play an effective monitoring role.

Regarding executive compensation, we note that stock options are rare in China. Furthermore, the information on executive pay is not complete and often inaccessible. Hence, we choose the following alternative variable to capture the alignment of interests between the managers and the shareholders. We define the top executives of the firm to be its CEO, the executive vice presidents, the chairperson and the vice chairpersons of the board of directors. We take the percentage of shares held by these top executives and denote it *top_shares* as a measure of their economic interests in a company. The interests of the top managers are better aligned with the interests of shareholders if they have a larger stake in the firm.

Regarding financial transparency, most listed companies in China are audited by local accounting firms but no reliable information exists to determine which accounting firms are more reputable. However, companies that issue H shares, which are traded on the Hong Kong Stock Exchange, or B shares, which are open mainly to foreign investors in domestic stock exchanges, must adopt international accounting standards. We take a dummy variable that equals 1 if a company has H shares traded in the Hong Kong Stock Exchange or B shares traded in Shanghai or Shenzhen stock exchange and 0 otherwise and denote it *hbshare*.

Turning to the external mechanisms, we measure the market for corporate control by the concentration of shares in the hands of the second to the tenth largest shareholders. We take the natural logarithm of the sum of squares of the percentage points of shareholding by the 2nd to the 10th largest shareholders and denote it *cstr2_10*. This variable should have a positive effect on firm valuation for three reasons. First, large shareholders other than the

largest one are obstacles to tunneling activities by the largest shareholder because these shareholders have incentives to monitor and restrain the largest shareholder. Second, the efficiency of the market for corporate control is enhanced because these large shareholders can either initiate a fight for corporate control or assist an outsider's fight for control when the existing management underperforms. Third, these large shareholders have an incentive to monitor the management directly. Therefore, the higher is the concentration of shareholding in the hands of these large shareholders, the higher should be the value of the firm.[7]

As explained above, the Chinese listed companies are regulated uniformly by Chinese jurisprudences. However, companies that have issued H shares or B shares are subject to stricter legal rules. Hence, the dummy variable *hbshare* can be viewed as a proxy for a better legal environment. With respect to product market competition, we do not have a good measure for this mechanism. However, its effect on market valuation is ambiguous. On the one hand, product market competition enhances corporate governance. On the other hand, product market competition erodes the profitability of the firm. Hence, we make no attempt to include this effect.

In addition to these seven measures of corporate governance derived from conventional economic theory, we consider one final variable to indicate whether or not the controlling shareholder is the government.[8] We define a dummy variable that equals 1 if the government is the controlling shareholder and 0 otherwise and denote it *so_top1*. The government is likely to have goals other than profit maximization, such as maintaining employment and social stability. A controlling government stakeholder can use the listed company as a vehicle to achieve these other policy goals even though they may conflict with shareholders' interests (Bai et al., 2000). Therefore, we expect government control to have negative effect on the firms' market valuation.

Since we aim to study the impacts of corporate governance mechanisms on the market valuations of the firms, we must define appropriate measures of market valuation. We take the widely used measure of valuation for listed companies, namely, Tobin's q. This measure is normalized with respect to the size of the firm; details about the variable definition are given in Appendix A. Another frequently used measure of firm valuation is the market-to-book ratio of the firm's total assets. Since Tobin's q and the market-to-book ratio are highly correlated having a correlation coefficient of 0.996 in our sample, we use only Tobin's q. When we used the market-to-book ratio in our empirical work, results were similar to those with Tobin's q.

[7] The construction of this variable follows the Herfindahl index of industry concentration. As a robustness check, we use the ratio of the total shareholding by the second to the tenth largest shareholders with respect to the shares not held by the largest shareholder and the main results do not change. Using a sample of firms that are in serious financial trouble and are hence given special treatment status and subject to more stringent regulation by the securities regulatory agency, Bai et al. (2004) estimate that increased competition for the control over a firm triggered by the special treatment status results in an average abnormal return of 31%. They also find that the abnormal return is positively correlated to *cstr2_10*, implying that concentration of shareholding in the hands of the second to the tenth largest shareholders enhances competition for the control over the firm and thus increases its market valuation.

[8] The state-controlling shareholder also includes legal-person shares that are controlled by various levels of governments.

One difficulty with these definitions is that a large proportion of shares of the listed firms in China cannot be traded freely and therefore do not have market prices. No consensus exists about how to compute the total market value of firms with a substantial percentage of non-tradable shares. One straightforward approach is to use the price of the tradable shares as a proxy for the price of the non-tradable shares, which we define as the variable *Tq*. However, this method overstates the market valuation of the firm because non-tradable shares should have a lower price than the tradable ones. Chen and Xiong (2002) find that the non-tradable state-owned shares and legal-person shares in China have an average illiquidity discount of between 70 to 80% when they are traded on informal markets. Hence, we define two additional valuation measures: *Tq_70* is computed by taking a 70% discount and *Tq_80* is computed by taking an 80% discount for non-tradable shares. These discounted measures may reflect better the market valuation of China's listed firms.

Our data source is *China Stock Market & Accounting Research Database* (*CSMAR*), compiled by The University of Hong Kong and GTA Information Technology Company Limited in Shenzhen according to the format of *CRSP* and *Compustat*. The sample includes all listed companies on both the Shanghai and Shenzhen Stock Exchanges between 1999 and 2001. Because information about whether a firm has a parent company is available only for 2000, we use only firms that had been listed by that year. Therefore, the sample size for year 2001 is the same as that for year 2000. Table 1 reports the summary statistics for the eight corporate governance variables.

The largest shareholder in each firm holds a significantly large stake as the mean of the top shareholder's holding is 44.8% and the highest value is 88.6%. A large majority (79%) of the publicly listed firms in China have a parent company. More than one third of the CEOs are also either the chairman or a vice chairman of the board of directors, which impedes the board from playing an effective monitoring role. The proportion of outsider directors on the board is surprisingly high, with a mean of 70.6% and a standard deviation of 18.3%. Top managers typically own very little of their companies' shares, on average only 0.1%. The mean and the standard deviation for the concentration of the second to the tenth largest shareholders are −5.98 and 2.72, respectively.[9] Neither dual listing nor multiple listing is common for Chinese firms as the average proportion of companies issuing H or B shares is about 10%. Finally, over 50% of companies are controlled by the government. The correlation coefficients among the eight corporate governance variables are given in Table A1. Only one pair of variables has a correlation coefficient greater than 0.5, namely *top1* and *cstr2_10*, and this is negative as one would expect.

The summary statistics for the valuation variables are given in Table 2. If non-tradable shares are not discounted, the publicly listed firms are highly valued by shareholders. The overall mean value of Tobin's q, at 2.99, is significantly higher than the international norm. However, if non-tradable shares are discounted, the average adjusted Tobin's q values are 1.72 and 1.54, which are more comparable with those in other major stock markets. In the following section, we present the regression results based on these corporate governance variables.

[9] The value of the concentration variable is negative because it is defined to be the natural logarithm of the Herfindahl index of shareholdings and the Herfindahl index is less than 1.

Table 1
Summary statistics for the governance variables

Year	Variable	No. of obs.	Mean	S. D.	Min.	Median	Max
1999	*top1*	865	0.458	0.180	0.023	0.452	0.886
	parent	865	0.790	0.408	0	1	1
	ceo_is_top_dir	865	0.402	0.491	0	0	1
	out_ratio	865	0.706	0.183	0	0.714	1
	top_shares	865	0.001	0.004	0	0.000	0.109
	hbshare	865	0.105	0.307	0	0	1
	cstr2_10	865	−5.918	2.601	−13.476	−5.440	−1.771
	so_top1	865	0.491	0.500	0	0	1
2000	*top1*	1020	0.450	0.178	0.021	0.446	0.886
	parent	1020	0.786	0.410	0	1	1
	ceo_is_top_dir	1020	0.329	0.470	0	0	1
	out_ratio	1020	0.723	0.178	0	0.727	1
	top_shares	1020	0.001	0.004	0	0.000	0.130
	hbshare	1020	0.100	0.300	0	0	1
	cstr2_10	1020	−6.005	2.780	−14.434	−5.421	−1.938
	so_top1	1020	0.561	0.497	0	1	1
2001	*top1*	1020	0.439	0.178	0.019	0.432	0.850
	parent	1020	0.790	0.407	0	1	1
	ceo_is_top_dir	1020	0.314	0.464	0	0	1
	out_ratio	1020	0.733	0.161	0.143	0.727	1
	top_shares	1020	0.001	0.005	0	0.000	0.149
	hbshare	1020	0.094	0.292	0	0	1
	cstr2_10	1020	−5.993	2.767	−13.828	−5.356	−1.932
	so_top1	1020	0.605	0.489	0	1	1
Total	*top1*	2905	0.448	0.179	0.019	0.443	0.886
	parent	2905	0.789	0.408	0	1	1
	ceo_is_top_dir	2905	0.346	0.476	0	0	1
	out_ratio	2905	0.722	0.174	0	0.727	1
	top_shares	2905	0.001	0.005	0	0.000	0.149
	hbshare	2905	0.099	0.299	0	0	1
	cstr2_10	2905	−5.975	2.723	−14.434	−5.416	−1.771
	so_top1	2905	0.556	0.497	0	1	1

Table 2
Summary statistics for the valuation measures

Year	Variable	No. of obs.	Mean	S. D.	Min.	Median	Max
1999	*Tq*	865	2.574	1.385	0.576	2.260	13.379
	Tq_70	865	1.462	0.780	0.309	1.306	8.569
	Tq_80	865	1.303	0.711	0.220	1.154	7.882
2000	*Tq*	1020	3.645	2.049	0.880	3.219	18.342
	Tq_70	1020	2.076	1.134	0.500	1.802	10.438
	Tq_80	1020	1.852	1.022	0.396	1.606	9.309
2001	*Tq*	1020	2.689	1.864	0.682	2.202	25.744
	Tq_70	1020	1.576	1.233	0.317	1.302	21.437
	Tq_80	1020	1.417	1.158	0.241	1.166	20.822
Total	*Tq*	2905	2.990	1.870	0.576	2.519	25.744
	Tq_70	2905	1.717	1.113	0.309	1.463	21.437
	Tq_80	2905	1.536	1.022	0.220	1.315	20.822

4. Empirical results on corporate governance and market valuation

In this section, we investigate empirically the effects of the chosen corporate governance mechanisms on the market valuation of the firms. We use three different measures of market valuation, namely *Tq*, *Tq_70*, and *Tq_80*, as dependent variables. The explanatory variables include the eight corporate governance variables, together with size, the leverage ratio, the capital-sales ratio, the operation income-sales ratio, and industry dummies as control variables. We choose control variables that are used in corporate valuation studies, e.g., Cho (1998) and Joh (2003). As a proxy of firm size, we take the natural logarithm of main operating income and denote it *ln_sales*. We include the capital to sales ratio, calculated as the ratio of the book value of total tangible assets to total sales, and denote it *k_s*. In addition, we use the operating income to sales ratio, defined as the ratio of operating profit divided by total sales and denoted *y_s*, and the leverage ratio, defined as the ratio of the book value of debt to the book value of total asset and denoted *leverage*. Finally, we include industry dummies, which are defined according to the industrial classification of the Chinese Security Regulatory Commission (CSRC). All listed firms are classified into sixteen industries; we take agriculture to be the reference industry. After controlling for these effects, we identify the impact of corporate governance variables on market valuation. In the estimations, we also include the square term of the variable *top1*, denoted *top1_sq*, because the relationship between market valuation and the percent of shares held by the largest shareholder is expected to be non-linear.

We estimate both a fixed-effects model and a random-effects model using the three-year panel data set. The fixed-effects model mitigates, but does not necessarily eliminate, the endogeneity problem. However, some of the corporate governance variables are time-invariant so that their influence cannot be estimated by a fixed-effects model. On the other hand, the random-effects model does allow us to estimate the impact of these time-invariant variables. Table 3 presents the results for the fixed-effect models using the three variants of Tobin's q as dependent variables.

As Table 3 indicates, the effect of the shareholding of the proportion of shares held by the largest shareholder is non-linear. The coefficient of *top1* is negative and statistically significant and the coefficient of *top1_sq* is positive and statistically significant. Hence, we find the expected U-shaped relationship between a firm's market valuation and the proportion of shares held by its largest shareholder. In addition, the higher is the degree of concentration among other large shareholders, the higher will be the firm's market valuation. Hence, potential competition for corporate control and the constraints imposed by other large shareholders on the largest shareholder's aspiration to tunnel are important determinants of firm valuation. Moreover, if a company's CEO is also a top director of the board, the company's valuation is reduced. However, the ratio of outside directors on the board has no significant effect on the firm's market valuation. Perhaps outside board members are not really independent of the management in China's listed companies. Finally, we find that increasing the shareholdings of top managers may not be value enhancing in China, perhaps because these shareholding are relatively small in the listed companies.

Among the four control variables, the size of the firm is negatively correlated with Tobin's q, indicating that smaller firms have higher valuation. The leverage ratio of the firm has a statistically significant positive effect on firm valuation, for which we have no

Table 3
Fixed effect estimation

	Tq	*Tq_70*	*Tq_80*
top1	−5.6123**	−2.2581*	
	(2.339)	(1.970)	(1.857)
top1_sq	7.0036**	3.0115*	2.4412*
	(2.519)	(1.913)	(1.733)
ceo_is_top_dir	−0.2281**	−0.1365**	−0.1235**
	(2.404)	(2.541)	(2.568)
out_ratio	−0.0884	−0.0427	−0.0362
	(0.324)	(0.276)	(0.261)
top_shares	−0.3000	0.1561	0.2213
	(0.024)	(0.022)	(0.035)
cstr2_10	0.0871**	0.0444**	0.0383**
	(2.528)	(2.276)	(2.195)
ln_sales	−0.4236***	−0.2329***	−0.2057***
	(5.610)	(5.448)	(5.377)
k_s	0.0199	0.0050	0.0029
	(1.223)	(0.546)	(0.352)
y_s	−0.0014	−0.0065***	−0.0072***
	(0.310)	(2.589)	(3.220)
leverage	1.8142***	1.5115***	1.4683***
	(14.387)	(21.168)	(22.981)
Intercept	12.1278***	6.5032***	5.6997***
	(7.565)	(7.163)	(7.017)
No. of obs.	2905	2905	2905
No. of firms	1051	1051	1051
Overall-R^2	0.203	0.298	0.325
Between-R^2	0.192	0.271	0.295
Within-R^2	0.191	0.323	0.359

Note. The numbers in parentheses are t-statistics.
* Significance at the 10% level.
** Idem., 5%.
*** Idem., 1%.

explanation. The other control variables are not significant. In the second and the third regressions, we use illiquidity-discount adjusted values of Tobin's q and find results that are mainly consistent with those in the first regression. One difference is that the coefficient of the operating income to sales ratio becomes statistically significant, for which we have no satisfactory explanation. In summary, the results from the fixed-effects regression using Tobin's q are robust and mostly consistent with the predictions from the theory of corporate governance.

The estimation results of the random-effects models are reported in Table 4. The coefficients of the corporate governance variables that appear in both the fixed-effects models and random-effects models are qualitatively similar in both cases, although the non-linear effect of the largest shareholder is less pronounced and all the control variables are highly significant. The random-effects model allows us to estimate the influence of time-invariant variables. We find that listing a firm on the Hong Kong Stock Exchanges or trading in B shares has a statistically significant positive effect on firm valuation. In addition, if the gov-

Table 4
Random effect estimation

	Tq	*Tq_70*	*Tq_80*
top1	−0.9745	−1.0061*	−1.0085*
	(0.936)	(1.702)	(1.885)
top1_sq	3.6901***	1.2479*	0.8980
	(3.219)	(1.917)	(1.524)
parent	−0.0959	−0.0251	−0.0150
	(0.971)	(0.448)	(0.294)
ceo_is_top_dir	−0.1694**	−0.0958**	−0.0857**
	(2.454)	(2.446)	(2.430)
out_ratio	0.1568	−0.0006	−0.0229
	(0.815)	(0.005)	(0.233)
top_shares	5.6239	4.0656	3.8308
	(0.812)	(1.034)	(1.079)
hbshare	0.4624***	0.3700***	0.3553***
	(3.631)	(5.113)	(5.411)
cstr2_10	0.1451***	0.0333***	0.0174*
	(8.132)	(3.284)	(1.905)
so_top1	−0.1248*	−0.0799**	−0.0731**
	(1.771)	(1.997)	(2.025)
ln_sales	−0.6797***	−0.3612***	−0.3150***
	(20.425)	(19.117)	(18.426)
k_s	−0.0306**	−0.0205***	−0.0187***
	(2.361)	(2.788)	(2.839)
y_s	−0.0192***	−0.0167***	−0.0162***
	(4.837)	(7.434)	(8.026)
leverage	0.9522***	0.9996***	1.0134***
	(9.617)	(17.808)	(20.063)
Intercept	16.5434***	8.8120***	7.6912***
	(22.157)	(20.788)	(20.053)
No. of obs.	2905	2905	2905
No. of firms	1051	1051	1051
Overall-R^2	0.329	0.388	0.409
Between-R^2	0.388	0.417	0.430
Within-R^2	0.159	0.303	0.341

Notes. 1. The Industrial Dummies are included but are not reported. 2. The numbers in parentheses are *t*-statistics.
* Significance at the 10% level.
** Idem., 5%.
*** Idem., 1%.

ernment is the largest shareholder in a firm, Tobin's q is significantly lower. Both of these results confirm our theoretical predictions.

Some potential problems in interpreting these results should be mentioned. First, since we have eight regressors, multicollinearity may be a problem. However, the pair-wise correlation coefficients of the main regressors are low and most of the regressors are statistically significant. Second, a potential endogeneity problem exists; the fixed-effects model mitigates but does not solve fully this issue.

5. Conclusion

We analyze empirically the impact of eight corporate governance measures on the market valuation of listed firms in China with standard control variables included. We take Tobin's q, and its adjusted values for the illiquidity of the Chinese market, as measures of market valuation. We use a three-year panel data set and estimate both fixed-effects and random-effects models. Consistent with theoretical predictions, we find that both high concentration of shareholding among the second to the tenth largest shareholders and issuing shares to foreign investors have statistically significant and positive effects on market valuation. In addition, a large holding by the largest shareholder, the CEO being the chairman or vice chairman of the board of directors, and the largest shareholder being the government all have statistically significant and negative effects on Tobin's q. Our results are robust to the different measures of market valuation.

These findings have implications for both the security regulators and the listed companies in China. Security regulators in much of the world, including both developed and developing countries, recognize the importance of corporate governance in enhancing firms' investment values. Various best practice codes are imposed to improve a firm's overall governance standard. Our study sheds light on the relative importance of various corporate governance practices; hence, it provides useful information to the Chinese regulatory authorities to design best practice codes tailored to both the Chinese institutional background and the current level of capital market development in China. In addition, these results are a useful guide for firms that are designing their corporate governance mechanisms to enhance their market valuation and, thus, provide additional value to their shareholders and reduce their future investment cost.

Acknowledgments

We thank two anonymous referees and especially John Bonin for their valuable comments and suggestions, and Li Chuntao for his excellent research assistance. We acknowledge financial support from the Center for China Financial Research (CCFR) in the Faculty of Business and Economics of the University of Hong Kong.

Appendix A. Calculation of Tobin's q

Tobin's q is defined as[10]

$$Tq = \frac{MVCS + BVPS + BVLTD + BVINV + BVCL - BVCA}{BVTA},$$

where *MVCS* is the market value of the firm's common stock shares, *BVPS* is the book value of the firm's preferred stocks, *BVLTD* is the book value of the firm's long-term debt, *BVINV* is the book value of the firm's inventories, *BVCL* is the book value of the firm's

[10] We follow Chung and Pruitt (1994) in this definition.

Table A1
Correlation coefficients between governance variables

	top1	*parent*	*ceo_is_top_dir*	*out_ratio*	*top_shares*	*hbshare*	*cstr2_10*
parent	0.3926						
	(0.0000)						
ceo_is_top_dir	−0.0844	−0.1025					
	(0.0000)	(0.0000)					
out_ratio	−0.0725	0.0339	−0.3534				
	(0.0001)	(0.0678)	(0.0000)				
top_shares	−0.0347	0.0076	0.0396	−0.0273			
	(0.0614)	(0.6840)	(0.0326)	(0.1414)			
hbshare	−0.0410	0.0340	−0.0384	−0.0018	0.0118		
	(0.0273)	(0.0666)	(0.0385)	(0.9208)	(0.5264)		
cstr2_10	−0.6745	−0.2471	0.0292	0.1198	0.0311	0.0908	
	(0.0000)	(0.0000)	(0.1154)	(0.0000)	(0.0933)	(0.0000)	
so_top1	0.2155	0.0070	0.0265	−0.0784	−0.0532	0.0265	−0.1813
	(0.0000)	(0.7055)	(0.1535)	(0.0000)	(0.0041)	(0.1539)	(0.0000)

Note. The p-values are in parentheses.

current liabilities, *BVCA* is the book value of the firm's current assets, and *BVTA* is the book value of the firm's total assets. Because no preferred stock exists in China, the above formula reduces to

$$Tq = \frac{MVCS + BVLTD + BVINV + BVCL - BVCA}{BVTA}.$$

In addition, we adjust the measurement of Tobin's q to take account of illiquidity discounts of 70 and 80% in the Chinese market. Specifically, we multiply the amount of tradable shares by the market price and the amount of non-tradable shares by 30 and 20% of the market share price respectively to obtain the value of equity in the Tobin's q formulae denoted by *Tq_70* and *Tq_80*, respectively.

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