China's Secondary Privatization: Perspectives from the Split-Share Structure Reform*

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JEL Classification: G15, G18, G30.

Keywords: The Split-Share Structure Reform, privatization, market mechanism, state-owned enterprise, government agents.

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Abstract

The Split-Share Structure Reform granted legitimate trading rights to the state-owned shares of listed state-owned enterprises (SOEs), opening up the gate to China's secondary privatization. The expectation of privatization quickly boosted SOE output, profits, and employment, but did not change their operating efficiency and corporate governance. The improvements to SOE performance are positively correlated to government agents' privatization-led incentive of increasing state-owned share value. In terms of privatization methodology, the reform adopted a market mechanism that played an effective information discovery role in converging the interests of the government and private investors.

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1 Introduction

The split-share structure was a legacy of China's initial share issue privatization (SIP), in which state-owned enterprises (SOEs) went public to issue minority tradable shares to private agents while the Chinese government remained in control by holding majority non-tradable shares.[1] Although it played a positive role in assisting China's SOE ownership reform at an early stage, the split-share structure jeopardized China's continued privatization efforts by restricting trading of state-owned shares in the secondary market. It also caused serious corporate governance problems, encouraged speculation in the stock market, and blocked mergers and acquisitions activities.[2]

In 2005, the Split-Share Structure Reform was initiated to dismantle the dual share structure by converting non-tradable shares into tradable shares.[3] The reform removed any legal and technical obstacles of transferring state-owned shares to private agents, opening up the gate to China's secondary privatization, which, in contrast to the initial SIP, would further liberalize state-owned shares in full circulation. Although it had long been predicted that the Split-Share Structure Reform would substantially change China's corporate landscape (Inoue, 2005), the country's continued privatization efforts have not been comprehensively studied, while China's initial SIP during the 1990s received extensive research attention (Bai et al., 1997; Lin et al., 1998; Lin, 2000; Sun and Tong, 2003). In this paper, we fill this research gap by reviewing and evaluating the Split-Share Structure Reform. We identify the

[1]For almost all SOEs that went public before 2005, state-owned shares—together with shares held by non-state legal persons, natural persons, and foreigners before initial public offerings (IPOs)—were restricted from trading in the secondary market. Only new shares issued in IPOs and seasoned cash offerings and those derived from tradable shares in rights offerings and stock splits were listed and tradable. By the end of 2004, the total number of RMB-denominated domestic shares (A-shares) outstanding was 714.9 billion, among which 454.3 billion shares were non-tradables, 74% of which were state-owned.

[2]Section 2.2 presents in detail the corporate governance problems caused by the split-share structure and their reasons and consequences. The problems involve large shareholder rent seeking activities, such as related-party transactions, listed firms lending or guaranteeing loans to controlling shareholders. See also Allen et al. (2005), Huwang et al. (2006), Lin (2008), Deng et al. (2008), and Liao et al. (2011) for additional discussions.

[3]The Split-Share Structure Reform remains an ongoing process as of November 2013. However, most listed firms finished the reform during 2005-2007, that is, 1,260 firms finished the reform by the end of 2007. As of November 2013, only three out the 1,315 listed firms with the split-share structure have not reformed.

reform's privatization effect measured by the differential changes in post-reform operational and stock performance of SOEs and comparable non-SOEs.[4] We further trace the sources of the privatization effect in an effort to generate policy implications for future privatization.

The evidence shows that the output, profit, and employment of listed firms increased substantially after the reform and much more so for SOEs. Such differences were reflected in higher SOE stock returns, consistent with Megginson et al. (1994) in that firms with better incentives to increase stock value boost output and profits. After the reform, SOEs and non-SOEs experienced similar degrees of increase in profitability and operating efficiency, measured by accounts receivable turnover and expense-to-revenue ratio. Evidence on change in corporate governance, measured by agency activities of controlling shareholders, for SOEs and non-SOEs is however mixed. It appears that the Split-Share Structure Reform created privatization expectation that quickly boosted SOE output and profits, but did not change SOE corporate governance or operating efficiency without fundamentally altering their ownership structure.

The privatization effect is sourced to several factors. After the reform, state-owned shares became market priced and could be conveniently transferred to private agents in the secondary market. Therefore, the interest of government agents operating and controlling SOEs became better aligned with that of private investors.[5] In particular, government agents will be rewarded with control enhancement and favorable promotion opportunities if they improve SOE performance, which leads to higher state-owned share value in preparation for in-depth privatization. The evidence shows that privatization-led improvements to post-reform SOE performance are positively correlated to government agents' supportive activities to SOEs,

[4]A firm is defined in the paper as SOE if its ultimate controlling party is the state, non-SOE otherwise. See Section 4.1.1 for details. The Split-Share Structure Reform was simultaneously carried out on SOEs and comparable non-SOEs that had the split-share structure. For non-SOEs, the reform dismantled the dual share structure. For SOEs, the reform not only dismantled the dual share structure, but also liberalized state-owned shares, creating a privatization effect.

[5]We use "government agents" to denote executives of SOEs and their controlling shareholders. Almost all Chinese listed SOEs have state-owned controlling shareholders, who hold majority non-tradable shares on behalf of the Chinese government. Executives of listed SOEs are appointed and evaluated by their controlling shareholders, whose executives are appointed and evaluated by the Chinese government.

but negatively correlated to post-reform state-owned share sales, which are considered a punitive mechanism to government agents.

Compared to privatization in the other countries (Megginson and Neffer, 2001; Stiglitz, 2002) and failed early privatization attempts in China, the Split-Share Structure Reform adopted a market mechanism through which government agents and private investors negotiate the terms of SOE reform plans including consideration paid to the latter.[6] The market mechanism allowed government agents to communicate with private investors their incentive of improving SOE performance after the reform in exchange for the latter's agreement to reform. We find that privatization-led improvements to post-reform SOE performance are negatively correlated to consideration demanded, and positively correlated to private investors' support to reform plans. The evidence suggests that the market mechanism played an effective information discovery role in facilitating privatization in the reform.

Our finding adds new support to the notion that privatization improves the performance of SOEs (Megginson et al., 1994; Dewenter and Malatesta, 2001; Boubakri et al., 2005; Song et al., 2011). Moreover, expectation on privatization can stimulate managerial incentives and boost firm performance even before actual ownership transition takes place. The finding generates implications for privatization policy, which is considered a complex task for global economies. Outcome of privatization is influenced by not only economic, political, legal, institutional and firm-specific factors (Megginson et al., 2004) but also privatization methodology (Perotti, 1995; Biais and Perotti, 2002).[7] In particular, we demonstrate that

[6]Sections 2.3 and 2.4 present in detail China's failed privatization attempts after the SIP and the market mechanism in the Split-Share Structure Reform, respectively.

[7]Megginson and Neffer (2001) and Sheshinski and Lopez-Calva (2003) provide excellent reviews of the empirical and theoretical privatization literature. In particular, Brada (1996) classifies privatization methods into four categories: privatization through restitution, privatization through the sale of state property (direct sales and SIP), mass or voucher privatization, and privatization from below. Different economies have adopted different privatization methods and have experienced very different results. For example, Boubakri and Cosset (1998) evaluate the financial and operating performance of newly privatized firms in developing countries, and find significant post-privatization improvements. Harper (2002) and Black et al. (2000) find disappointing results from the Czech Republic and Russia: Firm income, profitability, and employment significantly decreased after voucher privatization. Martin and Parker (1995) show that most UK firms did not improve their performance after privatization through asset sales after adjusting for the business cycle effect. Boubakri and Cosset (2002) find that 79 SOEs in 21 African countries improved their output,

market-involved privatization approach is more effective than crude top-down privatization orders when China enters into an in-depth reform era. The positive elements of the Split-Share Structure Reform provide policy implications for China's continued economic reforms.

To the best of our knowledge, this study constitutes the first effort to review the Split-Share Structure Reform with privatization perspectives, examining its long-term effects on SOE performance and corporate governance.[8] Importantly, the reform provides a desirable experiment setting enabling us to overcome such methodology difficulties as sample bias, data unreliability, and changing environments that plague the empirical privatization literature (Megginson and Neffer, 2001; Sheshinski and Lopez-Calva, 2003). As a policy event, the reform involved almost all listed firms, both SOEs and non-SOEs, in the world's largest transitional economy, providing a cross-sectional sample of unprecedented scale. Publicly disclosed high quality financial, stock, and ownership information is available before and after the reform. These unique features allow us to measure the effects of privatization in a clean and reliable way.

The rest of the paper is organized as follows. Section 2 reviews the Split-Share Structure Reform and its background. Section 3 develops our hypotheses. Section 4 describes the empirical strategy. Section 5 presents and analyzes the empirical findings. Section 6 concludes.

operating efficiency, and profitability after SIP. The above results imply that privatization methods are of critical importance and worthy of careful examination.

[8]There is a growing literature studying the Split-Share Structure Reform as a special event to examine various corporate finance and capital market issues. Among them, the study of Li et al. (2011) finds that consideration is significantly influenced by efficiency gain from better risk sharing. Liao et al. (2011) examine information discovery and information-based trading during post-reform lockups. Among studies on short-term market reactions and the interaction between consideration and ownership, that of Bortolotti and Beltratti (2006) reports a statistically significant 8% positive abnormal return over the reform event window after adjusting for consideration requested by tradable shareholders. Lu et al. (2008) find that the positive abnormal returns after the reform announcement are not related to consideration paid to tradable shareholders. Firth et al. (2010) report the opposite effects of state ownership and mutual fund ownership on consideration. Huang and Zhu (2011) find that qualified foreign institutional investors help increase consideration. Liu et al. (2011) report a significant reduction in cash dividends after the reform, which is significantly related to the reduction in the ownership of the largest shareholders.

2 Review of the Split-Share Structure Reform

This section presents the origin of the split-share structure and the problems it had caused. It then reviews China's failed in-depth privatization attempts before the Split-Share Structure Reform, followed by describing the reform process.

2.1 Formation of the split-share structure

A split-share structure involves two classes of domestic A-shares with otherwise identical rights, tradable and non-tradable, coexisting in a listed firm.[9] Before the Split-Share Structure Reform, the non-tradable shares were not listed and only allowed to be transacted through negotiations between designated parties. In contrast, the tradable shares were issued to private investors and could be transacted in the secondary market.

The origin of this dual share ownership structure can be traced back to the enterprise ownership structure reform in 1978. By then there were only two types of enterprise ownership in China: SOEs, which contributed 78% of China's industrial output, and *collectives*, which were small enterprises operated by rural municipalities or urban communities. In the early 1980s, the Chinese government carried out a series of reforms to improve the low productivity and shrinking efficiency of the financially plagued SOEs. Those early economic reform attempts all eventually failed, because their limited purposes of improving managerial incentives and decentralizing decision making were unable to fundamentally resolve the complex ownership structure problems inherited from the country's planned economy.[10]

The Chinese government started corporatizing a selection of small and medium SOEs in the mid-1980s and experimented by privatizing them as a core element of the second-stage

[9] A Chinese firm can issue several types of common shares: A-shares are common shares priced in RMB and traded on the Shanghai or Shenzhen Stock Exchange. B-shares are listed on the domestic exchanges but priced in US dollars and H-shares are listed on the Hong Kong Stock Exchange and priced in Hong Kong dollars. A firm can also be cross-listed overseas. For example, N- and L-shares represent shares listed on the New York Stock Exchange and London Stock Exchange, respectively.

[10] See Sun and Tong (2003) for a detailed review of the goals and undesirable outcomes of these reform policies before SIP.

economic reform in 1988. The founding of the Shanghai Stock Exchange and Shenzhen Stock Exchange in 1990 marked the start of China's SIP. SOEs went public to issue exchange-listed tradable shares to private agents. The SIP could be best labeled as partial because it transferred only a small portion of SOE ownership to private agents and did little to lessen the state's role in corporate decision making. The split-share structure was then formed.

Transaction of state-owned shares was not an issue by then. State-owned shares, together with shares issued to legal persons, natural persons, and foreigners before IPOs, were restricted from trading in the secondary market. This restriction was explicitly written in IPO prospectuses or publicly announced. Only new shares issued in IPOs and seasoned cash offerings and those derived from tradable shares in rights offerings and stock splits were tradable on the stock exchanges. The *Tentative Measures for the Administration of the Issuance and Trading of Stocks*, issued by the State Council in April 1993, required transactions of state-owned shares to be approved by the relevant authorities but provided no applicable measures on implementation.

The Chinese government chose to put the state-owned share transaction issue on hold indefinitely for several reasons. First, transactions of state-owned shares appeared unnecessary in a centralized ownership framework and the designated administrative system.[11] Second, in the 1990s, the economic reform was still focused on the administration and management of the SOEs that went public mainly to raise capital and to experiment with the new government-controlled management mechanism. Third, the Chinese stock market was at an experimental stage and not ready to facilitate transactions of state-owned shares.

[11]By then socialism was ideologically interpreted to mean that all assets belong to all citizens. The state possesses these assets on behalf of the citizens at the primitive stage of socialism. The central government represents the state in exercising ultimate control and administration of the state-owned assets. The state-owned shareholders consisted of different levels and departments of the Chinese government and their affiliates, who delegated the central government to manage SOEs according to their administrative functions. Transfers of state-owned assets due to reorganization and industry restructure were almost all executed through administrative orders without monetary transactions.

2.2 Problems caused by the split-share structure

The legacy dual share ownership structure created critical problems in the functioning and development of China's financial markets in the most recent years and caused tremendous concerns. Under the split-share structure, the interests of tradable and dominant non-tradable shareholders were fundamentally divided due to different share pricing mechanisms. The non-tradable shares were priced according to the book value of firm assets instead of firm market values. Controlling non-tradable shareholders, who on average possessed two-thirds of total shares outstanding, were unable to benefit from capital gains. Hence, they had little, if not zero, incentive to improve firm performance.

In the absence of effective internal and external monitoring,[12] controlling shareholders made listed firms raise money relentlessly through seasoned cash offerings, ignoring adverse market reactions and control dilution because of their absolute dominance. After raising money, controlling shareholders duly extracted value through related-party transactions, where controlling non-tradable shareholders transferred wealth through transactions, such as asset sales and product purchases, with entities they owned (before the reform 29.7% of firms in our sample engaged in related-party transactions with controlling shareholders), corporate lending, where listed firms made loans to controlling shareholders (before the reform 42.3% of firms in our sample made loans to their controlling shareholders), and listed firms guaranteeing loans to controlling shareholders.

In equilibrium, investors speculated in the stock market for short-term returns rather than invested for long-term capital gains. Overtrading was rampant in the Chinese stock market. As of 2007, the average turnover ratios of the Shanghai and Shenzhen Stock Exchanges were 927% and 987%, respectively. In comparison, as of 2005, the average turnover ratios of the stock markets in the US, UK, and Japan were 129%, 142%, and 119%, respec-

[12]Boards of directors nominated by dominant non-tradable shareholders did not function effectively in terms of monitoring managerial behaviors in the best interests of minority tradable shareholders. External monitoring through corporate takeovers was not feasible due to non-transferability of dominant non-tradable shares.

tively (*China Capital Markets Development Report*, China Securities Regulatory Commission (CSRC), 2008). Such high turnover ratios cannot be justified by liquidity, which should be accompanied by low volatility of stock returns. Liao et al. (2010) show that between 1995 and 2008 the average monthly stock return volatilities of the Shenzhen and Shanghai Stock Exchanges were 10.7% and 8.9%, respectively, the highest in the world, and 19 and 16 times the average stock return volatility of the New York Stock Exchange. Highly volatile stock prices are likely driven by Chinese investors' speculation activities (Sun and Tong, 2003; Allen et al., 2005; Xiong and Yu, 2011).

The lack of controlling shareholder incentive to finance with debt to avoid financial distress together with the corporate bond pricing difficulties introduced by the split-share structure fundamentally discouraged the development of domestic corporate debt and derivative markets. As of 2007, China's bond market capitalization to gross domestic product (GDP) ratio was 35.3%, far lower than the 188.5% and 201.0% of the US and Japan, respectively. Corporate bonds amounted to only 4.2% of China's bond market. The ratio of outstanding corporate bonds to GDP was 1.5% for China, in comparison to 125.7% and 38.9% for the US and Japan, respectively (*China Capital Markets Development Report*, 2008).

2.3 Failed early privatization attempts

The Split-Share Structure Reform, as part of China's in-depth privatization efforts, did not come easily. This section presents China's failed privatization attempts after the initial SIP and their reasons.

In September 1999, the Fourth Plenum of the 15th Central Committee of the Communist Party of China passed the *Decision of the Central Committee of the Communist Party of China on Major Issues Concerning the Reform and Development of State-Owned Enterprises*. The decision aimed to privatize an unspecified number of state-owned shares to raise capital for the Social Security Fund, which served to lessen the welfare burden of SOEs. The privatization, however, was conditional on the state securing absolute control of those SOEs

to be further privatized.

In December 1999, the CSRC handpicked ten listed companies to pilot the state-owned share sales. As in rights offerings, preferential subscription rights were offered to existing shareholders. Sale prices were crudely set using firms' average earnings per share in prior three years multiplied by a fixed price earnings ratio of ten. Sales were quickly suspended after trying two companies because the stock market reacted negatively due to the dramatic discrepancy between the sales prices and prices the market was expecting. The Shanghai Composite Index and the Shenzhen Composite Index dropped by 7.3% and 6.8%, respectively, during the 25-day sale period.

On June 12, 2001 the State Council issued the *Interim Measures of the State Council on the Management of Reducing State Shares Held and Raising Social Security Funds*, stating that SOEs would privatize 10% of state-owned shares in IPOs and seasoned cash offerings. The price of state-owned shares would be set equal to the offering price of newly issued shares. Sales were halted on October 22, 2001 after 16 SOEs practiced the interim measures, thus inviting tremendous adverse market reaction. During four months, the Shanghai and Shenzhen Composite Indexes plummeted by 31.0% and 32.9%, respectively. The stock market remained bearish throughout 2002-2004 with transaction volumes shrunk by nearly 30%. The Shanghai Composite Index plunged from a record high of 2,245 points on June 14, 2001 to 998 points on June 6, 2005. During the same period of time, the Chinese economy experienced 11% annual compounding growth.

Why did the market react so adversely? Besides the market being concerned that the rapidly inflated stock volume might flood the secondary market, a more fundamental reason was that these privatization attempts directly breached IPO and seasoned equity offering agreements on non-tradability of state-owned shares. Privatization harmed investor interests but provided no compensation. That created widespread dissatisfaction as well as anxiety over the overhung state-owned shares. In November 2001 the CSRC solicited public opinions and suggestions on practical method to privatize state-owned shares. No satisfactory reso-

lution was reached because the market refused to accept the idea of privatizing state-owned shares without systematically legitimizing their trading rights and compensating tradable shareholders.[13]

2.4 The Split-Share Structure Reform

The Chinese government gradually realized that in-depth privatization and market liberalization could not be accomplished without completely dismantling the legacy dual share structure inherited from the SIP. The Split-Share Reform was then initiated to liberalize state-owned shares in full circulation. On January 31, 2004 the State Council issued *Some Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markets* as a blueprint of the reform. *The Notice of the China Securities Regulatory Commission on Piloting the Share-Trading Reform of Listed Companies* issued on April 30, 2005 marked the official start of the Split-Share Structure Reform.[14] Instead of directly selling state-owned shares, the reform aimed to convert all non-tradable shares into legitimate tradable shares with negotiated considerations to compensate tradable shareholders. To encourage listed firms to reform, the CSRC imposed the reform as a prerequisite for seasoned equity offerings.

A firm's reform process typically has several steps. First, if at least two-thirds of non-tradable shareholders agree to reform, the board of directors authorizes the management to hire a qualified securities firm as facilitator to seek an agreement with the domestic exchange on which the firm is listed on a tentative reform schedule. Non-tradable shareholders then

[13]Other privatization methods, including contract-based transaction of state-owned shares, state-owned share-to-debt swaps, and auctions, were either considered or pilot-tested but quickly withdrawn. For example, in January 2003 the CSRC announced a plan to sell state-owned shares, together with other non-tradable shares, at discounted prices. Sale price would be determined through public auction and below the secondary market price. After sales, non-tradable shareholders would compensate tradable shareholders through share transfers or designated rights offerings. The plan was withdrawn in two days after the Shanghai Composite Index lost 6%.

[14]Four companies, namely, Sany Heavy Industry, Tongfang Co., Zijiang Enterprise Group, and Jinniu Energy Resources, comprised the first batch of pilot firms chosen by the CSRC. The second pilot batch included 42 companies.

propose a reform plan with consideration paid to tradable shareholders in exchange for the trading rights of non-tradable shares. The consideration can be paid in cash, stock, stock option, or warrant.[15] Controlling non-tradable shareholders can make written promises on future dividend payouts and/or asset injections to sweeten the consideration package. The proposal is then circulated for tradable shareholder feedback and negotiation.[16]

The reform adopts a market mechanism through which tradable and non-tradable shareholders negotiate the terms of reform plan. On the principle of 'fair negotiation, mutual trust, and independent decision making' (*China Capital Markets Development Report*, 2008), the negotiation reflects each firm's specific situation. No government intervention or standard pricing is imposed. After receiving positive feedback from tradable shareholders during negotiation, the firm calls for a special shareholder meeting in which tradable shareholders vote to approve the proposal. The firm is required to provide the necessary information technology system for tradable shareholders to vote online. Trading of tradable shares is frozen on the meeting day. The reform plan is submitted to the CSRC for final approval if more than two-thirds of participating tradable shareholders approve it. After the CSRC's approval, the reform plan becomes effective. Trading of tradable shares resumes the next trading day.

To stabilize the stock market, each firm's reform plan contains a compulsory non-tradable share lockup of 12 months after the reform plan's effective day. In addition, a non-tradable shareholder is restricted from selling more than 5% (10%) of total shares outstanding within 12 (24) months after the lockup. Transactions of non-tradable shares over 1% of total shares outstanding must be publicly disclosed within two trading days. Upon completion of the

[15]Li et al. (2011) report that the average (median) value of consideration, measured as the number of shares transferred to tradable shareholders for each tradable share held is 0.305 (0.310) for firms whose non-tradable shareholders paid considerations in stock only.

[16]It was not uncommon for a negotiation to take several rounds. For example, Tongfang Co., one of the first batch of pilot firms, disregarded the negative feedback from tradable shareholders and held a special shareholder meeting in which its reform plan proposal was rejected and returned for re-proposal. That substantially delayed the company's reform. Later on, all companies tended to renegotiate and re-propose their plans after learning of tradable shareholder dissatisfaction.

Split-Share Structure Reform, the Chinese stock market would no longer be fundamentally different from international markets in terms of pricing and valuation.

3 Hypothesis development

This section develops hypotheses to identify the privatization effect embedded in the Split-Share Structure reform, and determines the sources of the privatization effect. Theory predicts that private ownership is more efficient than government ownership because a competitive equilibrium is Pareto optimal (Megginson and Neffer, 2001). Sheshinski and Lopez-Calva (2003) argue that significant efficiency gain should be obtained for firms being transferred from government to private ownership in competitive industries. Empirical evidence indicates that in many economies and industries, firm performance is improved after privatization (Megginson et al., 1994; LaPorta et al., 1999; Boubakri et al., 2005). We develop and test the following hypothesis on the existence of a privatization effect in the Split-Share Structure Reform:

H1: After the Split-Share Structure Reform, SOEs improved performance more than non-SOEs.

The next question is on the sources of such privatization effect, if exists. Megginson et al. (1994) show that stronger managerial incentive of increasing share value leads to increases in SOE output and profit. The interest of the Chinese government and the incentive of the government agents running SOEs play central roles in shaping SOE performance and corporate governance, due to the different corporate structure of Chinese listed SOEs from that of western firms. Almost all listed SOEs in China have state-owned controlling shareholders, who hold majority non-tradable shares on behalf of the Chinese government. Executives of listed SOEs are appointed and evaluated by their controlling shareholders, whose executives are appointed and evaluated by the Chinese government.

Before the reform, the split-share structure of listed firms caused serious governance problems and is regarded as a failure of China's SIP (Allen et al., 2005; Deng et al., 2008).

Jensen and Meckling (1976) state that a particular form of agency problem involves the interest conflicts between controlling shareholders and minority shareholders in a market with high ownership concentration. Grossman and Hart (1988) and Shleifer and Vishny (1997) show that controlling shareholders have incentives to divert firm resources for private interest at the expense of minority shareholders. Since private investors hold tradable shares of SOEs, the agency problems of SOE controlling shareholders are rooted in the interest conflicts between government agents and private investors.

The Split-Share Structure Reform generated expectation of further privatization.[17] After the reform, state-owned shares became market priced and could be easily transferred to private agents in the secondary market. Performance of government agents will be evaluated on the market values of SOE shares, instead of the book values of SOE assets as before the reform. Hence, the interests of government agents and private investors become better aligned. In particular, government agents will be rewarded with control enhancement and favorable promotion opportunities if they improve SOE performance and increase state-owned share values in preparation for privatization. For example, good SOE performance could help their controlling shareholders become group listed.[18] On the other hand, the government could divest in underperforming SOEs to discipline their management. Sales of state-owned shares constitute a punitive mechanism that dilutes government agents' control and jeopardizes their future promotion. Furthermore, SOEs with good performance could have better access to seasoned equity offerings, which are subject to profitability requirements. They could

[17]As shown in the previous section, the Chinese government had attempted but failed to privatize state-owned shares of listed SOEs to raise capital for in-depth economic reform. Although it remains unclear when and how the Chinese government will privatize SOEs after the Split-Share Structure Reform, which has nevertheless removed the legal and technical obstacles. The reform also pointed out the direction for future policies. Rapidly growing government liabilities and loss of SOE competitiveness after further financial liberalization are potential triggers for large-scale privatization. Consistently, the third plenum of the 18th Central Committee of the Chinese Communist Party closed on November 12, 2013 decides to allow more private capital into the market to develop a mixed ownership economy.

[18]On August 23, 2005 the CSRC, jointed by the State-owned Assets Supervision and Administration Commission of the State Council, the Ministry of Finance, the People's Bank of China (the central bank), and the Ministry of Commerce, announced *The Guiding Opinions on the Split-Share Structure Reform of Listed Companies* stating that the government encourages enterprises with good performance to become group-listed through the SOEs under their control after the Split-Share Structure Reform.

also enjoy lower financing costs, because higher firm value derives lower insolvency risk and better quality collateral. Given that privatization-led incentive of government agents reflects in their supportive activities to SOEs, we develop and test the following hypothesis:

H2: Privatization-driven improvements to post-reform SOE performance are positively correlated to government agents' supportive activities.

We further examine the information discovery role of the market mechanism in facilitating privatization, arguing that the market mechanism helps to bridge information exchange between government agents and private investors at the reform negotiation stage. Government agents offer either up-front consideration or future capital gain in exchange for the latter's agreement to reform. If the market mechanism is effective in facilitating the information exchange, private investors should be able to form reasonable expectation on the post-reform performance of SOEs, which in turn affects their approval of reform plans and the amount of considerations demanded. Therefore, we develop and test the following hypotheses:

H3: Privatization-driven improvements to post-reform SOE performance are negatively correlated to consideration demanded and positively correlated to private investors' reform plan approval rate.

4 Empirical strategy

This section presents our empirical strategy, first illustrating the methods used to identify the privatization effect, followed by introducing the data. It then introduces how to relate the privatization effect to several potential sources.

4.1 Identifying the privatization effect

Our greatest advantage in studying privatization is that the Split-Share Structure Reform was simultaneously carried out on SOEs and comparable non-SOEs with the split-share structure. For non-SOEs, the reform dismantled the dual share structure. For SOEs, the reform not only dismantled the dual share structure, but also removed legal and technical ob-

stacles restricting transfer of state ownership to private agents. That generated expectation for in-depth privatization, creating a privatization effect on SOEs.

4.1.1 Measuring state ownership

For robustness we measure state ownership in three ways: (1) We define a firm as SOE if its ultimate controlling party is the state, non-SOE otherwise. Chinese listed firms disclose their ultimate controlling parties in annual financial reports. The state is the ultimate controlling party of a firm if the state controls directly or indirectly over 50% of total shares outstanding, the state controls directly or indirectly over 30% of total voting rights, the state's voting rights can elect over 50% of board directors, or the state has significant influence on decisions made in shareholder meetings; (2) we use the ratio of state-owned shares to total shares outstanding as a proxy for state-ownership in regressions; and (3) we divide firms by state ownership measured in (2) into four groups, where Group P contains private listed firms that do not have any state-owned shares, constituting a sub-sample of the non-SOEs.[19] The rest of the firms are ranked by their ratios of state-owned shares to total shares outstanding from low to high, and assigned to Groups S^L, S^M, and S^H, respectively.

4.1.2 Evaluating the reform and estimating the privatization effect

We contrast firm operating performance and corporate governance three years before and after the reform in evaluating the success of the reform. Medians, instead of means, of the variables are examined, because, as for Sun and Tong (2003), we note that the distributions of the key variables of interest are heavily skewed and leptokurtic.[20] As a result, we apply Wilcoxon signed-rank tests to examine the significance of the median changes in the variables

[19]We manually trace the origins of the 146 private listed firms, and find that nearly 43% of the firms have never been state-owned. Their shares held by non-state legal persons, natural persons, and foreigners before IPOs were restricted from trading in the secondary market before the Split-Share Structure Reform. About 53% of the firms had state-owned shares at IPOs. The state-owned shares were transferred to private agents on individual case base as China continued experimenting privatization methodology after the SIP. These privatized shares remained untradable before the Split-Share Structure Reform.

[20]For example, the Shapiro-Wilk test on operating revenue generates W=0.13 with p<0.0001, rejecting the null hypothesis that the variable is normally distributed.

before and after the reform, and Wilcoxon Z-tests to examine the significance of the difference in the median changes between groups.

Following Megginson et al. (1994), Dewenter and Malatesta (2001), and Sun and Tong (2003), we adopt a *difference-in-difference* approach to measure the privatization effect. We first divide the non-SOEs into 5x5 benchmark portfolios by size (measured by market capitalization) and industry. For robustness, we construct another set of 5x5 non-SOE benchmark portfolios by size and market-to-book ratio. We then assign each SOE to one of the 5x5 benchmark portfolios by matching size and industry (size and market-to-book ratio). We compute the median changes in the performance and corporate governance variables of these benchmark portfolios, $\Delta Perform^{BK}$, and those of each SOE, $\Delta Perform^{SOE}$, respectively. We compute in the final step the privatization-led improvements to SOE performance as $IMP^{PRIV} = \Delta Perform^{SOE} - \Delta Perform^{BK}$, removing the non-privatization effects of the reform and influence of unknown economic shocks.

4.1.3 Operational performance

It is important to consider that China revised Chinese Generally Accepted Accounting Principles (GAAP) to embrace the International Financial Reporting Standards during the sample period. The new Chinese GAAP became effective in January 2007 with revisions centering on how investment profit and other income are scoped and calculated. Assets and shareholder equity are affected by the changes in calculating inventories and retained earnings (Ding and Su, 2008; Peng and Bewley, 2010). The revision renders incomparable earnings- and asset-based financial measures, such as return on assets (ROA) and return on equity (ROE), before and after the reform.

As a result, we use the Consumer Price Index-adjusted operating revenue and operating profit as proxies for output, the number of employees and capital expenditure (measured as change in gross property, plant, and equipment (PPE) *plus* change in intangible assets) normalized by operating revenue as proxies for employment and investment, respectively.

We use operating revenue per employee and operating profit per employee as proxies for productivity and profitability, respectively. We compute the accounts receivable turnover and the ratio of selling and financial expenses to operating revenue to measure operating efficiency.[21] Since the accounting variables used in computing the frequently used debt-to-asset and current ratios are also affected by the revision of the Chinese GAAP, we use the ratio of cash to total liabilities as a proxy of insolvency risk. These common but incomparable financial measures, such as ROA, ROE, and debt-to-asset ratio, are also reported only for reference.

4.1.4 Stock market performance

To measure firm market performance, we estimate the Fama and French (1993) three-factor model-adjusted stock returns, and compute the model-implied stock returns with

$$\hat{r}_i = \beta_i^M (r^M - r^f) + \beta_i^{SMB} r^{SMB} + \beta_i^{HML} r^{HML} + r^f, \tag{1}$$

where r^M, r^f, r^{SMB}, and r^{HML} denote the market (Shanghai Composite Index) return, the risk-free (one year Chinese Treasury) rate, and the returns for the *SMB* and *HML* portfolios, respectively. β is estimated using one-year pre-reform daily stock returns. We compute adjusted stock return as $r_{adj} = r_i - \hat{r}_i$, where r_i denotes raw stock return. Privatization-driven SOE stock return is computed as $r_{adj}^{PRIV} = r_{adj}^{SOE} - r_{adj}^{BK}$, where r_{adj}^{SOE} denotes an SOE's adjusted stock return, and r_{adj}^{BK} denotes the median adjusted stock return of the non-SOE benchmark portfolio, to which the SOE is assigned by matching size and industry (or size and market-to-book ratio).

[21] General and administrative expenses are affected by the revision of the Chinese GAAP due to such changes as in calculating inventories and assets. Selling and financial expenses are not affected by the revision, and applied as a substitute for commonly used selling, general, and administrative expenses.

4.1.5 Corporate governance

Traditional corporate governance tools, such as internal monitoring and external takeover, have been shown ineffective for listed Chinese firms (Sun and Tong, 2003; Allen et al., 2005). We propose three novel measures of corporate governance: (1) related-party transactions, (2) related-party transactions with controlling shareholders, and (3) listed firms lending to controlling shareholders. These activities represented notorious controlling shareholder agency problems before the reform (Xu et al., 2005; Ma et al., 2005; Cheung et al., 2006; Hou et al., 2008). We would like to examine whether the percentage of firms engaged and the amount of money involved in these agency activities change before and after the reform, in assessing the effect of the reform on listed firms' corporate governance.

4.2 Data

Data on the Split-Share Structure Reform and firm financial information are obtained from the CSMAR database and cross-checked against data in the WIND database to improve reliability. Firm operating revenues before the revision of the Chinese GAAP are manually collected from firm annual reports, since they are not reported in the databases. There are 1,260 firms completed the Split-Share Structure Reform by the end of 2007. We exclude 228 firms that are delisted, in the financial industry, or with incomplete accounting information. Our final sample contains 1,032 firms, among which 633 are SOEs and 399 are non-SOEs. Groups P, S^L, S^M, and S^H contain 146, 295, 296, and 295 firms, respectively.

Table 1 reports the medians of a selection of key variables one year before the reform being effective. The medians of the ratios of non-tradable shares to total shares outstanding for non-SOEs and SOEs are similar, at 60.15% and 62.51%, respectively. The SOEs, originating from capital-intensive heavy industries, are larger than the non-SOEs in terms of assets, revenue, and employment. For example, the non-SOEs' median assets and annual revenue are RMB 1,264.25 million and 592.31 million, respectively. The SOEs' were RMB 2,069.67

million and 1,236.01 million, respectively.[22] The SOEs and non-SOEs have similar levels of profitability. The medians of the SOE (non-SOE) net margin rate, ROA, and ROE are 3.50% (3.66%), 2.50% (2.08%), and 5.26% (4.25%), respectively. The SOEs and non-SOEs have comparable leverage ratios and short-term solvency measures, that is, the medians of the SOE (non-SOE) debt-to-asset ratios and current ratios are 0.51 (0.55) and 1.17(1.14), respectively. The market-to-book ratios for the SOEs and non-SOEs are 1.70 and 1.76, respectively, comparable to the average market-to-book ratio of US firms.[23] The SOEs have a median accounts receivable turnover of 5.97, higher than the 3.53 for the non-SOEs.

Managerial ownership is low for listed Chinese firms. The median managerial shareholding is 0.004% for the full sample, that is, average firm management holds four out of 100,000 shares outstanding. In general, non-SOE managers hold higher percentage of shares outstanding than SOE managers. The median managerial shareholding for SOEs and non-SOEs are 0.004% and 0.005%, respectively. The Chinese government restricts SOE managerial shareholding in avoiding value and control dilution of state assets. We, therefore, do not use management shareholding as a primary managerial incentive measure for government agents running SOEs.

4.3 Sources of the privatization effect

This section first examines the significance of privatization effect in the reform, and then applies regression analysis to relate the privatization effect to potential sources.

[22]The RMB appreciated steadily against the US dollar during our sample period. The average exchange rates of RMB to US dollars were 8.28, 8.29, 7.97, 7.60, 6.95, and 6.83 from 2004 to 2009, respectively. On average, US$1 was equivalent to RMB 7.64 during our sample period.

[23]Pontiff and Schall (1998) report an average book-to-market ratio of 0.668 for US firms during 1926-1994, which translates into an average market-to-book ratio of 1.50. Chen et al. (2013) report an average market-to-book ratio of 2.13 for US firms during 1950-2010.

4.3.1 Regression setup

We test H1 using the following regression with the full sample:

$$\Delta Perform_i = \alpha_i + \beta^{StateOwn} StateOwn_i + \sum_{j=1}^{N} \beta_j^{Control} Control_{i,j} + \varepsilon_i, \tag{2}$$

where $\Delta Perform_i$ denotes the change in firm i's operational performance or stock return. $StateOwn_i$ denotes state ownership measured by the ratio of number of state-owned shares to number of total shares outstanding. According to H1, the coefficient of $StateOwn$ is expected to be positive.

We include the ratio of non-tradable shares to tradable shares in controlling for the relative bargaining power of non-tradable shareholders in reform plan negotiation, where the higher the ratio, the stronger the relative bargaining power of non-tradable shareholders. There could be concerns that stronger improvements to SOE operating performance are driven by their monopoly power (Megginson and Neffer, 2001). To address the issue, we include the logarithm of market equity value and a regulated industry dummy to control for such an effect, because large SOEs tend to possess the strongest monopoly power in regulated industries, such as telecommunications and natural resources (Sun and Tong, 2003). We include a Hong Kong cross-listing dummy in the regressions to control for the cross-listing effect. We control for the year effect by including dummies for the years 2005 and 2006, respectively.

We investigate whether improvements to post-reform SOE performance are positively correlated to controlling shareholders' supportive activities with the SOE sample and the following regression:

$$\begin{aligned} IMP_i^{PRIV} &= \alpha_i + \beta^{GroupList} GroupList_i + \beta^{AssetInject} AssetInject_i \\ &\quad + \beta^{FundRaise} FundRaise_i + \sum_{j=1}^{N} \beta_j^{Control} Control_{i,j} + \varepsilon_i, \end{aligned} \tag{3}$$

where IMP_i^{PRIV} represents privatization-driven improvements to SOE post-reform performance, measured by operating revenue, operating profit, and stock return, respectively. $CroupList$ represents the group-listing dummy taking 1 if the controlling shareholder of an SOE became group-listed after the reform—majority assets of the controlling shareholders were injected into the SOE, and 0 otherwise. $AssetInject$ represents the asset injection dummy taking 1 if the controlling shareholder of an SOE injected assets into the SOE after the reform, and 0 otherwise. $FundRaise$ represents the number of rounds of external fund raising after the reform. According to H2, $CroupList_i$, $AssetInject_i$, and $FundRaise_i$ should all be positively correlated to IMP_i^{PRIV}. To avoid the multicollinearity problem, we include these supportive activities each individually as independent variables in the regressions.

To analyze whether the market mechanism played an effective informational role in facilitating privatization embedded in the reform, we carry out cross-sectional regressions based on the following equation with the SOE sample to test H3:

$$IMP_i^{PRIV} = \alpha_i + \beta^{Consider} Consider_i + \beta^{Approval} Approval_i + \sum_{j=1}^{N} \beta_j^{Control} Control_{i,j} + \varepsilon_i, \quad (4)$$

where $Consider$ and $Approval$ denote consideration paid to tradable shareholders and tradable shareholder reform plan approval rate, respectively. $Consider$ is measured as the ratio of number of shares transferred from non-tradable shareholders to tradable shareholders to number of tradable shares outstanding (Li et al., 2011). Tradable shareholders' reform plan approval rate is computed as the ratio of number of tradable shares voted to approve the reform plan to number of tradable shares participated in the vote. According to H3, $Consider_{i,t}$ and $Approval_i$ should be negatively and positively correlated to $IMP_{i,}^{PRIV}$, respectively.

The independent variables and the residuals in the above equations are not normally distributed.[24] In such case, ordinary least square (OLS) regressions can produce biased

[24]For example, the skewness and kurtosis of the residuals in the operating revenue regression specified in Eq. (2) are 3.3 and 15.8, respectively. The Shapiro-Wilk test on the residuals shows W=0.70 with p<0.0001, rejecting the null hypothesis that the residuals are normally distributed.

estimates and unreliable statistical inferences. Thus, we apply quantile regressions in our investigation (Koenker and Bassett, 1978). Quantile regression imposes no restrictive prior on the distribution of residuals, and utilizes the least absolute distance estimation algorithm instead of the least-squares algorithm. It allows one to examine any arbitrary quantiles of selected dependent variables, enabling the investigation on the significance and stability of results all over a quantile spectrum. We analyze the most representative 25%, 50% (median) and 75% quantile, and illustrate the robustness of results over the entire quantile range.

5 Result analysis

This section evaluates the Split-Share Structure Reform and its privatization effect looking into the post-reform changes in SOE and non-SOE output, employment, productivity, operating efficiency, and corporate governance. We find that the listed firms substantially increased output, profit, and employment after the reform, with SOEs significantly outperforming their counterparts. Such differences are duly reflected in their higher stock returns. There is no consistent evidence that expectation of privatization led to greater improvements in operating efficiency and corporate governance for SOEs than non-SOEs. Improvements to SOE performance are positively correlated to government agents' incentive of increasing state-owned share value. The market mechanism plays a remarkable information discovery role in facilitating privatization.

5.1 Evaluating the reform and privatization effect

5.1.1 Output and productivity

Table 2 reports the post-reform changes in firm output, employment, and investment. It shows that firm operating revenue increases significantly after the reform. For the full sample, the median increase is 73%, significant at the 1% level. The result is unlikely driven by outliers as Column (1) shows that 779 firms experienced positive operating revenue change,

whereas 253 firms experienced downward change. The increases in median operating revenue for the non-SOEs and SOEs are 57% and 84%, respectively. Moreover, the increases in the medians for groups P , S^L, S^M and S^H were 47%, 60%, 74%, and 92%, respectively, significant at the 1% level. SOEs experienced greater output growth than non-SOEs, that is, the difference in median output growth between SOEs and non-SOEs (the highest state ownership group S^H and the pure private group P) was 27% (44%), significant at the 1% level. Expectation of privatization can have two opposite effects on output. On the one hand, there is a positive effect due to better-aligned government agent incentive and more flexible financing (Megginson et al., 1994). On the other hand, output could decrease due to a reduction in government subsidy (Boycko et al., 1996). The first effect appears to dominate the second in the expectation of privatization in our case.

The evidence indicates significant post-reform increases in firm operating profit. The median increases for the full sample, non-SOEs, and SOEs are 45%, 44%, and 50%, respectively, significant at the 1% level. The difference between the SOEs and non-SOEs is however insignificant. Employment increased substantially after the reform with a median change for the full sample of 13%, significant at the 1% level. The difference in the changes of the median employment growth rate between SOEs and non-SOEs (Group S^H and Group P) is 17% (16%), significant at the 1% level. Higher growth in SOE employment after the reform can not be entirely due to new positions created. Some employees could have been transferred from the SOE's controlling shareholders with asset injections. The reform nonetheless did not cause mass reduction in employment, which is in stark contrast to China's SIP that led to sizable unemployment in the 1990s (Sun and Tong, 2003).

Post-reform growth in capital asset investment was slower than operating revenue growth. The changes in the median ratios of capital expenditure to operating revenue for the full sample, non-SOEs, and SOEs are -2.76%, -3.87%, -2.04%, respectively. SOEs experienced lower decreases in capital assets relative to their operating revenues than non-SOEs. The difference in the changes of the median ratios of capital expenditure to operating revenue

between SOEs and non-SOEs (Group S^H and Group P) is 1.83% (5.16%), significant at the 10% (1%) level. The result is consistent with H2 in that government agents had stronger incentive to inject high-quality assets into SOEs in boosting their performance and increasing stock prices after the reform.

Theory and empirical evidence show that a dual share structure misaligns the control and cashflow rights of controlling shareholders, and negatively affects productivity and profitability (Jensen and Meckling, 1976; Gompers et al., 2008; Masulis et al., 2009). Panel B of Table 3 reports the changes in operating revenue per employee and profit per employee as proxies for productivity. Operating revenue (profit) per employee increased significantly, by 41% (17%), 41% (19%), and 41% (15%) for the full sample, non-SOEs, and SOEs, respectively. However, there is no significant difference between SOEs and non-SOEs (Group S^H and Group P).

5.1.2 Operating efficiency and insolvency risk

Table 3 reports the post-reform changes in firm operating efficiency and insolvency risk. For operating efficiency, the increases in the median accounts receivable turnover for all firms, non-SOEs, and SOEs are 4.51, 4.24, and 4.64 times, respectively, significant at the 1% level. The increases in the median accounts receivable turnover for groups P, S^L, S^M, and S^H are 3.78, 5.26, 4.46 and 4.60 times, respectively, significant at the 1% level. Firms on the one hand experienced efficiency gains, and on the other hand became more discreet with credit sales, particularly during the global financial crisis in 2008-2009.[25] The difference between SOEs and non-SOEs is however insignificant. The ratio of selling and financial expenses to operating revenue exhibits similar patterns for SOEs and non-SOEs with an increase of 3%. We find mixed evidence on improvements in operating efficiency with no significant difference between SOEs and non-SOEs. Panel B of Table 3 reports changes in leverage and

[25]The full sample median accounts receivable turnover three years before the reform is 4.40. The median post-reform increase in operating revenue is 73%, while the median decrease in accounts receivable is 13%. These results imply a median post-reform accounts receivable turnover of 8.70, leading to a net change of 4.30, roughly matching the actual change of 4.51.

solvency proxies after the reform. The ratio of cash to total liabilities displays no significant change in listed firms' insolvency risk.

5.1.3 Corporate governance

Our corporate governance measures include (1) related-party transactions, (2) related-party transactions with controlling shareholders, and (3) listed firm lending to controlling shareholders. Related-party transactions, especially those involving controlling shareholders, were accused of being a popular way of profit tunneling before the reform (Cheung et al., 2006). Controlling shareholder borrowing at extremely low cost or even interest free from listed firms has also been widely criticized (Ma et al., 2005; Hou et al., 2008).

Panel A of Table 4 reports the percentage of firms engaging in such activities. Before the reform, there were 43.4%, 29.7%, and 42.3% of firms in our sample engaged in related-party transactions, related-party transactions with controlling shareholders, and lending to controlling shareholders, respectively. After the reform, the percentages dropped to 35.7%, 24.0%, and 16.6%, respectively. The percentage of firms engaged in these agency activities increases monotonically with state ownership. After the reform, the percentage of S^H firms engaged in related-party transactions decreased more than the private listed firms. However, the percentage of S^H firms engaged in related-party transactions with controlling shareholders and lending to controlling shareholders reduced less compared to firms in the private group. Panel B of Table 4 reports that the changes in the ratios of the amount of fund involved in these agency activities to operating revenue are insignificant. Overall, there is no consistent evidence that SOEs experienced greater improvements in corporate governance than the non-SOEs, suggesting that expectation of privatization might quickly boost SOE output and profit, but did not change corporate governance.

5.1.4 The privatization effect

Table 5 summarizes the privatization effect measured by changes in SOE operating revenue and operating profit, and Fama-French model-adjusted stock returns, respectively. An average SOE's operating revenue and operating profit increase by 84% and 50%, respectively. Its adjusted stock return is 109%. The changes are statistically significant at the 1% level. SOEs exhibit 6% (6%) higher increase in operating revenue, 2% (0.3%) higher increase in operating profit, and 6% (20%) higher stock return compared to their benchmark non-SOE portfolios, by size and industry (size and market-to-book ratio), respectively. The results suggest that the Split-Share Structure Reform contains a significant positive privatization effect, supporting H1.

5.2 Sources of the privatization effect

This section analyzes the significance of the privatization effect and explores its sources. The evidence shows that privatization-induced improvements to post-reform SOE performance are positively correlated to the supportive activities of government agents, suggesting that their incentive plays an important role in shaping the privatization effect. Post-reform sales of state-owned shares are negatively correlated to the improvements to SOE performance, indicating that control dilution works as a punitive mechanism to government agents who fail to increase state-owned share value after the reform. Beside converging the interests of the government and private investors, the market mechanism plays an effective information discovery role in facilitating privatization embedded in the reform.

5.2.1 Significance of the privatization effect

We formally test H1, that is, whether SOEs experienced significantly stronger post-reform improvement in performance than non-SOEs, using the regressions specified in Eq. (2). In Table 6, the quantile regression results indicate that post-reform increase in operating revenue is positively and significantly correlated to state ownership. The coefficients of state owner-

ship are 0.46, 0.51, and 0.83 for the 25%, 50% (median) and 75% quantiles, respectively. The t-statistics show statistical significance at the 1%, 1%, and 5% levels, respectively. Graph A in Figure 1 illustrates the estimates of the coefficients of state-ownership for regressions over the quantile spectrum. The post-reform change in operating revenue is positively correlated to state-ownership for all quantiles. Post-reform increase in operating profit is positively correlated to state-ownership in the 25%, 50% (median) and 75% quantiles, significant at the 5% level for the 75% quantile. Graph B in Fig. 1 shows that the positive correlation between increase in operating profit and state ownership is more evident for firms with high profit growth. Table 7 reports the regression results of stock performance measured by the Fama-French three-factor model-adjusted stock returns. The coefficients of state-ownership are positive and significant for the 25% and 50% (median) quantiles. Both the operational performance and stock return results support H1 in that improvements to SOE performance were stronger than those to non-SOE performance, highlighting a positive and significant privatization effect.

5.2.2 Government agents' incentives and supportive activities

We test H2, that is, privatization-driven improvements to SOE performance are positively correlated to government agents' supportive activities, using the regressions specified in Eq. (3). Table 8 reports the 50% quantile (median) regression results. It shows that privatization-driven changes in SOE operating revenue are positively correlated to the two proxies of government agents' supportive activities. The coefficients of the group listing dummy are 137.2, 168.5 and 144.3 for the unadjusted, size—industry, and size—market-to-book ratio portfolio adjusted operating revenue regressions, significant at the 1% or 5% levels. The asset injection dummy and fund raising rounds results are consistent.

Privatization-driven changes in SOE operating profit are also positively correlated to government agents' supportive activities. The asset injection dummy and fund raising rounds are significant for the two privatization-driven change in SOE operating profit measures at the

1% level. The stock return results are also consistent with the prediction of the hypothesis. But highly skewed and volatile post-reform stock returns during the global financial crisis undermine the representativeness of the stock return results.

Overall, the empirical evidence supports H2 in that privatization-induced improvements to post-reform SOE performance are positively correlated to the supportive activities of government agents and SOE financing activities. Since these activities capture the incentive of the government agents running SOEs, the results support our argument that the privatization effect is positively related to the better-aligned incentive of government agents in the expectation of in-depth privatization.

5.2.3 Evidence from post-reform sales of state-owned shares

Beside rewarding the government agents boosting SOE performance, the Chinese government could choose to divest in underperforming SOEs to discipline the government agents who fail. Sales of the state-owned shares work as a punitive mechanism to government agents by diluting their control power and jeopardizing their future promotion. We examine whether post-reform sales of state-owned shares are negatively correlated to privatization-led improvements to SOE performance as a robustness check for H2. We collect data on post-reform sales of state-owned shares to private agents and measure actual privatization with (1) number of state-owned shares sold, (2) percentage of state-owned shares sold to state-owned shares owned, (3) percentage of state-owned shares sold to total shares outstanding, and (4) percentage of state-shareholders involved in the sales.

Panel A of Table 9 shows that state shareholders in 160 out of 633 SOEs in our sample sold 2.95% of state-owned shares to private agents as of October 2011.[26] The comprehensive firms had the highest percentage of firms sold state-owned shares, 28.7%, whereas the utility firms had the lowest 14.5%.[27] An average firm sold 5.13 million shares, comprising 0.44%

[26]The statistics could slightly underestimate the actual sales of state-owned shares, since only sales with shares exceeding 1% of total shares outstanding are required to be publicly disclosed. Since most of sales of state-owned shares are in large quantity, our results provide imperfect but reasonable estimates.

[27]A Chinese listed firm is classified as comprehensive if it is not in the utility, real estate, manufacturing,

of total shares outstanding, with 31% state shareholders involved. The pattern is similar across all five industries. Privatization appeared to take place only on a small scale after the reform. Therefore, the privatization effects on SOE performance were largely driven by the expectation of privatization.

Panel B of Table 9 reports the correlations between post-reform sales of state-owned shares and privatization-driven improvements to SOE operating performance. Number of sales of state-owned shares, number of state-owned shares sold, percentage of state-owned shares sold to total shares outstanding, and percentage of state shareholders involved are all negatively and significantly correlated to changes in SOE performance. The results show that the government indeed divested in underperforming SOEs after the reform, supporting our prior that improvements to post-reform SOE performance were driven by the incentive of government agents in increasing state-owned share value.

5.2.4 Information discovery role of the market mechanism

We look into whether the incentives of government agents and expectation of privatization were effectively communicated through the market mechanism adopted in the reform. Table 10 reports the 50% quantile (median) regression results in testing H3. It shows that privatization-led improvements to SOE operating revenue and operating profit are negatively and significantly correlated to consideration. Privatization-driven improvements to SOE operating revenue and operating profit are positively correlated to private investors' reform plan approval rate, supporting H3. Figures 2 confirms the robustness of these findings.

The evidence implies that through the market mechanism, government agents communicate their privatization-led incentives of improving SOE performance with private investors in exchange for their support to the reform. Private investors trade off receiving higher consideration at the reform stage versus benefiting from greater improvements to post-reform SOE performance. Moreover, they tend to approve reform plans with higher approval rates

or commercial industries.

when stronger SOE performance is expected. Beside balancing the interests of the government and private investors, the market mechanism plays an information discovery role in facilitating privatization in the reform. It is an important element for the success of the reform and privatization.

6 Conclusions

The Split-Share Structure Reform was a landmark event in China's financial liberalization. It converted non-tradable state-owned shares into tradable shares, enabling in-depth privatization of listed SOEs. The evidence shows that SOEs experienced remarkable increases in output and employment without sacrificing operating efficiency. Expectation of privatization stimulated the incentive of government agents running SOEs to take quick measures to improve SOE performance. There is no evidence that the reform improved SOE corporate governance without fundamentally changing their ownership structure. In contrast to the evidence found in other transitional economies that new management help improve post-privatization firm performance, our results show that stimulating incumbent management's incentive with expectation of privatization also has positive effects. The market mechanism, which helps converge the government and private investor interests, is more effective than crude top-down orders in making privatization happen when China enters into an in-depth reform era. Moreover, it played an important information discovery role in facilitating privatization. The positive elements of the Split-Share Structure Reform provide useful policy implications for China's continued economic reforms.

References

Allen, F., Qian, J., Qian, M., 2005. Law, finance, and economic growth in China. Journal of Financial Economics 77, 57–116.

Bai, C., Li, D., Wang, Y., 1997. Enterprise productivity and efficiency: When is up really down? Journal of Comparative Economics 24, 265–280.

Biais, B., Perotti, E., 2002. Machiavellian privatization. American Economic Review 92, 240–258.

Black, B., Kraakman, R., Tarassova, A., 2000. Russian privatization and corporate governance: What went wrong. Stanford Law Review 52, 1731–1803.

Bortolotti, B., Beltratti, A., 2006. The nontradable share reform in the Chinese stock market. Unpublished working paper, Bocconi University.

Boubakri, N., Cosset, J.-C., 1998. The financial and operating performance of newly privatized firms: Evidence from developing countries. Journal of Finance 53, 1081–1110.

Boubakri, N., Cosset, J.-C., 2002. Does privatization meet the expectations? Evidence from African countries. Journal of African Economics 11, 111–140.

Boubakri, N., Cosset, J.-C., Guedhami, O., 2005. Postprivatization corporate governance: The role of ownership structure and investor protection. Journal of Financial Economics 76, 369–399.

Boycko, M., Shleifer, A., Vishny, R., 1996. A theory of privatisation. Economic Journal 106, 309–319.

Brada, J., 1996. A privatization is transition—or is it? Journal of Economic Perspectives 10, 67–86.

Chen, H., Wang, H., Zhou, H., 2013. Stock return volatility and capital structure decisions. Unpublised working paper, Massachusetts Institute of Technology.

Cheung, Y.-L., Rau, R., Stouraitis, A., 2006. Tuneling, propping,and expropriation: Evidence from connected party transactions in Hong Kong. Journal of Financial Economics 82, 343–386.

Deng, J., Gan, J., He, J., 2008. The dark side of concentrated ownership in privatization: Evidence from China. Unpublished working paper, Hong Kong University of Science and Technology.

Dewenter, K., Malatesta, P., 2001. State-owned and privately owned firms: An empirical analysis of profitability, leverage, and labor intensity. American Economic Review 91, 320–334.

Ding, Y., Su, X., 2008. Implementation of IFRS in a regulated market. Journal of Accounting and Public Policy 27, 474–479.

Fama, E., French, K., 1993. Common risk factors in the returns on bonds and stocks. Journal of Financial Economics 33, 3–53.

Firth, M., Lin, C., Zou, H., 2010. Fridend or foe? The role of state and mutual fund ownership in the Split Share Structure Reform in China. Journal of Financial and Quantitative Analysis 45, 685–706.

Gompers, P., Ishii, J., Metrick, A., 2008. Extreme governance: An analysis of dual-class companies in the United States. Review of Financial Studies 23, 1051–1088.

Grossman, S., Hart, O., 1988. One share one vote and the market for corporate control. Journal of Financial Economics 20, 323–336.

Harper, J., 2002. The performance of privatized firms in the Czech Republic. Journal of Banking and Finance 26, 621–649.

Hou, X., Li, Q., Luo, W., 2008. Shareholder borrowing and the profitability of Chinese listed firms. Accounting Research June, 77–84.

Huang, W., Zhu, T., 2011. Foreign institutional investors and corporate governance in emerging markets: Evidence from Chinese share structure reform. Unpublished working paper, University of Hawaii at Manoa.

Huwang, C., Zhang, S., Zhu, Y., 2006. Float liquidity, speculation, and stock prices: Evidence from the share structure reform in China. Unpublished working paper, Nanyang Technological University.

Inoue, T., 2005. Reform of China's split-share structure takes shape. Nomura Capital Market Review 8, 42–59.

Jensen, M., Meckling, W., 1976. Theory of the firm: Managerial behavior, agency cost and ownership cost. Journal of Financial Economics 3, 305–360.

Koenker, R., Bassett, G., 1978. Regression quantiles. Econometrica 46, 33–50.

LaPorta, R., de Silanes, F. L., Shleifer, A., 1999. Corporate ownership around the world. Journal of Finance 54, 471–517.

Li, K., Wang, T., Cheung, Y.-L., Jiang, P., 2011. Privatization and risk sharing: Evidence from the Split Share Structure Reform in China. Review of Financial Studies 24, 2499–2525.

Liao, L., Liu, B., Wang, H., 2011. Information discovery in share lockups: Evidence from the Split-Share Structure Reform in China. Financial Management Winter, 1001–1027.

Liao, L., Liu, B., Zhang, W., 2010. Ten-year perspective of Chinese capital markets. Unpublished working paper, Tsinghua University.

Lin, C., 2000. Corporate governance of state-owned enterprises in China. Unpublished working paper, Asian Development Bank.

Lin, H., 2008. The costs of large shareholders: Evidence from China. Unpublished working paper, Columbia University.

Lin, Y., Cai, F., Li, Z., 1998. Competition, policy burdens, and state-owned enterprise reform. American Economic Review 88, 422–427.

Liu, C., Uchinda, K., Yang, Y., 2011. Controlling shareholder, Split-Share Structure Reform and cash dividends payments in China. Unpublished working paper, Kyushu University.

Lu, F., Balatbat, M., Czernkowski, R., 2008. The role of consideration in China's Split Share Structure Reform. Unpublished working paper, University of New South Wales.

Ma, S., Huang, Z., Xue, Y., 2005. Split-share structure, loans to large shareholders and cash dividend policy of listed firms. Accounting Research June, 44–55.

Martin, S., Parker, D., 1995. Privatization and economic performance throughout the UK business cycle. Managerial and Decision Economics 16, 225–237.

Masulis, R., Wang, C., Xie, F., 2009. Agency problems at dual-class companies. Journal of Finance 64, 1697–1727.

Megginson, W., Nash, R., Netter, J., Poulsen, A., 2004. The choice between private and public markets: Evidence from privatizations. Journal of Finance 59, 2835–2870.

Megginson, W., Neffer, J., 2001. From state to market: A survey of empirical studies on privatization. Journal of Economic Literature 39, 321–389.

Megginson, W. L., Nash, R. C., Randenborgh, M. v., 1994. The financial and operating performance of newly privatized firms: An international empirical analysis. Journal of Finance 49, 403–452.

Peng, S., Bewley, K., 2010. Adaptability to fair value accounting in an emerging economy: A case study of China's IFRS convergence. Accounting, Auditing and Accountability Journal 23, 982–1011.

Perotti, E., 1995. Credible privatization. American Economic Review 85, 847–859.

Pontiff, J., Schall, L., 1998. Book-to-market ratios as predictors of market returns. Journal of Financial Economics 49, 141–160.

Sheshinski, E., Lopez-Calva, L., 2003. Privatization and its benefits: Theory and evidence. CESifo Economic Studies 49, 429–459.

Shleifer, A., Vishny, R., 1997. A survey of corporate governance. Journal of Finance 42, 737–783.

Song, Z., Storesletten, K., Zilibotti, F., 2011. Growing like China. American Economic Review 101, 196–233.

Stiglitz, J., 2002. Globalization and its discontents, Norton and Company, New York.

Sun, Q., Tong, W., 2003. China share issue privatization: The extent of its success. Journal of Financial Economics 70, 183–222.

Xiong, W., Yu, J., 2011. The Chinese warrants bubble. American Economic Review 101, 2723–2753.

Xu, D., Cai, Y., Xu, M., 2005. Management shareholding and corporate performance: Evidence from MBOs of Chinese listed firms. Management Science (in Chinese) April, 40–47.

Table 1. Summary Statistics

This table reports the summary statistics of sample firms. Medians of variables are reported. A firm is labeled as SOE (non-SOE) if its ultimate controlling party is (not) the state. Groups $\boldsymbol{P}$, $\boldsymbol{S^L}$, $\boldsymbol{S^M}$, $\boldsymbol{S^H}$represent the sub-samples of firms with zero, low, medium and high levels of state ownership measured by the ratio of state-owned shares to total shares outstanding, respectively. Net margin rate is calculated as net income divided by revenue. Accounts receivable turnover, asset turnover, and inventory turnover are calculated using operating revenue divided by average accounts receivable, total assets, and inventory, respectively. Capital expenditure is calculated as change in gross properties, plant and equipment plus change in intangible assets. On average, US$1 exchanged into RMB7.64 during the sample period.

			By Ultimate Control		By State Ownership			
	Variable	**Full Sample**	***Non-SOEs***	***SOEs***	$\boldsymbol{P}$	$\boldsymbol{S^L}$	$\boldsymbol{S^M}$	$\boldsymbol{S^H}$
Sample	Number of firms	1032	399	633	146	295	296	295
	Non-tradable share-to-total share ratio	61.85%	60.15%	62.51%	60.00%	58.61%	55.99%	67.00%
Size	Total assets (RMB in millions)	1,727.19	1,264.25	2,069.67	1,350.81	1,398.51	2,016.95	2,033.64
	Revenue (RMB in millions)	946.41	592.31	1,236.01	562.83	693.95	1,145.39	1,225.31
	Number of employees	1,688.50	1,277.50	2,086.00	1,216.50	1,416.00	1,911.00	2,156.00
	EBIT (RMB in millions)	63.74	46.73	83.75	49.17	47.35	68.09	99.42
Profitability	Net margin rate (%)	3.66	3.66	3.50	3.74	3.24	3.22	4.72
	ROA (%)	2.26	2.08	2.50	1.80	1.82	2.22	3.18
	ROE (%)	4.95	4.25	5.26	4.55	3.39	4.97	6.28
Capital Structure	Debt-to-asset ratio	0.52	0.55	0.51	0.54	0.54	0.53	0.49
	Current ratio	1.16	1.14	1.17	1.15	1.11	1.17	1.19
Growth	Market-to-book ratio	1.72	1.76	1.70	1.68	1.79	1.64	1.79
	Capital expenditure (RMB in millions)	61.26	35.07	87.56	42.19	41.88	70.25	96.88
Productive Efficiency	Accounts receivable turnover	5.11	3.53	5.97	3.29	4.06	5.46	6.69
	Asset turnover	0.56	0.48	0.59	0.45	0.51	0.56	0.61
	Inventory turnover	3.90	3.26	4.32	3.13	3.77	3.90	4.78
Management Incentive	Management shareholding (‰)	0.04	0.05	0.04	0.09	0.07	0.07	0.01

Table 2. Post-Reform Changes in Output, Employment, and Productivity

This table reports changes in firm output, profitability, employment and productivity three years before and after the reform. Wilcoxon signed-rank test is applied to examine the significance of changes in medians of variables. Wilcoxon *Z*-test is applied to examine the significance of difference in changes between groups. Proportion *Z*-test is used to test whether increase (decrease) odd is greater than 1. A firm is labeled as SOE (non-SOE) if its ultimate controlling party is (not) the state. Groups $\boldsymbol{P}$, $\boldsymbol{S^L}$, $\boldsymbol{S^M}$, $\boldsymbol{S^H}$represent the sub-samples of firms with zero, low, medium and high levels of state ownership measured by ratio of state-owned shares to total shares outstanding, respectively. A variable with ※ is associated with percentage change calculated as the difference between its post-reform and pre-reform values normalized by pre-reform value. Otherwise, the change is calculated as the level difference between post-reform and pre-reform values. Variables in *Italic* are incomparable before and after the revision of the Chinese Generally Accepted Accounting Principles effective in 2007, and reported only for reference. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	Full Sample		**By Ultimate Control**			**By State Ownership**				
	Increase Odds	**Median Change**	***Non-SOEs***	***SOEs***	***SOEs –non-SOEs***	$\boldsymbol{P}$	$\boldsymbol{S^L}$	$\boldsymbol{S^M}$	$\boldsymbol{S^H}$	$\boldsymbol{S^H - P}$
Panel A. Output, Employment,and Capital Expenditure										
Operating revenue※	779/253***	0.73***	0.57***	0.84***	0.27***	0.47***	0.60***	0.74***	0.92***	0.44***
	(16.4)	(187950)	(24001)	(79305)	(3.6)	(2832)	(14195)	(16499)	(18301)	(3.8)
Operating profit※	681/334***	0.45***	0.44***	0.50***	0.05	0.45***	0.34***	0.60***	0.51***	0.05
	(10.9)	(133594)	(18187)	(53214)	(1.4)	(2521)	(10260)	(11584)	(10449)	(1.2)
Total assets※	850/182***	0.81***	0.62***	0.98***	0.35***	0.64***	0.61***	0.93***	1.13***	0.50***
	(20.8)	(219524)	(29966)	(89348)	(4.2)	(3886)	(17049)	(19071)	(19999)	(3.5)
No. of employees※	606/424***	0.13***	0.02***	0.19***	0.17***	0.00*	0.09***	0.17***	0.16***	0.16***
	(5.7)	(93920)	(7367)	(47277)	(4.3)	(968)	(6842)	(9500)	(9413)	(2.6)
Capital expenditure	317/556***	-2.76***	-3.87***	-2.04***	1.83*	-6.28***	-2.76***	-3.58***	-1.12*	5.16***
(%)	(8.1)	(57125)	(9004)	(20297)	(1.9)	(1222)	(4955)	(6684)	(2031)	(3.1)
Panel B.Productivity										
Operating revenue	703/327***	0.41***	0.41***	0.41***	0.01	0.38***	0.33***	0.39***	0.53***	0.14
per employee※	(11.7)	(147258)	(21209)	(58831)	(0.0)	(2857)	(10390)	(12250)	(14621)	(1.07)
Operating profit	579/434***	0.17***	0.19***	0.15***	-0.04	0.20***	0.14***	0.16***	0.18***	-0.02
per employee ※	(4.6)	(75740)	(13209)	(25691)	(1.5)	(2074)	(5463)	(5750)	(6455)	(1.0)
ROE(%)	538/465**	0.67***	0.72**	0.66**	-0.06	0.48	1.66***	0.67	0.10	-0.37
	(2.3)	(25465)	(4539)	(8493)	(0.7)	(354)	(4035)	(1984)	(590)	(0.5)
ROA (%)	507/523	-0.06	0.27*	-0.17	-0.44**	0.26	0.32**	-0.07	-0.59*	-0.85*
	(0.5)	(1655)	(4330)	(6190)	(2.3)	(435)	(3178)	(997)	(2632)	(1.7)

Table 3. Post-reform Changes in Operating Efficiency and Insolvency Risk

This table reports changes in firm operating efficiency and insolvency risk three years before and after the reform. Wilcoxon signed-rank test is applied to examine the significance of changes in medians of variables. Wilcoxon *Z*-test is applied to examine the significance of difference in changes between groups. Proportion *Z*-test is used to test whether increase (decrease) odd is greater than 1. A firm is labeled as SOE (non-SOE) if its ultimate controlling party is (not) the state. Groups $\boldsymbol{P}$, $\boldsymbol{S^L}$, $\boldsymbol{S^M}$, $\boldsymbol{S^H}$ represent the sub-samples of firms with zero, low, medium and high levels of state ownership measured by ratio of state-owned shares to total shares outstanding, respectively. The change is calculated as the level difference between post-reform and pre-reform values. Variables in *Italic* are incomparable before and after the revision of the Chinese Generally Accepted Accounting Principles effective in 2007, and reported only for reference. Superscripts *, **, and ***denote the significance levels of 10%, 5%, and 1%, respectively.

	Full Sample		**By Ultimate Control**			**By State Ownership**				
	Increase Odds	**Median Change**	***Non-SOEs***	***SOEs***	***SOEs – non-SOEs***	$\boldsymbol{P}$	$\boldsymbol{S^L}$	$\boldsymbol{S^M}$	$\boldsymbol{S^H}$	$\boldsymbol{S^H - P}$
Panel A. Operating Efficiency										
Accounts receivable	806/209***	4.51***	4.24***	4.64***	0.39	3.78***	5.26***	4.46***	4.60***	0.82
turnover	（18.7）	(180474)	(29016)	(64776)	(0.7)	(3552)	(16888)	(14769)	(12981)	(0.0)
Expense-to-sales ratio	714/280***	0.03***	0.03***	0.03***	0.00	0.03***	0.03***	0.03***	0.02***	0.00
	(13.8)	(124758)	(15848)	(52335)	(0.4)	(2087)	(9548)	(12041)	(10229)	(0.7)
Asset turnover	624/404***	0.08***	0.07***	0.09***	0.01	0.04	0.08***	0.10***	0.08***	0.05
	(6.9)	(71064)	(8977)	(29150)	(1.0)	(811)	(5546)	(6736)	(6741)	(1.5)
Panel B. Insolvency Risk										
Cash-to-total	547/485**	0.01	0.01	0.02	0.01	-0.01	0.06***	0.03	-0.04***	-0.03
liabilities ratio	(1.9)	(1724)	(1724)	(1166)	(0.6)	(252)	(4146)	(973)	(3926)	(1.2)
Deb-to-asset ratio	696/336***	0.07***	0.05***	0.08***	0.03***	0.06***	0.03***	0.07***	0.11***	0.05***
	(11.2)	(117747)	(10654)	(55697)	(3.6)	(1459)	(5605)	(11500)	(13632)	(2.6)
Current ratio	388/644***	-0.15***	-0.07***	-0.18***	-0.11***	-0.10*	-0.08***	-0.13***	-0.25***	-0.14*
	(8.0)	(73164)	(5395)	(36668)	(2.8)	(1327)	(4042)	(5993)	(8930)	(1.7)

Table 4. Post-reform Change in Corporate Governance

This table reports changes in corporate governance measures before and after the reform. Panel A reports the percentage of firms engaged in agency activities. Panel B reports the median ratios of the amount of money involved in agency activities to operating revenue for firms engaged in these activities. Wilcoxon *Z*-test is applied to examine the significance of the difference between groups in Panel B. Groups $\boldsymbol{P}$, $\boldsymbol{S^L}$, $\boldsymbol{S^M}$, $\boldsymbol{S^H}$ represent the sub-samples of firms with zero, low, medium and high levels of state ownership measured by ratio of state-owned shares to total shares outstanding, respectively. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	Pre-Reform						**Post-Reform**					
	Full Sample	$\boldsymbol{P}$	$\boldsymbol{S^L}$	$\boldsymbol{S^M}$	$\boldsymbol{S^H}$	$\boldsymbol{S^H - P}$	**Full Sample**	$\boldsymbol{P}$	$\boldsymbol{S^L}$	$\boldsymbol{S^M}$	$\boldsymbol{S^H}$	$\boldsymbol{S^H - P}$
Panel A. Percentage of Firms Engaged in the Agency Activities												
Related-party transaction	43.4%	39.7%	36.9%	45.9%	49.2%	9.4%	35.7%	29.9%	32.5%	39.0%	38.3%	8.4%
Related-party trans. with controlling shareholders	29.7%	29.5%	22.7%	31.8%	34.9%	5.5%	24.0%	19.4%	20.0%	25.4%	28.8%	9.4%
Lending to controlling shareholders	42.3%	37.7%	40.0%	43.2%	46.1%	8.4%	16.6%	9.7%	11.5%	19.3%	22.4%	10.8%
Panel B. Median Ratio of the Amount of Funds Involved to Operating Revenue												
Related-party transaction (%)	6.92	9.90	7.60	7.76	5.84	-4.06* (1.9)	7.16	8.34	7.17	5.47	7.74	-0.58 (0.4)
Related-party trans. with controlling shareholders (%)	5.81	5.59	6.34	5.66	5.84	0.25 (0.4)	7.36	10.70	5.40	6.48	9.15	-1.55 (0.8)
Lending to controlling shareholders (%)	1.11	1.01	1.43	0.64	1.15	0.14 (0.5)	0.11	0.49	0.07	0.14	0.10	-0.39 (0.8)

Table 5. The Privatization Effect

This table reports the privatization effect measured by privatization-led post-reform changes in SOE operating revenue, operating profit, and stock return, respectively. Unadjusted change in firm operating revenue (profit) is measured as the differences of the variables three years before and after the reform, normalized by pre-reform value. Unadjusted stock return is the three-year cumulative Fama-French model-adjusted return after the reform. In measuring the privatization effect, SOE operating revenue, operating profit, and stock return are further adjusted by the median operating revenue, operating profit, and stock return of a matching non-SOE benchmark portfolio by size-industry and size–market-to-book ratio, respectively. The results of Wilcoxon signed-rank tests on the significance of changes in the medians of variables are reported in brackets. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	Unadjusted	***Adj. by Non-SOE Size-Industry Portfolio***	***Adj. by Non-SOE Size-M/B Ratio Portfolio***
Operating revenue	0.84^{***}	0.06^{***}	0.06^{***}
	(79305)	(20394)	(19462)
Operating profit	0.50^{***}	0.02^{***}	0.003^{***}
	(53214)	(18368)	(15299)
Stock return	1.09^{***}	0.06	0.20^{***}
	(47764)	(2867)	(8562)

Table 6. Post-Reform Changes in Operational Performance and State Ownership

This table reportsregression results of changes in firm operating revenue and operating profit on state ownership for the full sample. We follow Koenker and Bassett (1978) to apply Quantile regressions. The results for the 25%, 50% (median), and 75% quantiles are reported. OLS regression results are reported for reference. Data is winsorized at the 1% level for OLS regressions. T-statistics are reported in brackets. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	Operating Revenue				**Operating Profit**			
	25%Quantile	***50%Quantile***	***75%Quantile***	***OLS***	***25%Quantile***	***50%Quantile***	***75%Quantile***	***OLS***
Intercept	-94.92***	-73.70***	27.69	24.64	-45.11**	-20.04	96.27	144.87***
	(4.9)	(3.1)	(0.5)	(0.5)	(2.3)	(0.7)	(1.3)	(2.7)
State ownership (%)	0.46***	0.51***	0.83**	0.52	0.07	0.34	1.05**	0.51
	(2.7)	(2.7)	(2.3)	(1.5)	(0.4)	(1.5)	(2.4)	(1.3)
Non-tradable-to-tradable ratio	-0.08*	-0.06	-0.19*	-0.11	-0.07	-0.04	-0.20	-0.10
	(1.8)	(1.1)	(1.7)	(1.0)	(1.6)	(0.6)	(1.3)	(0.8)
Log of market cap.	34.64***	43.55***	51.19***	33.92***	27.15***	30.93***	39.20***	27.50***
	(7.5)	(7.7)	(4.3)	(3.6)	(6.1)	(4.8)	(3.1)	(2.5)
Regulated industry dummy	-1.46	-4.27	7.69	16.41	-2.61	-16.94	-30.74	-35.93
	(0.1)	(0.3)	(0.2)	(0.6)	(0.1)	(0.7)	(0.8)	(1.0)
H-share dummy	35.07	15.68	-80.86	-14.42	34.98	13.33	-77.80	-11.61
	(0.9)	(0.8)	(1.5)	(0.3)	(0.9)	(0.6)	(0.6)	(0.2)
B-share dummy	-27.59**	-51.49***	-42.84	-32.67	-8.82	-33.98**	-45.96	-74.95**
	(2.0)	(2.9)	(0.9)	(1.0)	(0.7)	(2.1)	(1.3)	(2.1)
Year 2005 dummy	97.16***	135.37***	183.85***	150.20	57.13***	73.48***	99.63	52.87
	(4.8)	(5.9)	(4.0)	(4.4)	(3.7)	(2.8)	(1.3)	(1.3)
Year 2006 dummy	30.57**	34.99**	6.79	11.45	14.20	16.62	-23.40	-28.90
	(2.3)	(2.2)	(0.2)	(0.4)	(1.3)	(0.9)	(0.5)	(0.9)
Wald test for state ownership	7.37***	7.07***	5.06**	F-stat=5.44*** Adjusted R^2=5.45%	0.15	2.35	5.87**	F-stat=3.08*** Adjusted R^2=2.68%

Table 7. Post-Reform Stock Return and State Ownership

This table reports regression results of the Fama-French three-factor model adjusted stock return on state ownership for the full sample. We follow Koenker and Bassett (1978) to apply Quantile regressions. The regression results for the 25%, 50% (median), and 75% quantile are reported. OLS regression results are reported for reference. Data is winsorized at the 1% level for OLS regressions. T-statistics are reported in brackets. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	25%Quantile	***50%Quantile***	***75%Quantile***	***OLS***
Intercept	138.69***	231.92***	321.67***	206.14***
	(4.6)	(8.0)	(11.8)	(7.0)
State ownership (%)	0.70**	0.54**	-0.14	0.57**
	(2.4)	(2.3)	(0.4)	(2.1)
Non-tradable-to-tradable ratio	-0.42***	-0.29***	-0.33***	-0.33***
	(4.2)	(3.6)	(3.6)	(3.9)
Change in operating revenue	0.40	0.20	0.78	0.64
	(0.4)	(0.2)	(0.3)	(1.3)
Change in operating profit	0.15	0.21	0.25	0.20**
	(0.2)	(0.3)	(0.3)	(2.0)
Log of market cap.	-15.93**	-28.40***	-28.31***	-35.55***
	(2.4)	(3.8)	(3.2)	(4.6)
Regulated industry dummy	-31.75	-45.65**	-43.10	-48.14**
	(1.5)	(2.0)	(1.6)	(2.0)
H-share dummy	-60.66	-69.08	9.01	-21.79
	(1.4)	(1.6)	(0.1)	(0.5)
B-share dummy	-122.59**	-133.74***	-154.95***	-130.49***
	(4.7)	(7.5)	(6.2)	(5.4)
Year 2005 dummy	-43.65***	-49.72***	-2.43	-8.74
	(2.6)	(3.9)	(0.1)	(0.5)
Wald test for state ownership	5.87**	5.04**	0.12	F-stat=5.21*** Adjusted R^2=6.81%

Table 8. Post-Reform Changes in the SOE Performance and Government Agents' Supports

This table reports the results of the 50% quantile (median) regressions of changes in post-reform SOE operating revenue, operating profit, and stock returns on government agents' supporting activities. The unadjusted changes in SOE operating revenue and operating profit are calculated as the differences between the CPI-adjusted revenues and profits three years before and after the reform, normalized by pre-reform value. Size–industry and size–market-to-book ratio adjusted changes are calculated using the unadjusted changes in SOE variables minus median changes in the variables of the matching non-SOE benchmark portfolio by size–industry or size–market-to-book ratio. The unadjusted SOE stock returns are the Fama-French three-factor model adjusted cumulative stock returns three years after the reform. Size-industry and size-market-to-book ratioadjusted SOE stock returns are calculated using the unadjusted SOE stock returns minus the median stock returns of the matching non-SOE benchmark portfolio by size–industry or size–market-to-book ratio. The supportive activities proxies are individually included in the regressions. T-statistics are reported in brackets. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

	Unadjusted (%)	***Size-Industry Adjusted (%)***	***Size-M/B Adjusted (%)***
Panel A. Change in Operating Revenue			
Group listing dummy	137.23**	168.50***	144.26**
	(2.3)	(3.7)	(2.3)
Wald test for group listing dummy	5.38**	13.32***	5.35**
Asset injection dummy	120.09***	113.81***	112.47***
	(3.9)	(3.8)	(3.4)
Wald test for asset injection dummy	15.26***	14.29***	11.58***
Fund raising rounds	18.82***	21.61***	23.06***
	(3.8)	(4.0)	(5.7)
Wald test for rounds of fund raising	14.54***	15.76***	32.70***
Panel B. Change in Operating Profit			
Group listing dummy	116.23**	96.06	109.94*
	(2.0)	(1.6)	(1.9)
Wald test for group listing dummy	4.16**	2.48	3.62*
Asset injection dummy	108.10***	104.27***	107.14***
	(4.7)	(3.3)	(3.4)
Wald test for asset injection dummy	21.8***	10.72***	11.47***
Fund raising rounds	26.67***	26.02***	30.29***
	(5.4)	(5.8)	(7.6)
Wald test for rounds of fund raising	28.63***	33.67***	58.32***
Panel C. Post-Reform Stock Returns			
Group listing dummy	15.07	22.81	14.78
	(0.6)	(0.9)	(0.6)
Wald test for group listing dummy	0.3	0.83	0.40
Asset injection dummy	-0.54	2.45	11.70
	(0.0)	(0.1)	(0.6)
Wald test for asset injection dummy	0.00	0.01	0.31
Fund raising rounds	9.01**	6.11	-1.61
	(2.2)	(1.5)	(0.3)
Wald test for rounds of fund raising	4.99**	2.25	0.08

Table 9.Post-Reform Sales of State-Owned Shares and SOE Performance

This table reports the statistics of post-reform sales of state-ownedsharesas of October 2011. Panel A reports the numbers of firms, state-owned shares sold, ratio of state-owned shares sold to total shares outstanding, and percentage of state shareholders involved in the sales. We apply two-tail *t*-test to examine the statistical significance of these variables. The *t*-test results are reported in brackets expect for Column (2). Panel B reports the Pearson correlations between post-reform sales of state-owned shares and post-reform change in SOE operating revenue. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

Panel A. Post-Reform Sales of State-owned Shares

Industry	Obs.	Number (% in Brackets) of SOEs Sold State-owned Shares	Avg. Number of Shares Sold per SOE (in millions)	Avg. % of State-owned Shares Sold to Owned per SOE	Avg. % of State-owned Shares Sold to Outstanding per SOE	Avg. % of State Shareholders Involved in the Sales
Full sample	633	160 (25.3%)	5.13*** (9.6)	2.95*** (5.8)	0.44*** (11.0)	31*** (12.7)
Utilities	69	10 (14.5%)	3.69*** (2.7)	2.66* (1.7)	0.25*** (2.5)	20*** (3.0)
Real estate	31	8 (25.8%)	4.72** (2.4)	1.24** (2.4)	0.59** (2.1)	26*** (3.2)
Comprehensive	87	25 (28.7%)	4.87*** (4.7)	2.32*** (3.2)	0.47*** (5.4)	38*** (4.9)
Manufacturing	394	108 (27.4%)	5.94*** (7.7)	3.01*** (5.0)	0.46*** (9.3)	33*** (10.6)
Commercial	52	9 (17.3%)	1.53*** (2.6)	4.91 (1.4)	0.34** (2.3)	19** (3.1)

Panel B. Correlations between Sales of State-owned Shares and Changes in SOE Operating Revenue

	Number of Sales of State-owned Shares	Number of State-owned Shares Sold (in millions)	% of State-owned Shares Sold to Owned	% of State-owned Shares Sold to Shares Outstanding	% of State Shareholders Involved in the Sales
Unadjusted	-0.08**	-0.08**	-0.02	-0.07*	-0.09**
Size-Industry adjusted	-0.10***	-0.11***	0.00	-0.09**	-0.11***
Size-M/B Ratio adjusted	-0.09**	-0.11***	0.00	-0.08*	-0.10***

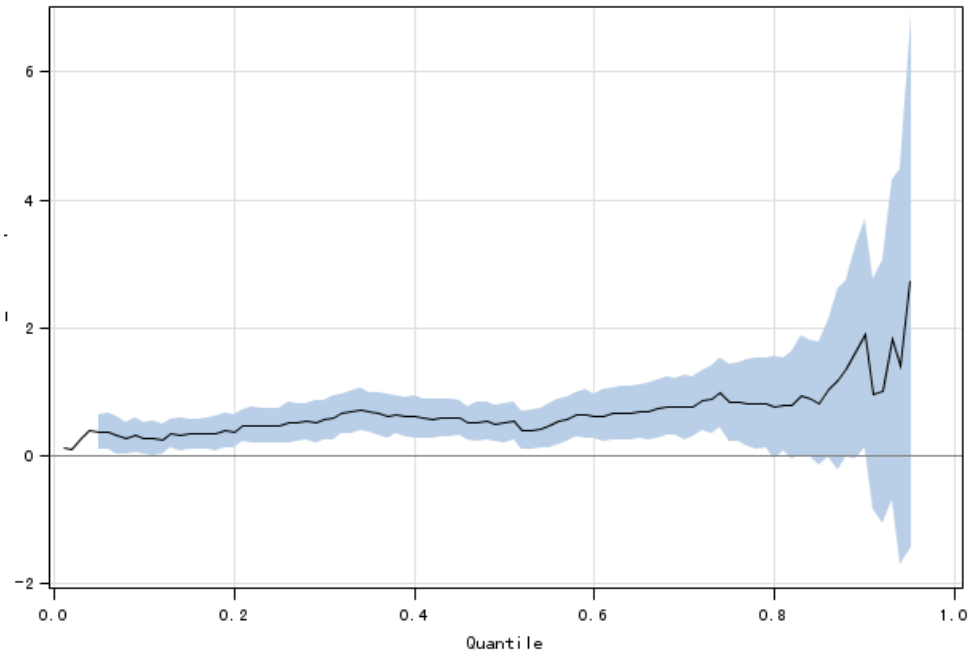
Table 10. Post-Reform Changes in SOE Performance and the Market Mechanism

This table reports the results of the 50% quantile (median) regressions of changes in post-reform SOE operating revenue, operating profit, and stock returns on consideration and private investor reform plan approval rate. The unadjusted changes in SOE operating revenue and operating profit are calculated as the differences between the CPI-adjusted revenues and profits three years before and after the reform, normalized by pre-reform value. Size–industry and size–market-to-book ratio adjusted changes are calculated using the unadjusted changes in SOE variables minus median changes in the variables of the matching non-SOE benchmark portfolio by size–industry or size–market-to-book ratio. The unadjusted SOE stock returns are the Fama-French three-factor model adjusted cumulative stock returns three years after the reform. Size-industry and size-market-to-book ratioadjusted SOE stock returns are calculated using the unadjusted SOE stock returns minus the median stock returns of the matching non-SOE benchmark portfolio by size–industry or size–market-to-book ratio. T-statistics are reported in brackets. Superscripts *, **, and *** denote the significance levels of 10%, 5%, and 1%, respectively.

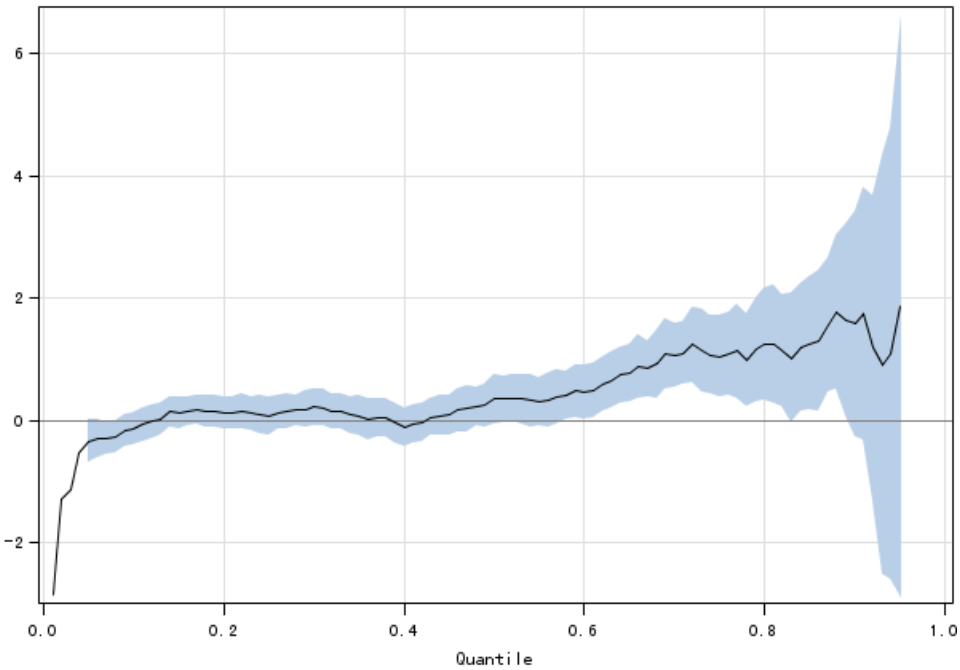
	Change in Operating Revenue			**Change in Operating Profit**			**Post-Reform Stock Return**		
	Unadjusted (%)	***Size-Ind.Adj. (%)***	***Size-M/B Adj. (%)***	***Unadjusted (%)***	***Size-Ind. Adj.(%)***	***Size-M/B Adj. (%)***	***Unadjusted (%)***	***Size-Ind. Adj.(%)***	***Size-M/B Adj. (%)***
Consideration	-1.06***	-0.84***	-1.16***	-0.81*	-0.72*	-1.10***	0.63	0.72	0.64
	(3.1)	(2.5)	(3.2)	(1.9)	(1.7)	(2.4)	(1.1)	(1.6)	(1.6)
Approval rate (%)	1.45*	1.73**	1.97**	2.02**	1.61*	2.42***	0.04	-0.07	2.46**
	(1.8)	(2.0)	(2.3)	(2.0)	(1.7)	(2.6)	(0.1)	(0.1)	(2.2)
State ownership (%)	0.17	0.35	0.03	-0.22	0.08	-0.36	0.00	0.09	0.11
	(0.6)	(1.2)	(0.1)	(0.7)	(0.2)	(1.2)	(0.0)	(0.2)	(0.3)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test for consideration	9.79***	6.10***	10.52***	3.57*	2.82*	5.97***	1.19	0.05	2.44
Wald test for approval rate	3.15*	3.91**	5.14**	3.81**	2.83*	6.57***	0.13	0.11	4.75**

Figure. 1. Coefficients of State Ownership in Quantile Regressions

This figure depicts the estimates of the coefficients of state ownership in the quantile regressions of changes in firm operating revenue and operating profit on state ownership for the full sample. The quantile regression method follows that in Koenker and Bassett (1978). The solid line represents coefficient values within a 0-100% quantile range. The grey area represents 95% confidence interval.



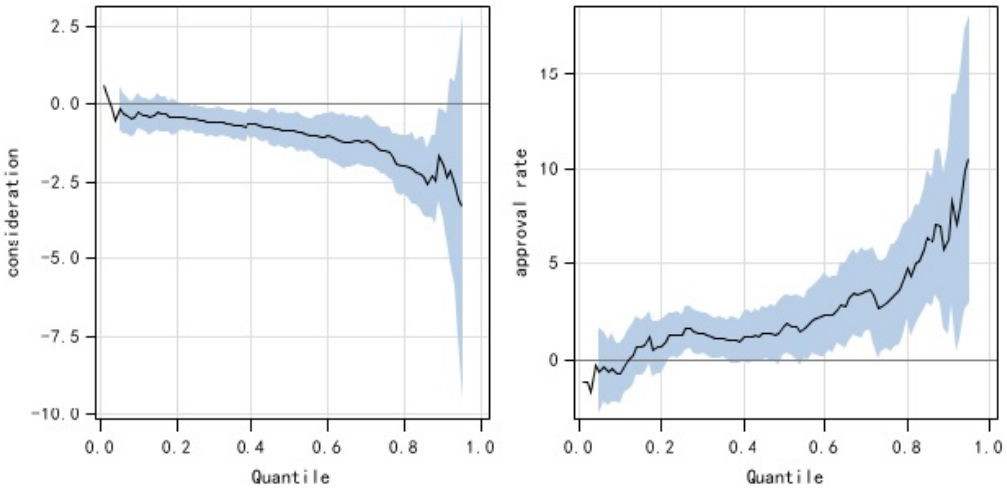
(Graph A: Operating Revenue)



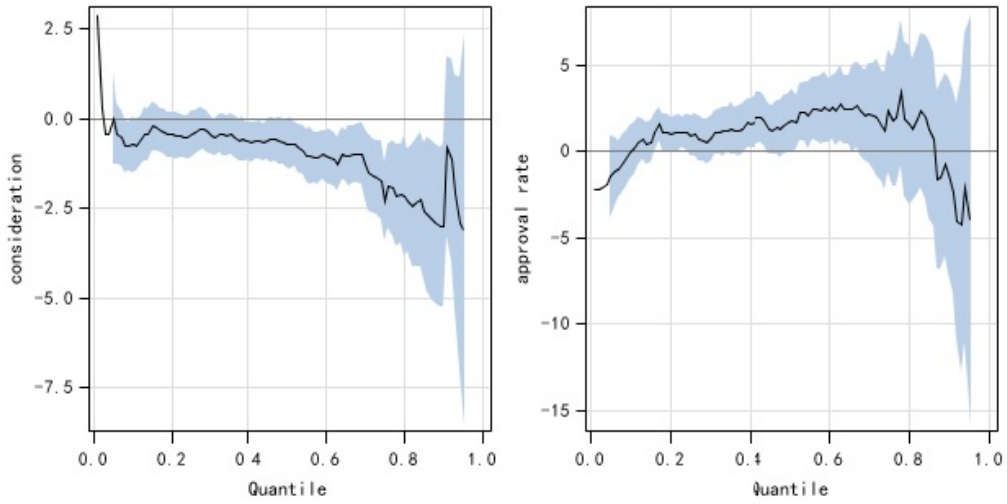
(Graph B: Operating Profit)

Figure. 2. Coefficients of Considerationand Reform Plan Approval Rate in Quantile Regressions for Privatization-Led Improvements in SOE Performance

This figure depicts the estimates of the coefficients of consideration and private investor reform plan approval rate in quantile regressions. The dependent variables are changes in the size-industry adjusted SOE operating revenue and operating profit in capturing privatization-led improvements to SOE post-reform performance. The quantile regression method follows that in Koenker and Bassett (1978). The solid line represents coefficient values within a 0-100% quantile range. The grey area represents 95% confidence interval.



(Graph A: Size-Industry Adjusted Operating Revenue)



(Graph B: Size-Industry Adjusted Operating Profit)