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

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Abstract

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JEL Classification: G15, G18, G30.

Keywords: The Split-share Structure Reform, privatization, state-owned enterprise, corporate governance, market mechanism.

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Abstract

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1 Introduction

The split-share structure was a legacy of China's initial (partial) share issue privatization (SIP),[1] in which state-owned enterprises (SOEs) went public to transfer a small portion of ownership to private agents while the Chinese government remained in control by holding dominant non-tradable state-owned shares.[2] Although it played a positive role in facilitating China's SOE ownership reform at an early stage, the split-share structure tremendously jeopardized China's further privatization efforts by restricting the state-owned shares from being traded on the secondary market. In addition, it had caused serious corporate governance problems, leading, in particular, to ineffective boards, profit tunneling through related-party transactions and listed firms making loans to large shareholders. It also encouraged speculations in the stock market, blocked merger and acquisition activities, and hampered the development of the corporate bond and derivative markets.[3]

In 2005, the Split-share Structure Reform was carried out to dismantle the dual share structure by converting state-owned shares together with the other types of non-tradable shares into tradable shares. This landmark event constituted the gateway of China's secondary privatization, which in contrast to the initial SIP, would further liberalize the state-owned shares of listed SOEs with legitimate trading rights on the secondary market in a full share circulation environment. This paper introduces the Split-share Structure Reform in the context of China's step-by-step privatization scheme and evaluates its success in terms of improving firm performance and corporate governance.

[1]The start of China's SIP was marked by the founding of the Shanghai Stock Exchange and Shenzhen Stock Exchange in 1990. Qualified SOEs were privatized through issuing exchanged-listed tradable shares to public investors. Among others, see Bai, Li, and Wang (1997), Lin, Cai, and Li (1998), Lin (2000), and Sun and Tong (2003) for studies of China's SIP.

[2]For SOEs that went public before 2005, state-owned shares—together with the shares issued to legal persons, natural persons and foreigners before initial public offerings (IPOs)—were restricted from trading on 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 RMB-denominated domestic shares (A-shares) outstanding of listed Chinese firms amounted to RMB 714.9 billion. Among them, 454.3 billion shares, or 64% of the total, were non-tradables, 74% of which were state-owned.

[3]Section 2.2 extensively presents the problems caused by the split-share structure. Also see Allen, Qian, and Qian (2005), Huwang, Zhang, and Zhu (2006), Lin (2008), Deng, Gan, and He (2008), and Liao, Liu, and Wang (2011) for discussions of the problems.

We select a set of proxies to measure the post-reform changes in firm performance and governance from various angles. The performance measures include output, profitability, employment, solvency, and operating efficiency. Evidence indicates that the output and profit of the listed firms increased substantially after the reform and that SOEs significantly outperformed their counterparts. The results are consistent with the findings of Megginson, Nash, and vanRandenborgh (1994) that better incentives in increasing share values boost firm output and profit. In addition, SOEs experienced much greater increases in employment compared to non-SOEs. The Split-share Structure Reform helped improve significantly listed firms' productive efficiency measured by output and profit per employee. Although there is no significant difference in the productivity improvements between SOEs and non-SOEs, the reform, as China's secondary privatization efforts, can be considered successful since SOE output and employment increased substantially without surrendering productive efficiency. We find remarkable improvements in the listed firms' governance proxied by related-party transactions, large shareholders borrowing from listed firms, management shareholding, and ownership concentration, but no significant differences between SOEs and non-SOEs.

The Split-share Structure Reform provides a unique opportunity to study privatization since it was carried out simultaneously on both SOEs and non-SOEs. For non-SOEs, the reform dismantled the dual share structure. For SOEs, the reform not only resolved the dual share issue, but also liberalized state-owned shares with legitimate trading rights, thus opening up the gate for secondary privatization. Although a full-scaled sale of state-owned shares did not take place, the expectation of privatization may nevertheless have impacted corporate behaviors. Contrasting post-reform changes in the performance and governance of SOEs to those for non-SOEs enables us to separate out the net effect of privatization uncontaminated by other economic shocks. Whereas the initial SIP during the 1990s received extensive research attention (Bai, Li, and Wang, 1997; Lin, Cai, and Li, 1998; Lin, 2000; Sun and Tong, 2003), China's secondary privatization has not been studied comprehensively, even though it had long been predicted that the reform would bring substantial changes to China's corporate environment (Inoue, 2005). Our work aims to fill this void.

We look into the unique features of the reform in an effort to draw implications on the sources of its success, particularly from a privatization perspective. Privatization has been a complex task for global economies. Its results have been influenced not only by capital market, political and firm-specific factors (Megginson et al., 2000), but also by the privatization method itself (Perotti, 1995; Biais and Perotti, 2002). An inappropriate privatization method can hurt the real economy (Martin and Parker, 1995; Black, Kraakman, and Tarassova, 2000; Megginson and Neffer, 2001; Harper, 2002). Compared to the privatization methods in other countries (Megginson and Neffer, 2001; Stiglitz, 2002) and several failed early post-SIP privatization attempts in China, the Split-share Structure Reform has two unique features. First, it involved a market-based *consideration* negotiation mechanism between tradable and non-tradable shareholders. Second, the non-tradable share sale process was deliberately prolonged to avoid large supply shocks to the stock market through compulsory post-reform lockups.[4]

We find that the market mechanism through which state-owned shares and other types of non-tradable shares acquired legitimate trading rights by providing negotiated *consideration*s to tradable shareholders was an important driver of the success of privatization. In cross section, SOEs that were more sensitive to, and, more actively involved in the market mechanism, experienced significantly greater output growth than their comparable non-SOE counterparts. Post-reform sales of the state-owned shares were negatively correlated to SOE output growth in cross section (see the Appendix), consistent with the notion that privatization expectations remarkably stimulated SOE performance.

To the best of our knowledge, this study constitutes the first effort to present the Split-share Structure Reform in the context of China's secondary privatization since the SIP and to appraise its success in stimulating long-term firm performance and improving corporate governance of SOEs.[5] The Split-share Structure Reform provides a desirable setting that

[4]We present in detail China's failed early post-SIP privatization attempts and the Split-share Structure Reform in Sections 2.3 and 2.4, respectively, and contrast them under the privatization method framework proposed by Brada (1996) in Section 3.3. For detailed information on the Split-share Structure Reform, see *Measures for the Administration of the Share Trading Reform of Listed Companies*, China Securities Regulatory Commission (CSRC), 2005.

[5]There is a growing literature studying the Split-share Structure Reform as a special event to examine

allows us to overcome such methodological difficulties as sample bias, data reliability, and endogeneity that plague the traditional empirical privatization literature.[6] As a policy event, the reform involved almost all public firms, both SOEs and non-SOEs, in the world's largest transitional economy, providing a cross-sectional sample of unprecedented scale. Publicly disclosed financial and ownership data are available from before and after the reform. These unique features allow us to measure the net effect of the privatization component embedded in the reform in a clean and reliable way.

Our findings have useful implications for China's future economic restructure as well as global privatization design. China's economic reform has been undertaken without fully liberalizing its SOEs and financial system. Its success has therefore been largely attributed to urbanization and population dividend (Qian, 1996; Li, 1997). While China is changing its growth model in the upcoming decades, the ongoing secondary privatization had been fueling new energy into China's economic development in the presence of existing mechanisms, adding new support to the proposition that privatization improves the performance of SOEs (Megginson, Nash, and vanRandenborgh, 1994; Dewenter and Malatesta, 2001). In particular, the expectation of privatization may have stimulated managerial incentives and boosted corporate performance before actual ownership transfer took place. Market-based privatization mechanisms have played a vital role in the success of the economic reform in the world's largest transitional economy, adding to the findings of Song, Storesletten, and Zilibotti (2011). As China's financial market matures, step-by-step privatization through a market mechanism that balances public interests and the governmental agenda has proven

various corporate finance and capital market issues. Among them, Li, Wang, Cheung, and Jiang (2011) find that *consideration*s in the reform were significantly influenced by efficiency gains from better risk sharing. Liao, Liu, and Wang (2011) examine information discovery and information-based trading during the post-reform lockups. Among studies on short-term market reactions and the interaction between *consideration* and ownership, Bortolotti and Beltratti (2006) report a statistically significant 8% positive abnormal return over the reform event window after adjusting for *consideration* requested by tradable shareholders. Lu, Balatbat, and Czernkowski (2008) find that the positive abnormal returns after the reform announcement are not related to *consideration* paid to tradable shareholders. Firth, Lin, and Zou (2010) report the opposite effects of state ownership and mutual fund ownership on *consideration* values. Huang and Zhu (2011) find qualified foreign institutional investors help increase *consideration*. Liu, Uchinda, and Yang (2011) find a significant reduction in cash dividends after the reform, which is significantly related to the reduction in largest shareholder ownership.

[6] Megginson and Neffer (2001) and Sheshinski and Lopez-Calva (2003) provide excellent reviews of the empirical and theoretical privatization literature.

to be more effective than crude top-down administrative orders.

The rest of the article is organized as follows. Section 2 introduces the Split-share Structure Reform and its background. Section 3 describes our empirical design. Section 4 presents and analyzes the empirical findings. Section 5 concludes the paper.

2 The Split-share Structure Reform

The split-share structure means that two classes of domestic A-shares with otherwise identical rights, tradable and non-tradable, coexist in a public firm.[7] Before the Split-share Structure Reform, non-tradable shares were not listed and could be transacted only through negotiations between designated parties. Tradable shares were purchased by public investors and could be transacted on stock exchanges. Table 1 illustrates the background of the split-share structure and summarizes the major policy events around the Split-share Structure Reform. Figure 1 shows the timeline of a typical privatization process.

2.1 The Origin of the Split-share Structure

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* that 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, since their limited goals of improving managerial incentives and decentralizing decision making were unable to systematically resolve the fundamental ownership

[7] A domestically listed Chinese firm can issue several types of common shares: A-shares are common shares priced in RMB and traded on the Shanghai/Shenzhen Stock Exchanges; B-shares are listed on the domestic exchanges but priced in US dollar; and H-shares are listed on the Hong Kong Stock Exchange and priced in Hong Kong dollars. A firm can be cross-listed on overseas stock markets as well. For example, in August 1994, Shandong Huaneng Power Development Company was listed on the New York Stock Exchange and became the first company issuing N-shares. In March 1997, Beijing Datang Power Generation Company Limited went public on the London Stock Exchange, becoming the first company to issue L-shares.

problems inherited from the country's planned economy.[8]

The Chinese government started corporatizing small- and medium-sized SOEs in the mid-1980s and experimented privatizing corporatized SOEs as a core element of the second-stage economic reform in 1988. The founding of the Shanghai Stock Exchange and Shenzhen Stock Exchange in 1990 inaugurated China's initial SIP: SOEs went public to issue exchange-listed tradable shares to private investors. However, 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 by withholding controlling non-tradable shares. The split-share structure was then formed.

The state-owned share transaction issue was by and large ignored in the early SIP: State-owned shares—together with shares issued to legal persons, natural persons, and foreigners before the public offering of an SOE or private firm—were restricted from trading on the secondary market. Such restrictions were 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 listed and tradable. Although *Tentative Measures for the Administration of the Issuance and Trading of Stocks* issued by the State Council in April 1993 stated that transactions of state-owned shares are subject to the approval of relevant authorities, the regulation drafted no applicable rules on the implementation of the transactions.

The Chinese government chose to put the state-owned share transaction issue on hold for an indefinite period for several reasons. First, transactions of state-owned shares appeared unnecessary within the centralized ownership framework and designated administrative system.[9] Second, in the 1990s, the economic reform attention was still centered on the admin-

[8]Sun and Tong (2003) present an excellent overview of the incentives, steps and undesirable outcomes of the reform policies carried out before the SIP.

[9]Socialism by then was ideologically interpreted as the notion that national assets belong to all citizens and the state possessed these assets on behalf of the citizens in a primitive stage of socialism. The central government represented the state to exercise the 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 industry restructure and reorganization were almost all executed through administrative orders without monetary transactions.

istration and management of SOEs, which went public mainly to raise capital, in addition to experimenting with a new government-controlled management mechanism. Third, the stock market was at an experimental stage and not yet ready to facilitate the transactions of state-owned shares.

2.2 Problems Caused by the Split-share Structure

Originally not recognized as significant, the legacy dual share ownership structure created paramount obstacles to the functioning and development of China's financial markets in the recent years and caused tremendous concerns. Under the split-share structure, the interests of tradable and dominant non-tradable shareholders were fundamentally diverged due to different share pricing mechanisms. Non-tradable shares were priced according to the book values of firm assets instead of firm performance. Thus, controlling shareholders, who possessed two-thirds of shares outstanding on average, did not benefit from capital gains and had little incentives to improve firm performance.

In the absence of effective internal and external monitoring, controlling shareholders relentlessly raised money through seasoned cash offerings, ignoring adverse market reactions and control dilutions, given their absolute dominance.[10] After raising money, the controlling shareholders duly sought rent through: (1) related-party transactions, where controlling non-tradable shareholders transferred wealth through transactions with entities they owned, including asset sales and acquisitions and product purchases (prior to the reform, 43.2% of firms in our sample conducted related-party transactions); (2) corporate lending, where listed firms made interest-free loans to large shareholders (prior to the reform, 42.3% of firms in our sample made loans to their large shareholders); and (3) listed firm guaranteeing loans for large shareholders.

In equilibrium, investors speculated in the stock market for short-term returns rather than investing for long-term capital gains. Overtrading was rampant in the Chinese stock market.

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

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%, respectively (*China Capital Markets Development Report*, CSRC, 2008). Sun and Tong (2003) and l state that speculation in the A-share market could be reflected in the extremely high stock return volatilities in the Chinese markets. Statistics 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, 19 and 16 times the average stock return volatility of the New York Stock Exchange, ranking first and second place globally (Liao, Liu, and Zhang, 2010).

The lack of incentives from controlling shareholders to finance with debt to avoid financial distress, together with the pricing difficulties introduced by the split-share structure, discouraged the development of domestic corporate debt and derivative markets. As of 2007, the bond market size to gross domestic product (GDP) ratio of China was 35.3%, far lower than the 201% and 188.5% of Japan and the US, respectively. Corporate bonds amounted to only 4.2% of China's bond market. The ratio of outstanding corporate bonds to the GDP was 1.5% for China, in comparison to 125.7% and 38.9% for the US and Japan, respectively. As of 2006, China's futures and options market accounted for 1.9% of global turnover, measured in number of contracts traded, while China's GDP constituted 5.5% of the global aggregate figure (*China Capital Markets Development Report*, CSRC, 2008).

2.3 Failed Early Privatization Attempts

The Split-share Structure Reform, as part of China's secondary privatization efforts, did not come easily. This subsection presents several failed early privatization attempts carried out before the reform.

2.3.1 Direct Sales in the Secondary Market.

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, In particular, the Chinese government intended to privatize some state-owned shares issued by SOEs of good reputation and high growth potential to raise capital for the economic restructuring. The capital would be contributed to the Social Security Fund that served to lessen the heavy social welfare borne by SOEs. However, the privatization was conditional on the government securing absolute control of those SOEs.

In December 1999, the CSRC handpicked 10 public companies to pilot the state-owned share sales. As in rights offerings, preferential subscription rights of the state-owned shares were given to the existing shareholders. Sale prices were crudely set, using the average earnings per share of the SOEs in the most recent three years multiplied by a fixed price earnings ratio of 10. But the sales were quickly suspended after trying two companies because the stock market reacted negatively due to the huge discrepancies between the set prices and market expected prices. The Shanghai Composite Index and Shenzhen Composite Index dropped 7.3% and 6.8%, respectively, during the 25-day sale period.

2.3.2 Placement in the Primary Market.

On June 12, 2001, the State Council issued *Interim Measures of the State Council on the Management of Reducing Held State Shares and Raising Social Security Funds*, stating that SOEs would privatize 10% of the state-owned shares in IPOs and seasoned cash offerings. The prices of the state-owned shares would be set equal to the offered prices of new shares. The sale of the state-owned shares was halted on October 22 after 16 companies undertook the interim measures and invited tremendous adverse market reactions. In the four months, the Shanghai Composite Index and Shenzhen Composite Index plummeted 30.95% and 32.90%, respectively. The Chinese stock market was bearish during 2002-2004, with transaction volume shrunk by nearly 30%. The Shanghai Composite Index then plunged from a record-high of 2,245 points on June 14, 2001 to 998 points on June 6, 2005, while China's economy continued to experience tremendous growth.

Why did the market react so negatively? Besides the market concern that the rapidly

inflated stock volume might flood the secondary market, a more fundamental reason was that those privatization attempts directly breached previous IPO and SEO agreements on the non-tradability of state-owned shares. Privatization would hurt investor interest but provide no compensation. That created widespread dissatisfaction as well as concerns over the overhung state-owned shares. In November 2001, the CSRC solicited public opinions and suggestions on practical methods to privatize state-owned shares. No satisfactory solution was reached because investors refused to accept the idea of privatizing partially state-owned shares without systematically legitimizing their trading rights through compensating tradable shareholders.[11]

2.4 The Reform

The Chinese government gradually recognized that further privatization and market liberalization could not be achieved without completely dismantling the legacy dual share structure inherited from the initial SIP. The Split-share Reform therefore inaugurated China's secondary privatization by laying down the legal foundation for further liberalizing state-owned shares in a full share circulation environment. 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 for resolving the split-share structure stemming from China's transition from a planned economy to a market economy. Later on, the CSRC's issuance of *the Notice of the China Securities Regulatory Commission on Piloting the Share-Trading Reform of Listed Companies* on April 30, 2005 marked the official start of the Split-share Structure Reform.[12] Instead of selling directly non-tradable shares in the market, the reform aimed to convert all non-tradable shares, including state-owned shares, into tradable shares

[11] Other privatization methods, including contract-based transactions of the state-owned shares, state-owned share-to-debt swaps, and auctions, were either considered or pilot-tested but quickly dropped. For example, the CSRC announced on January 26, 2003 a plan of selling the state-owned shares, together with other non-tradable shares, at discounted prices. The sale prices would be set below the secondary market prices and determined through public auctions. After the sales, non-tradable shareholders would compensate tradable shareholders through share transfers or rights offering (without specifying quantifiable measures). The Shanghai Composite Index dropped 6% after the announcement. The plan was withdrawn in two days.

[12] The CSRC first chose four pilot firms for the reform: Sany Heavy Industry, Tongfang Co., Zijiang Enterprise Group, and Jinniu Energy Resources. The second pilot batch included 42 companies.

with negotiated *consideration*s to compensate tradable shareholders. To encourage firms to reform, the CSRC imposed the Split-share Structure Reform as a prerequisite for seasoned equity offerings. The reform process typically contained the four following steps:

Step 1. If at least two-thirds of non-tradable shareholders of a firm agree to reform, the board of directors authorizes the hiring of a qualified securities firm as a facilitator that will discuss the feasibility of the reform and establish a tentative schedule with the domestic exchange on which the firm is listed.

Step 2. Non-tradable shareholders propose a reform plan that contains *consideration* to tradable shareholders in exchange for the trading rights of their non-tradable shares. The *consideration* can be made in share transfers, cash payment, stock options, and warrants. It is based on the principles of "fair negotiation, mutual trust, and independent decision making" and reflects the specific situation of each listed firm. No government intervention or standard pricing is imposed. In addition, the controlling shareholders can make promises on future dividend payouts and/or capital injections to sweeten the *consideration* package. The proposal is then circulated for tradable shareholder feedback.

Step 3. If the tradable shareholders' feedback is positive, a special shareholder meeting is called for tradable shareholders to vote on the proposal.[13] Listed firms are required to provide the necessary information technology systems to allow shareholders to vote online. The trading of tradable shares is frozen. Li et al. (2011) report that the average (median) value of *consideration*, measured as the number of shares transferred to the tradable shareholders for each tradable share they held, is 0.305 (0.310) for the firms that paid *consideration* through share transfers only;

Step 4. If at least two-thirds of tradable shareholders approve the reform plan, it is submitted to the CSRC for approval. The reform plan becomes effective after receiving the CSRC's approval. The next day, the trading of tradable shares resumes.

[13]It was not uncommon for the bargaining process to take several rounds. Tongfang Co., one of the first batch pilot companies, disregarded the negative feedback from its tradable shareholders and held a special shareholder meeting in which its reform plan proposal was rejected and returned for re-proposal. That caused significant delays in the company's reform. Later on, all companies tended to avoid such situations by re-proposing immediately after hearing about tradable shareholder dissatisfaction.

To stabilize the stock market, each firm's reform plan contains a compulsory 12-month lockup to restrict non-tradable shareholders from selling their shares after the reform plan implementation day. In addition, a non-tradable shareholder who possesses more than 5% of a firm's total shares outstanding is only allowed to sell at most 5% (10%) of total shares within the 12 (24) months after the lockup. Any transactions of non-tradable shares over 1% of total shares outstanding must be publicly disclosed within two business days.

3 Empirical Design

This section introduces our empirical design to evaluate the Split-share Structure Reform. We first outline our empirical strategy regarding variable selection and analytical methods, followed by describing the data. It then develops the hypotheses on analyzing the privatization component embedded in the reform and presents the regression setup.

3.1 Empirical Strategy

Following Megginson, Nash, and vanRandenborgh (1994), Dewenter and Malatesta (2001) and Sun and Tong (2003), we carry out tests to compare changes in firm performance and corporate governance during the three years before and after the reform. Several issues complicated our selection of firm performance measures. China changed its general accounting principles effective January 2007, within our sample period. The accounting principle changes were concentrated on how inventories, investment incomes and profits, and other incomes are scoped and calculated, so we chose to use operating revenue and profit based indicators rather than traditional total revenue and net income to maintain consistency. Under the new accounting principles, firm asset values are calculated differently as well, making asset-related measures unreliable.[14] Commonly used profitability measures, such as return on assets and return on equity, cannot be reliably applied because they differ before and

[14]For example, dividend payments to minority shareholders are documented as the actual amount paid before the accounting principle change. After the change, dividend payments are calculated and allocated to minority shareholders as a portion of the net income based on ownership structure, regardless of whether dividends are actually paid out or not.

after the accounting principle change. We present those variables, however, for reference only. The global financial crisis during 2007-2009 negatively and systematically influenced post-reform stock market performance. Such large impacts cannot be controlled for satisfactorily, if even possible, since the Split-share Structure Reform was almost a market-wide event. We thus focus on financial performance rather than market performance.

We evaluate firm performance change from the following aspects: productivity, operating efficiency, solvency and corporate governance. The productivity measures are consumer price index-adjusted operating revenue and operating income. We use per employee operating revenue, per employee operating income, and accounts receivable turnovers (the ratio of operating income to accounts receivable) to measure operating efficiency. Besides the top 10 shareholders' shareholding Herfindahl Index and management shareholding percentage, we use two variables to measure corporate governance: related-party transactions and large shareholder loans from a listed firm, which are reported as the most widespread large shareholder rent-seeking methods in China (Xu, Cai, and Xu, 2005; Ma, Huang, and Xue, 2005; Cheung, Rau, and Stouraitis, 2006; Hou, Li, and Luo, 2008). Related-party transactions (with large shareholders) are calculated as the amount of transactions (carried out with large shareholders) normalized by operating revenue. Large shareholder loans are calculated as the amount of funds a listed company lends to its controlling shareholders normalized by operating revenue.

In terms of empirical methodology, we note, as do Sun and Tong (2003), that the distributions of the variables of interest in our sample are heavily skewed and leptokurtic. Taking operating revenue as an example, the Shapiro-Wilk test generates $W=0.13$ with $p<0.0001$ and rejects the null hypothesis that the variable is normally distributed. So we base our comparisons on the medians of the variables and apply the Wilcoxon tests for statistical inferences. We report, however, the t-test results as well for reference only.

We examine the unique features of the Split-share Structure Reform in an effort to draw implications on the drivers of its success, particularly from a privatization perspective. A merit of our dataset is that the Split-share Structure Reform was carried out on both SOEs

and comparable non-SOEs, thus, providing a great opportunity to cleanly measure the net effect of privatization. For non-SOEs, the reform dismantled the dual share structure. For SOEs, the reform not only resolved the dual share structure, but also generated expectations for secondary privatization. By benchmarking the SOEs' post-reform performance changes against those of their matched non-SOE counterparts, we measure the distinct effects of privatization embedded in the reform on the SOEs uncontaminated by the other components in the reform and external shocks, such as the economic cycle.

3.2 Data Description

The data on the Split-share Structure Reform and firm financial information are obtained from the CSMAR database and cross-checked against the data in the WIND datebase to improve reliability. Operating revenue data before 2007 were hand-collected from firm annual reports because of the changes in accounting principles. A total of 1259 firms finished the reform by the end of 2007. We excluded 227 firms that either were inactive, belonged to the financial industry, or had unreliable accounting data. Our final sample contains 1032 firms, among which 633 firms are SOEs and 399 are non-SOEs.[15]

Table 2 summarizes firm characteristics one year before the reform. On average, non-SOEs and SOEs had 59% and 61% non-tradable shares, respectively. In general, the SOEs were larger than the non-SOEs. For example, the non-SOEs' average total assets and annual sales were RMB 1.9 billion and RMB 1.3 billion, respectively, while those of their SOE counterparts were RMB 3.2 and RMB 2.4 billion, respectively.[16] The SOEs were slightly more profitable than the non-SOEs, evidenced by their higher profit margins, returns on assets and returns on equity. The SOEs and non-SOEs have very similar leverage ratios and short-term solvency variables—their debt/asset ratios (current ratios) are 0.50 (1.40) and 0.53 (1.35), respectively. The book/market ratios for the SOEs and non-SOEs are

[15]We define a firm as an SOE if its ultimate controlling party is the state. Therefore, non-SOEs include private firms and firms that are of mixed ownership but not state controlled.

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

comparable at 0.63 and 0.57, respectively. The SOEs had slightly higher turnover ratios for account receivables, assets and inventory, and shorter operation cycles. Similar levels of operating risk measured by total, financial and operating leverages were observed for the SOEs and non-SOEs. Lastly, the two groups had similar dividend payout rates: 66% and 67% for the SEOs and non-SOEs, respectively.

3.3 Hypothesis Development

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, Harper (2002) and Black, Kraakman, and Tarassova (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 had improved output, operating efficiency, and profitability after the SIP. The above results imply that privatization methods are of critical importance and worthy of careful examination.

Gibbon (1997) outlines the steps a government needs to take for divestment of state-owned shares. The steps include setting up a structure of privatization that includes legislation, providing reliable performance records of the SOEs, developing an appropriate regulatory structure, and formulating the post-sale relationship between the government and the firms. China's early privatization attempts were carried out without legitimizing the trading rights for the state-owned shares. Compensation to public investors was either not considered or designed unilaterally by the government. Further, those attempts were only targeted to privatize a small portion of state-owned shares, causing tremendous concerns over the overhung state-owned shares. In contrast, the Split-share Structure Reform granted legitimate

trading rights to not only all state-owned shares but also all non-tradable shares through an all-parties-involved market mechanism of negotiating how tradable shareholders would be compensated. Prespecified post-reform lockups helped create reasonable expectations on the timetable of the release of non-tradable shares into the secondary market.

The Split-share Structure Reform should positively influence firm performance by mitigating large shareholders' moral hazard problems through aligning their control and cashflow rights. Besides the common influence exerted on both SOEs and non-SOEs, the reform has generated expectations for secondary privatization, which in turn have provided additional incentives for SOEs to improve their performance since their management may fear losing control if the firms underperform.[17] Theory predicts that private ownership is more efficient than government ownership since, under strong assumptions, a competitive equilibrium is Pareto optimal (Megginson and Neffer, 2001). Sheshinski and Lopez-Calva (2003) argue that there should be significant efficiency gains for firms transferring from government ownership to private ownership in competitive industries. Empirical evidence confirms that in many economies and industries firm performance is improved after privatization (Megginson, Nash, and vanRandenborgh, 1994; LaPorta et al., 1999). In China, the initial SIP boosted firm performance, although the drivers behind it remain unclear (Sun and Tong, 2003). We first test the existence of a privatization effect in the reform and propose the following.

H1: The SOEs experienced greater post-reform performance improvements than the non-SOEs.

We conjecture that the market mechanism adopted in the reform may play an important role in its success as a secondary privatization effort. Unfortunately, reliable conclusions cannot be drawn by comparing the Split-share Structure Reform to those early privatization attempts because statistical inferences may be biased in the presence of changing economic conditions, regulations, and unknown factors over time. However, a cross-sectional investigation of the interaction between firm post-reform performance changes and the degree of

[17]The Appendix presents the post-reform sales of the state-owned shares. The evidence confirms that, in the cross section, the number of an SOE's state-owned shares sold after the reform is negatively correlated with the SOE's performance.

market mechanism involvement in their reforms allows us to overcome such difficulties. If Hypothesis 1 holds, the SOEs' sensitivity to the market mechanism and future privatization as well as the degree of the SOEs' market mechanism activeness should interact with their post-reform performance. Intuitively, an SOE that was less sensitive to the market mechanism and privatization should be less motivated to make positive performance changes after the reform. Reversely, if an SOE cares more about privatization, it will be more actively involved in negotiations with non-tradable shareholders and will thrive to improve performance later on. We propose the following.

H2a: The SOEs that were more sensitive to the market mechanism had greater post-reform performance improvements.

3.4 Regression Setup

To carry out our investigation, we must undertake three tasks: (1) design a method to measure the net effects of privatization on SOEs' performance uncontaminated by other factors, (2) select a set of variables to measure SOEs' sensitivities to the market mechanism and privation and the degrees of their involvement in the market mechanism, and (3) apply competent regression models to accommodate any undesirable statistical features of the variables of interest. We discuss those tasks in the order as in which they are introduced.

We would like to measure privatization-induced performance improvements, $IMP^{privatization}$, net of the influence of non-privatization factors. In doing so, we divide the non-SOEs into 5x5 portfolios by size and industry and compute the median performance change of each portfolio, $\Delta Perform^{benchmark}$. For robustness, we construct an alternative set of benchmark portfolios by dividing the non-SOEs into 5x5 portfolios by size and book-to-market ratio. For each SOE, we first estimate its operating revenue change in the seven-year time window across the reform, $\Delta Perform^{SOE}$. We then compute the net impact of privatization on the SOE's performance improvement as the difference between $\Delta Perform^{SOE}$ and $\Delta Perform^{benchmark}$ of the portfolio that the SOE matches by size and industry (or book-to-market ratio), $IMP^{privatization} = \Delta Perform^{SOE} - \Delta Perform^{benchmark}$. We carry out the

following cross-sectional regression to test the hypotheses:

$$IMP_i^{privatization} = \alpha_i + \beta^{SOE} SOE + \beta^{sen} sen_i + \beta^{mkt} mkt_i + \beta^{control} controls_i + \varepsilon_i \qquad (1)$$

where *SOE* is the SOE dummy, with *SOE=1* for a state-owned firm and *SOE=0* otherwise; *sen* and *mkt* denote proxies for a firm's market sensitivity and the degree of market mechanism activeness, respectively. In the full-sample regression tests of Hypothesis 1, the significance of the SOE dummy indicates whether privatization contributed to an SOE's performance improvements.

To complete our investigation, we collect a sample of post-reform sales of state-owned shares. Besides shedding light on the magnitude of actual privatization that took place after the reform, we would like to establish an important linkage between actual privatization and SOEs' performance and to decipher the Chinese government's intention on the administration of SOEs who received legitimate trading rights for their state-owned shares. We report the results in the Appendix.

Table 3 lists the variables used in the regressions. The ratio of non-tradable to tradable shares represent an SOE's sensitivity to the market mechanism and future privatization: the state would possess stronger control when the ratio was higher for an SOE because a majority of the non-tradable shares were state owned. The SOEs with higher ratios of non-tradable to tradable shares should be less sensitive to the market mechanism since the non-tradable shareholders would be dominant in *consideration* negotiations. They should worry less about state control dilution in future privatization by maintaining greater control. Further, it would take longer to privatize SOEs with larger percentages of non-tradable shares, given the laddered lockup policy. Thus, SOEs with higher ratios of non-tradable to tradable shares should be less sensitive to the market mechanism and future privatization and, consequently, less motivated to make changes. We expect a negative correlation between SOE performance improvement and the ratio of non-tradable to tradable shares.

We use two proxies to measure an SOE's activeness in the market mechanism: (1) the *consideration* value, measured as the number of shares transferred from non-tradable share-

holders to tradable shareholders for every 10 tradable shares held by the latter, and (2) the reform plan approval rate, measured by the percentage of tradable shareholders who approved the reform plan proposal. Our purpose is to investigate how the market mechanism influences the success of privatization. The market mechanism is essentially a multiple-round negotiation process between non-tradable and tradable shareholders (Hou, 2011; Li et al., 2011). Thus, the outcomes of the negotiation reflect the degree of market mechanism activeness. Note that our interest is the interactions between the market mechanism and the privatization effect, rather than its two proxies, *consideration*s and non-tradable shareholder approval rates. As long as these exhibit significant and consistent interactions with SOE post-reform performance, we can draw implications on whether market mechanism plays a role in the success of privatization embedded in the Split-share Structure Reform. Albeit the hypothesis offers no prediction on the signs of the two variables, their statistical significance and sign consistency would nevertheless yield powerful implications for Hypotheses 2a and 2b.

One may be concerned that the increases in SOE operating revenues were the result of their monopolies (Megginson and Neffer, 2001). Among the control variables, we include size and a regulated industry dummy to control for such an effect—monopoly is more likely to exist in large firms and in regulated industries (Sun and Tong, 2003). In China, large SOEs possess the strongest monopoly power in the regulated industries, including telecommunications, financial, and natural resources. We include a Hong Kong cross-listing dummy, an exchange dummy, and an industry dummy, as well as a reform year dummy in the regressions.

We detect that both the percentage changes in operating revenues and the residuals in Equation (1) are not normally distributed.[18] Then ordinary least squares (OLS) regressions may produce biased estimates and misleading statistical inferences. We therefore apply quantile regressions, as introduced by Koenker and Bassett (1978), in our investigation. This method uses the least-absolute-distance estimation algorithm instead of the

[18]The skewness and kurtosis of the residuals in Equation (1) are 3.3 and 15.7, respectively. The Shapiro-Wilk test generates W=0.71 with p<0.0001 and therefore significantly rejects the null hypothesis that the residuals are normally distributed. The Shapiro-Wilk test for changes in operating revenues generates W=0.13 with p<0.0001 and rejects the null hypothesis that the variable is normally distributed.

least-square algorithm and has several advantages. It imposes no restrictive assumptions on the distribution of the residuals and allows for the examination of any arbitrary quantiles of selected dependent variables, enabling us to investigate the stability of the coefficients of interest over the quantile spectrum. We focus on analyzing the 25%, 50% and 75% quantile performance improvement in our investigation, but illustrate the stability of the estimation coefficients in Figures 2 and 3.

4 Evaluating the Split-share Structure Reform

This section evaluates the Split-share Structure Reform by analyzing the post-reform changes in firm productivity, operating efficiency, solvency, and corporate governance. Consistent with previous findings where better incentives of increasing share values boost SOE output and profit (Megginson, Nash, and vanRandenborgh, 1994), we find that firm productivity increased substantially after the reform. The SOEs significantly outperformed their counterparts, accompanied by a much greater increase in employment as well. The Split-share Structure Reform helped improve Chinese firms' operating efficiency, measured in per employee output and profit. Corporate governance was substantially improved, but no differences were found between SOEs and non-SOEs.

4.1 Productivity and Employment

Table 4 reports changes in the proxies of output, employment, and profitability. For ratio and percentage variables, the changes are defined as the differences between the variable values three years before and after the reform. For level variables, we normalize the differences with the pre-reform values to obtain changes in percentage. The same method applies to the variables in the other tables as well. For simplicity, we report the medians and means of the changes and omit the original variable values before and after the reform. Columns (1)-(3) report the odds of firms experiencing non-negative changes and changes in the means and medians of variables before and after the reform, respectively, for the full sample. The results reported in brackets in the three columns are the proportional z-test results for the

odds, the t-test results for the changes in the means, and the Wilcoxon z-test results for the changes in the medians, respectively. Columns (4)-(6) report the same information for the SOE subsample, and Columns (7)-(9) report the same for the non-SOE subsample. Columns (10) and (11) report the differences between the changes in the means and medians of the SOE and non-SOE subsamples, respectively. The numbers reported in the brackets in the two columns are the paired t-test and Wilcoxon test results for the differences, respectively. The same table layout also applies to Tables 5 and 6.

Panel A in Table 4 reports that output measured by operating revenue increased significantly after the reform. For the full sample, the median change is 0.73, implying that on average the real operating revenue increased by 72.5% in the seven-year period. The change is statistically significant at the 1% level. The result does not appear to be driven by extreme values: 769 firms experienced non-negative operating revenue changes, whereas 228 firms experienced negative changes. The SOEs experienced greater output growth than their counterparts, with a median difference of 25.6%, statistically significant at the 1% level. Since the sales of state-owned shares were deliberately smoothed by post-reform lockups, the positive effect of better incentives and more flexible financing on output (Megginson, Nash, and vanRandenborgh, 1994) appears to outweigh the negative influence of cutting government subsidies on output (Boycko, Shleifer, and Vishny, 1996). The results of changes in total assets paint the same picture, albeit their representativeness may be diluted by the accounting principle change.

We find significant increases in operating profit. The median increases for the full sample, SOEs, and non-SOEs are 45.1%, 50.2% and 44.1%, respectively, all statistically significant at the 1% level. The SOEs outperformed non-SOEs by 6.0%, but this difference is not statistically significant. Total employment increased significantly after the reform, with the median change for the full sample at 0.13, implying a 13% increase in the number of employees. The median difference between changes in employment for the SOEs and non-SOEs is 16.8%, statistically significant at the 1% level. The result suggests that firms, especially SOEs, hired more for increased output.

Growth in revenues was accompanied by reduced capital investments in long-term fixed and intangible assets. The median drops are 2.76%, 2.05% and 3.78% for all sample firms, SOEs and non-SOEs, respectively. That means that the median firm used 2.76% less operating revenue for capital investment. All these drops are significant at the 1% level. These findings suggest that listed firms were more efficient at using capital after the reform and able to generate higher returns on new investments, resulting in significant increases in both output and profit. The SOEs reduced less capital expenditure than the non-SOEs, as evidenced by a 1.73% difference reported in Column (11) of Table 4.

Theories and empirical evidence show that a dual share structure that misaligns the control and cashflow rights of the controlling shareholders negatively affects operating efficiency (Jensen and Meckling, 1976; Gompers, Ishii, and Metrick, 2008; Masulis, Wang, and Xie, 2009). Panel B of Table 4 reports changes in per employee operating revenue and profit. Productivity was improved significantly during our sample period. Based on median comparisons, per employee operating revenue (profit) increased by 41.0% (16.9%), 41.4% (15.6%) and 40.5% (19.1%) for the full sample, SOEs, and non-SOEs, respectively. Proportional z-tests show that more than 50% of the sample firms increased their productivity. The reform had a positive effect on productive efficiency for Chinese firms through providing incentives to controlling non-tradable shareholders to better manage firms. However, we do not detect any difference between the improvements of the SOEs and non-SOEs, although Panel A reports that the difference in operating revenue change is larger than that in employment change. A direct explanation is that the SOEs' employment has grown faster than that of the non-SOEs, which offsets the SOEs' larger increases in output. Bearing fewer social and administrative burdens, non-SOEs may enjoy greater flexibility to trim labor and overhead costs (Qian, 1996; Li, 1997).

4.2 Operating Efficiency, Capital Structure and Solvency

Panel A of Table 5 reports the changes in operating efficiency proxies. The results show that the median account receivable turnovers for all firm increased significantly by 4.51 times

after the reform. A total of 796 out of the 995 sample firms made progress. The SOEs and non-SOEs had similar improvements of 4.75 times and 4.04 times, respectively, resulting in a statistically insignificant gap of 0.71 times. Statistics show that the listed firms' ability of managing business credit improved over time. Albeit their consistency is questionable due to changing accounting principles, the comparisons on asset turnover rate, operating cycle (defined as the inventory cycle *plus* account receivables cycle *minus* the account payables cycle) and operating leverage (defined as rate of change in earnings before interest and taxes to the rate of change in sales) lead to consistent conclusions on improved efficiency and reduced operating risk. We do not find evidence that SOEs outperformed their counterparts in terms of operating efficiency improvement.

Panel B of Table 5 reports the changes in long- and short-term financial and solvency proxies after the reform. Here the only reliable proxy is the ratio of cash to total liabilities, reflecting the firms' short-term debt-paying capability. The capability of non-SOEs increased slightly, by 1.8%, marginally significant. No significant changes are observed for the full sample and SOEs. We infer from the results that the SOEs underperformed non-SOEs in this aspect. From the governance perspective, this difference can be considered positive for SOEs, since less cash helps mitigate managerial agency problems such as contributing less effort and abusing corporate resources (Jensen, 1986). For reference only, the results on the debt ratio and current ratio indicate that the listed firms tended to use more debt after the reform and the SOEs were more liberal in borrowing. Financial risk increases with expanding financial leverage (defined as the ratio of the rate of change in return on equity to the rate of change in earnings before interest and taxes). A partial substitution effect may exist between cash and long-term liabilities as well.

Overall, we find insignificant evidence of greater efficiency improvement by SOEs over non-SOEs. No conclusive interpretation can be made on changes in capital structure due to the lack of reliable and comparable indicators, although SOEs appeared to use more liabilities in the post-reform era. Given the fact that SOE output and employment increased substantially without sacrificing productive efficiency, the reform, as part of China's privatization

efforts, can be considered mostly successful.

4.3 Corporate Governance

Ample evidence indicates that the ownership structure caused serious governance problems and has been regarded as a failure of China's partial privatization (Allen, Qian, and Qian, 2005; Deng, Gan, and He, 2008). Jensen and Meckling (1976) state that a particular form of agency problem is the interest conflict between controlling shareholders and minority shareholders in a market of high ownership concentration. Grossman and Hart (1988) and Shleifer and Vishny (1997) show that controlling shareholders have incentives to abuse firm resources for private interest at the expense of minority shareholders. For most Chinese companies, the controlling shareholders are non-tradable shareholders as well. Then the agency problems between majority shareholders and minority shareholders equate to those between non-tradable shareholders and tradable shareholders. Yu and Xia (2004) report that 77% of Chinese companies in their sample have the Chinese government and its affiliates as controlling shareholders. One purpose of the Split-share Structure Reform was to better align the interests of controlling shareholders and tradable shareholders. We select related-party transactions, large shareholders borrowing from listed firms, the Herfindahl index of the top 10 shareholders, and the management shareholding percentage as proxies to measure corporate governance.

Panel A of Table 6 reports the percentages of firms engaged in governance-related activities.[19] Related-party transactions, especially those engaged with large shareholders, are accused of being a widespread method of profit tunneling (Cheung, Rau, and Stouraitis, 2006). Three years before the reform, 43.4% (29.7%) of firms in the sample reported related-party transactions (with their large shareholders). Three years after the reform, 35.6% (23.9%) of firms reported such activities. As shown in Panel A of Table 7, the median sizes

[19]The activities—related-party transactions, large shareholder borrowing from listed firms, and management shareholding—occurred in less than half of firms in our sample. That causes the medians of the activities to equal zero, while inferences drawn based on the means could be biased due to heavily skewed variable distributions. Therefore, we present the occurrence frequencies of those activities in our sample firms as an alternative measure.

of related-party transactions (with large shareholders) normalized by operating revenues increased slightly, from 6.9% (5.8%) before the reform to 7.2% (7.4%) afterward, but this was statistically insignificant. The odds of related-party transactions (with large shareholders) dropped by 7.8% (5.8%), implying improved governance. This drop was greater for SOEs: The percentage of the SOEs engaged in related-party transactions (with large shareholders) before the reform was 11.5% (6.0%), dropping to 5.7% (4.3%) three years after the reform.

Large shareholder borrowing at extremely low costs or even interest free from listed firms in China has been widely criticized (Ma, Huang, and Xue, 2005; Hou, Li, and Luo, 2008). We collect large shareholder loan information reported in the notes on the account receivables and other receivables section of the financial statements. Table 6 shows that three years before the reform, 42.3% of firms made loans to controlling shareholders. The percentage dropped to 16.6% three years after the reform. The SOEs improved less compared to non-SOEs: The percentage of SOEs engaged in such activities was 4.5% (8.6%) higher than that of non-SOEs before (after) the reform. According to Table 7, the median amounts of the loans normalized by operating revenue dropped by 1%, statistically significant at the 1% level. The drop was more significant for SOEs. Overall, we find fewer firms made loans to large shareholders. The loan sizes were reduced as well.

The results on management shareholding paint a similar picture. Reported in Tables 6 and 7, the number of firms with management shareholding decreased after the reform. The decrease in non-SOEs is more significant. Management-held shares relative to total shares outstanding dropped from 0.018% to 0.011%. The SOEs experienced a greater drop in management shareholding percentage compared to non-SOEs. In China, management shareholding has been regarded as both a managerial rent seeking device and an incentive-stimulating mechanism (Xu, Cai, and Xu, 2005). Our finding nevertheless indicates that the negative impacts of management shareholding may outweigh its benefits, given that firms achieved remarkable growth in revenue and profit along with reduced management shareholding.

A firm with concentrated ownership and a weak board is likely to have greater moral

hazard problems (Jensen and Meckling, 1976; Grossman and Hart, 1988; Shleifer and Vishny, 1997). Panel A of Table 7 reports top 10 shareholders' shareholding Herfindahl index as a measure of ownership concentration. For all firms, the Herfindahl index dropped significantly, by 0.07, after the reform. Reduced ownership concentration points to a positive direction for developing more minority shareholder-friendly governance environment in the listed firms. The SOEs had a greater reduction in the index than the non-SOEs, supporting the positive role of privatization embedded in the reform.

Panel B of Table 6 reports the percentage of firms paying cash dividends. Before the reform, 51.6% firms in the sample paid cash dividends. The percentage is almost unchanged after the reform. A higher percentage of the SOEs than the non-SOEs paid cash dividends, and the difference increased from 13.8% before the reform to 15.6% afterward. Panel B of Table 7 reports the median cash dividend payout ratios. Although the percentage of firms paying cash dividends remains unchanged, the amount of dividend was reduced. The payout ratio dropped by 16.9% after the reform, statistically significant at the 1% level. Similarly, the dividend yield also dropped significantly, by 0.64%. Relating the results to the falling ratio of cash to liabilities and increasing ratio of debt to assets reported above, we attribute falling dividends, at least partially, to firms' increased use of debt, which may help reduce free cash flows and discourage managerial value expropriation. We do not find any substantial differences in the reduction of dividend payouts between SOEs and non-SOEs.

To sum up, we find evidence supporting corporate governance improvements after the Split-share Structure Reform, curbing value expropriation from large shareholders through related-party transactions, borrowing from listed firms, and tunneling through dividend payouts. However, we do not find consistent evidence that SOEs experienced greater corporate governance improvements than non-SOEs.

4.4 SOEs versus Non-SOEs

This subsection examines the net privatization effects of the Split-Structure Reform. It focuses on operating revenue change, given the evidence of significant improvements in the

listed firms' operating revenues and the remarkable differences in the operating revenue changes between SOEs and non-SOEs.

We first study our sample through a selection of firm characteristics that include the domestic exchanges on which they are listed, whether a firm is in a regulated industry, whether a firm is cross-listed in Hong Kong or an overseas market, whether a firm issues USD-denominated B-shares, and whether a firm is controlled by non-tradable shareholders. As reported in Table 8, the operating revenues for all groups increased significantly after the reform. Evidence shows that SOEs significantly outperformed non-SOEs, indicating the existence of a privatization effect and supporting our Hypothesis 1. Three years before the reform, the median operating revenue of SOEs was RMB 805.4 million, RMB 355.5 million higher than that of non-SOEs. Three years after the reform, the median operating revenue of SOEs increased to RMB 1,380.2 million. In contrast, the median operating revenue of non-SOEs increased from RMB 449.9 million to RMB 737.8 million. The gap between the two groups grew from RMB 355.5 million to RMB 725.1 million. The change in the gap is RMB 323.7 million, statistically significant at the 1% level. Firms cross-listed in Hong Kong experienced a greater output boost compared to their counterparts. For other comparison groups, we do not find significant differences.

As outlined in Section 3.4, we use a benchmark portfolio approach to measure the net effect of privatization on SOE operating revenue changes. In doing so, we first doubly sort the 399 non-SOEs into 5x5 benchmark portfolios by industry and size (market capitalization). We assign each SOE a non-SOE benchmark portfolio according to its size and industry. We measure the privatization-induced operating revenue improvements of the SOEs by estimating the differences between the operating revenue changes of the SOEs and the median operating revenue changes of their non-SOE benchmark portfolios. As shown in Table 9, the median privatization effect is 0.063, implying that the output growth of the SOEs was 6.3% higher than that of the non-SOEs, which is statistically significant at the 1% level. We add robustness to our measure by doubly sorting the non-SOE sample by firm size and book-to-market ratio to construct the benchmark portfolios. A significant and positive privatization

effect is found for most portfolios.

The SOEs experienced greater improvements in operating revenue than the non-SOEs, implying a positive and significant privatization effect in support of our Hypothesis 1. Together with other evidence, such as improved SOE output without the loss of operating efficiency, increased employment, and improved governance, the results suggest that the reform, as a beginning phase of China's secondary privatization, was successful.

4.5 Drivers of the Success

Table 10 reports the results of regressing operating revenue changes on the SOE dummy and other variables of interest to formally test *Hypothesis 1* with the full sample. Columns (A)-(C) report the quantile regression results of the 25%, 50% (median), and 75% quantiles, respectively, representing firms with small, medium, and big changes in operating revenue, respectively. The OLS results are presented in Column (D) for reference. We winsorize the data at 1% for the OLS regressions to reduce distortions induced by outliers.

The quantile regression results indicate that the SOE dummy is positively and significantly correlated with post-reform operating revenue increases. The coefficients of the SOE dummy are 17.87 and 17.49 in the 25% and 75% quantiles, respectively. As reported in Column B, the coefficient and t-statistic of the SOE dummy are 20.95 and 2.3, respectively, in the 50% quantile regression. The Wald test results also confirm the significance of the SOE dummy. Figure 2 illustrates the coefficients of the SOE dummy for various quantiles. The SOE dummy positively and consistently influences the post-reform performance improvements for all quantiles less than 90%. Overall, the results support our Hypothesis 1 that the SOEs have a greater post-reform output increase, confirming the positive role of privatization in stimulating SOE performance.

Table 11 reports the regression results for testing Hypotheses 2a and 2b. Columns (A) and (B) report the results for adjusted SOE output changes against non-SOE portfolios constructed by size and industry and by size and book-to-market ratio, respectively. The adjusted SOE output changes capture the net influence of privatization. We draw conclusions

on Hypotheses 2a and 2b mainly based on the results in Columns (A) and (B).

The market sensitivity proxy, the ratio of non-tradable to tradable shares, has consistent negative coefficients at the 1% significance level in the 25%, 50%, and 75% quantile regressions, respectively. The less sensitive an SOE to the market mechanism and privatization, the weaker its post-reform output growth. Taking the size- and industry-adjusted privatization effect as an example, if we increase the ratio of non-tradable to tradable shares by one standard deviation (81.6%), the SOE at the 25%, 50% (median), and 75% quantile points would experience growth drops by 18.0%, 22.9%, and 30.2%, respectively. The Wald test results reported in the bottom rows of Table 11 confirm the significance of the ratio of non-tradable to tradable shares. Panel A of Figure 3 illustrates the estimates of the coefficients of the ratio of non-tradable to tradable shares over the quantiles of size- and industry-adjusted operating revenue improvements. The figure on the left-hand side shows that the coefficients are below zero over the quantiles greater than 5%, and that the impacts of the ratio of non-tradable to tradable shares rise with the quantile. Evidence indicates that SOEs with a larger non-tradable (state) share percentage experienced less improvement in output because they are less sensitive to the market mechanism and privatization, supporting our Hypothesis 2a.

We test Hypothesis 2b by examining the interactions between *consideration* values and the tradable shareholder reform plan approval rate and SOE operating revenue improvement. *Consideration* value is negatively and consistently correlated to post-reform output improvements, confirming that market-based *consideration* negotiations rationally trade off short-term compensation versus long-term capital gains. Tradable shareholders demand lower up-front compensation in exchange for better future firm performance. As reported in Column (A) of Table 11, if the *consideration* value decreases by one standard deviation (17.4%), the operating revenue growth of the SOEs in the 25%, 50%, and 75% quantiles would increase by 8.2%, 16.6%, and 30.5%, respectively. The coefficients are statistically significant at the 10%, 1%, and 1% levels in the three quantiles. The Wald test results yield similar results for significance. The right-hand Panel (A) in Figure 3 shows that the nega-

tive correlation is presented in all regressions for quantiles above 5%, suggesting consistent and significant correlation between *consideration* value and SOE performance improvement. That supports Hypothesis 2b.

Another market mechanism activeness proxy, the non-tradable shareholder approval rate, has consistent and positive coefficients in the 25%, 50% (median), and 75% quantile regressions for the size- and industry-adjusted SOE operating revenue improvements. Column (A) reports that tradable shareholder approval is positively correlated to an SOE's post-reform performance improvement, suggesting that better firms generally received more tradable shareholder approval votes. We find support for Hypothesis 2b. Overall, a low *consideration* value and a high approval rate were direct results of the market mechanism and negotiations in the expectation of strong post-reform SOE performance. Tradable shareholders were more inclined to approve the reform plan when they expected high future capital gains resulting from performance improvements, in which case non-tradable shareholders were able to compensate tradable shareholders less up front.

For robustness checks, we test the hypothesis with the SOE output changes adjusted by the benchmark non-SOE portfolios constructed alternatively by firm size and book-to-market ratio and find consistent results. As reported in Column (B) of Table 11, all coefficient signs are the same as their counterparts reported in Column (A). Panel B in Figure 3 illustrates the coefficients estimated for the ratio of non-tradable to tradable shares and *consideration* value across the quantile spectrum. We find consistent negative coefficients for the ratio of non-tradable to tradable shares and *consideration* value, suggesting that the results for Hypotheses 2a and 2b are robust and significant.

5 Conclusions

In 2005, China carried out the landmark Split-share Structure Reform to convert state-owned shares, together with other types of non-tradable shares, into tradable shares with negotiated *consideration*s. With the completion of the reform, China's stock market would no longer have fundamental differences from the international markets in terms of pricing

and valuation. Importantly, the reform not only resolved the legacy structural problems, but also paved the road for the secondary privatization of listed SOEs.

The secondary privatization in China was undertaken cautiously, with a step-by-step approach, since the SIP in the 1990s. Early attempts at selling state-owned shares had backfired, since those privatization methods were designed unilaterally to satisfy the government's agenda without balancing public investor interests. We find the reform significantly improved SOE productivity and provided more employment without sacrificing operating efficiency compared to non-SOEs. The privatization appeared to add incentives for the government agents and SOE management to improve firm performance in the expectation that state-owned shares might be transferred to private agents in the future.

In contrast with evidence found in other transitional economies that bringing in new managers helps improve firm performance, our results indicate that stimulating managerial interest with privatization expectation plays a positive role as well. However, we find no consistent evidence on greater governance improvement for SOEs than for non-SOEs after the reform, suggesting that without substantial changes in the ownership structure of Chinese SOEs, the partial alignment of the interests of controlling government agents and tradable shareholders is insufficient to have significant impacts on improving corporate governance.

The parameters that affect the success of privatization are complex. Political, legal, and institutional factors, the capital market, and the private sector, as well as the privatization method, play vital and interrelated roles. This study finds that the market negotiation mechanism played an important role in the success of privatization embedded in the reform. It remains unclear when and how the Chinese government will fully privatize listed SOEs. The Split-share Structure Reform nevertheless points to a clear direction for future policies. The post-reform sales of state-owned shares suggests that the process will be gradual, along with developments in the private sector, institutions, and the financial and legal systems. Particularly important factors are the strategic importance of SOEs as the country's social safety net (Bai, Li, and Wang, 1997; Lin, Cai, and Li, 1998) and the financial health of the Chinese government in the presence of rapidly growing public spending and government

liabilities. The reform that inaugurated China's secondary privatization has achieved some degree of success so far. More importantly, the positive elements contributing to its success have useful implications for China's future economic reforms as well as global privatization.

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Appendix: Post-Reform Sales of the State-Owned Shares

We examine the post-reform sales of state-owned shares. Panel A of Table 12 shows that 160 out of the 633 SOEs in our sample sold, on average, 2.95% of state-owned shares as of October 2011.[20] The manufacturing industry had the highest percentage, 27.4%, of firms selling their state-owned shares, whereas the utility industry had the lowest percentage, 14.5%. On average, each of the 160 firms sold 5.13 million shares, constituting 0.44% of each firm's total shares outstanding. On average, 31% of the state shareholders were involved in the sales. The patterns are quite similar across all five industries. The sale of state-owned shares, or the actual privatization, was still partial and on a small scale. In addition, some state-owned shares were still in compulsory lockup, and the Chinese government showed no intention to quickly privatize these SOEs.

Panel B of Table 12 shows that the SOE operating revenue improvement measures are consistently and negatively correlated to the post-reform sale measures, among which the number of firms selling state-owned shares, the average number of shares sold by each firm, and the percentage of state shareholders involved in the sales are statistically significant at the 1% or 5% level. The results indicate that the government had a weaker incentive to privatize SOEs that achieved greater performance improvements, echoing the notion that SOEs are of strategic importance as the country's social safety net (Bai, Li, and Wang, 1997; Lin, Cai, and Li, 1998). The government appeared more likely to remain in control of the high-quality SOEs while boosting their output through economic restructuring.

[20] The statistics may slightly underestimate the actual sales of state-owned shares, since only sales of more than 1% of total shares outstanding were required to be disclosed publicly. Given the fact that most of the sales of the state-owned shares involved large numbers of shares, our results nevertheless provide an imperfect but close estimate.

Table 1. Major Policies and Events around the Split-Share Structure Reform

Stages	Time	Event
Formation of the Split-share Structure	April 1993	*"Tentative Measures for the Administration of the Issuance and Trading of Stocks"* issued by the State Council in April 1993 stated that transactions of state-owned shares are subject to the approval of relevant authorities, the regulation drafted no applicable rules on the implementation of the transactions. The Chinese government chose to put the state-owned share transaction issue on hold for an indefinite period.
Early Privatization Attempts	September 1999	the 4th 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"*, aiming to reorganize SOEs in an effort to strategically restructure China's economy.
	December 1999-January 2000	In December 1999, the CSRC handpicked 10 public companies to pilot the state-owned share sales. The sales were quickly suspended after trying two companies because the stock market reacted negatively.
	June 2001-October 2001	On June 12, 2001, the State Council issued "*Interim Measures of the State Council on the Management of Reducing Held State Shares and Raising Social Security Funds"*. The sales were stopped in October due to negative market reactions.
The Split-share Structure Reform	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 guideline of the Split-share Structure Reform.
	April-August 2005	The CSRC issued "*Notice of the China Securities Regulatory Commission on Piloting the Share-trading Reform of Listed Companies"* on April 30, 2005. The Split-share Structure Reform started with four pilot firms.
	August 2005---	Full-fledged Split-share Structure Reform started.
	June 2006---	The lockup of the non-tradable shares of Sany Heavy Industry was expired on June 19, 2006. On August 4, 2020, the lockup of the last batch non-tradable shares of Ji Lin Au Dong will be expired. A total of 432 billion non-tradable shares gained or will gain trading rights between 2006 and 2020.

Table 2. Summary Statistics

This table reports the summary statistics of the firms in the sample, including 633 SOEs and 399 non-SOEs. The data were obtained from the firms' financial reports of the year before the completion of the Split-share Structure Reform. The data are winsorized at 1 and 99 percentiles to compute the means.

	non-SOE		**SOE**		**Full Sample**	
Number of Firms	399		633		1032	
	mean	**median**	**mean**	**median**	**mean**	**median**
Non-tradable Share Percentage	58.90%	60.15%	60.77%	62.51%	60.05%	61.85%
Assets, Sales and Employment						
Total Assets (in million RMBs)	1924.69	1264.25	3204.68	2069.67	2711.40	1727.19
Operating Revenue (in million RMBs)	1275.04	592.31	2364.41	1236.01	1945.67	946.41
Number of Employees	2176.21	1277.50	3456.34	2086.00	2965.35	1688.50
EBIT (in million RMBs)	80.63	46.73	183.63	83.75	143.32	63.74
Profitability						
Net Margin Rate	-0.63%	3.66%	4.12%	3.50%	2.30%	3.66%
ROA	1.34%	2.08%	2.69%	2.50%	2.17%	2.26%
ROE	2.50%	4.25%	4.57%	5.26%	3.79%	4.95%
Capital Structure						
Debt/Assets	0.53	0.55	0.50	0.51	0.51	0.52
Long/Short Debt	0.15	0.05	0.26	0.09	0.22	0.07
Current Ratio	1.35	1.14	1.40	1.17	1.38	1.16
Acid-test Ratio	0.95	0.73	0.96	0.74	0.96	0.73
Growth						
Book/Market Ratio	0.57	0.55	0.63	0.59	0.61	0.57
Capital Expenditure (in million RMBs)	117.94	35.07	247.53	87.56	199.10	61.26
Productive Efficiency						
Operation Cycle (day)	426.69	240.92	258.78	159.88	323.01	192.08
Account Rec. Turnover	8.34	3.53	12.78	5.97	11.07	5.11
Asset Turnover	0.60	0.48	0.72	0.59	0.67	0.56
Inventory Turnover	5.97	3.26	8.09	4.32	7.27	3.90
Operating Risk						
Total Leverage	3.97	2.75	4.74	2.77	4.44	2.76
Financial Leverage	1.62	1.28	1.64	1.23	1.63	1.25
Operating Leverage	2.10	2.05	2.53	2.16	2.36	2.12
Dividend Policy						
Dividend Payout Ratio	67.06%	50.00%	65.75%	46.49%	66.15%	46.78%
Dividend Yield	0.92%	0.00%	1.27%	0.75%	1.14%	0.30%

Table 3. Regression Variables

This table describes the variables to proxy for SOE sensitivity to the market mechanism, the degree of SOE involvement in the market mechanism, and the control variables used in the regressions.

Variable	Description
SOE Dummy	Dummy equals 1 for SOEs and 0 for non-SOEs.
Consideration	Number of shares paid by non-tradable shareholders to tradable shareholders for every 10 shares held by the tradable shareholders.
Approval Rate	The percentage of tradable shareholders vote to approve reform plan proposal in special shareholder meetings.
Non-tradable Share Percentage	The ratio of non-tradable to tradable shares before the Split-share Structure Reform.
Log(market value of tradable shares)	The natural logarithm of the market value of tradable shares in billion RMBs one day before the start of the Split-share Structure Reform.
H-share Dummy	Dummy equals 1 if a firm is cross-listed on the Hong Kong Stock Exchange. Otherwise equals 0.
B-share Dummy	Dummy equals 1 if a firm issues B-shares. Otherwise equals 0.
Regulated Industry Dummy	Dummy equals 1 if a firm is in the following industries: Resources, energy, telecommunications and public utility.
Exchange Dummy	Dummy equals 1 if a firm is listed on the Shanghai Stock Exchange, and 0 if the firm is listed on the Shenzhen Stock Exchange.
Year Dummy for 2005	Year dummy for a firm that finished the reform in 2005.
Year Dummy for 2006	Year dummy for a firm that finished the reform in 2006.

Table 4. Changes in Output, Employment, and Productivity

This table reports the test results for changes in firm output, profitability, and employment. The t-test applies for the changes in the means. The Wilcoxon z-test applies for the changes in the medians. The proportion z-test applies to test if the proportion of positive (negative) change is greater than 50% when the odd is greater (less) than 1. A variable with ※ is the change of the variable calculated as the difference between the variable values for three years after and before the reform normalized by the three year after the reform value. For the other variables, the change is calculated as the difference between the variable value three years after and before the reform. Capital expenditures are normalized by operating revenues. The data are winsorized at 1 percent to compute the means. The variables in Italic were affected by the changes in accounting principles in 2007, and may be inconsistent. Those variables are for reference only. *, **, *** represent the 10%, 5% and 1% significance levels, respectively.

	Full Sample			SOEs			Non-SOEs			SOEs – Non-SOEs	
	Increase Odds	Chg. in Mean	Chg. in Median	Increase Odds	Chg. in Mean	Chg. in Median	Increase Odds	Chg. in Mean	Chg. in Median	Diff. in Mean	Diff. in Median
Panel A. Output, Employment & Capital Expenditure											
Operating Revenue ※	769/243	1.429	0.725	496/128	1.591	0.836	273/115	1.170	0.581	0.421	0.256
	(16.5***)	(18.3***)	(187950***)	(14.7***)	(15.1***)	(77858***)	(8.02***)	(10.3***)	(23319***)	(2.7***)	(3.6***)
Operating Profit※	671/324	1.310	0.451	419/194	1.388***	0.502***	252/130	1.186	0.441	0.202	0.060
	(11.0***)	(14.5***)	(133594***)	(9.1***)	(12.0***)	(53252***)	(6.2***)	(8.3***)	(17925***)	(1.1)	(1.5)
Total Assets※	840/172	1.429	0.812	539/83	1.599	0.968	301/89	1.159	0.629	0.440	0.339
	(21.0***)	(22.6***)	(219524***)	(18.3***)	(18.5***)	(86810***)	(10.7***)	(13.3***)	(29772***)	(3.6***)	(3.8***)
Number of Employees*	596/414	0.863	0.130	392/227	1.009	0.187	204/187	0.631	0.020	0.377	0.168
	(5.7***)	(10.0***)	(93920***)	(6.6***)	(8.9***)	(45590***)	(0.9)	(4.8***)	(7587***)	(2.1**)	(4.1***)
Capital Expenditure (%)	309/548	-2.729	-2.760	203/338	-2.219	-2.054	106/210	-3.061	-3.782	1.382	1.728
	(8.2***)	(2.5***)	(57125***)	(5.8***)	(1.7*)	(20593***)	(5.9***)	(1.8*)	(8862***)	(0.6)	(1.8*)
Panel B. Productivity											
Operating Revenue per Employee※	693/317	1.166	0.410	436/186	0.985	0.414	257/131	1.457	0.405	-0.472	0.009
	(11.8***)	(10.9***)	(147258***)	(10.0***)	(8.6***)	(57879***)	(6.4***)	(6.9***)	(20563***)	(2.0**)	(0.0)
Operating Profit per Employee※	569/424	1.110	0.169	343/272	0.957	0.156	226/152	1.359	0.191	-0.402	-0.035
	(4.6***)	(7.9***)	(75740***)	(2.9***)	(6.2***)	(26211***)	(3.8***)	(5.0***)	(12683***)	(1.3)	(1.3*)
Net Margin Rate (%)	453/557	0.391	-0.568	262/364	-0.649	-0.958	191/193	2.087	-0.036	-2.736	-0.923
	(3.3***)	(0.5)	(14221)	(4.1***)	(0.8)	(13546)	(0.1)	(1.2)	(2237)	(1.4)	(2.3**)
ROE (%)	528/455	0.474	0.674	333/280	0.384	0.674	195/175	0.622	0.665	-0.239	0.008
	(2.3***)	(0.8)	(25533***)	(2.1**)	(0.6)	(9123**)	(1.9)	(0.6)	(4188**)	(0.2)	(0.5)

Table 5. Changes in Operating Efficiency, Capital Structure, and Solvency

This table reports the test results for changes in firm operating efficiency, capital structure, and solvency. The t-test applies for the changes in the means. The Wilcoxon z-test applies for the changes in the medians. The proportion z-test applies to test if the proportion of positive (negative) change is greater than 50% when the odd is greater (less) than 1. The change is calculated as the difference between the variable value three years after and before the reform. Debt ratio is calculated as total debt divided by total assets. Financial leverage is calculated as (ΔEPS/EPS)/(ΔEBIT/EBIT). The variables in Italic were affected by the changes in accounting principles in 2007, and may be inconsistent. Those variables are for reference only. *, **, *** represent the 10%, 5% and 1% significance levels, respectively.

	Full Sample			SOEs			Non-SOEs			SOEs – Non-SOEs	
	Increase Odds	Chg. in Mean	Chg. in Median	Increase Odds	Chg. in Mean	Chg. in Median	Increase Odds	Chg. in Mean	Chg. in Median	Diff. in Mean	Diff. in Median
Panel A. Operating Efficiency											
Account Receivables Turnover	796/199 (18.9***)	52.763 (7.3***)	4.511 (179871***)	485/126 (14.5***)	55.146 (5.5***)	4.750 (65706***)	311/73 (12.1***)	48.973 (4.9***)	4.041 (28209***)	6.173 (0.4)	0.708 (0.3)
Sales and Financial costs/Sales Ratio	705/271 (13.9***)	0.070 (8.5***)	0.028 (124758***)	446/153 (12.0***)	0.053 (7.1***)	0.029 (51429***)	259/118 (7.3***)	0.097 (5.5***)	0.026 (16343***)	-0.044 (2.3**)	0.00 (0.0)
Asset Turnover	614/394 (6.9***)	0.079 (7.4***)	0.081 (71004***)	383/237 (5.9***)	0.077 (5.6***)	0.086 (27885***)	231/157 (3.8***)	0.082 (4.8***)	0.078 (9747***)	-0.005 (0.2)	0.008 (0.6)
Operation Cycle (in days)	331/660 (10.5***)	-14.018 (0.9)	-36.977 (84991***)	201/418 (8.7***)	-31.788 (2.2**)	-36.977 (36770***)	130/242 (5.8***)	15.553 (0.5)	-36.720 (10235***)	-47.341 (1.4)	-0.257 (0.8)
Operating Leverage	360/450 (3.2***)	-0.584 (3.8***)	-0.124 (24069***)	227/264 (1.7**)	-0.620 (3.2***)	-0.091 (8759***)	133/186 (3.0***)	-0.529 (2.1**)	-0.146 (3772**)	-0.092 (0.3)	0.056 (0.3)
Panel B. Capital Structure and Solvency											
Cash/Total Liabilities	517/495 (0.7)	-0.004 (0.4)	0.004 (2562)	300/322 (0.9)	-0.025 (2.2**)	-0.006 (5352)	217/173 (2.2***)	0.029 (2.2**)	0.018 (4353*)	-0.054 (3.1***)	-0.024 (2.3**)
Debt Ratio	686/326 (11.3***)	0.078 (13.2***)	0.072 (117747***)	445/185 (10.4***)	0.097 (13.1***)	0.083 (55369***)	241/141 (5.1***)	0.047 (4.9***)	0.053 (10813***)	0.049 (4.1***)	0.030 (3.6***)
Current Ratio	378/634 (8.0***)	-0.228 (6.5***)	-0.149 (73164***)	207/415 (8.3***)	-0.293 (6.6***)	-0.174 (35081***)	171/219 (2.4***)	-0.124 (2.2***)	-0.080 (6378***)	-0.170 (2.3**)	-0.094 (2.4**)
Financial Leverage	423/387 (1.3*)	-0.006 (0.1)	0.022 (6585)	254/232 (1.0)	0.083 (1.1)	0.021 (4327)	169/155 (0.8)	-0.139 (1.2)	0.023 (297)	0.221 (1.6*)	-0.002 (0.9)

Table 6. Statistics on Corporate Governance and Dividend Payout

This table reports the statistics on corporate governance activities and dividend payout. For each variable, the top number represents the number of firms involved. The bottom number represents the percentage of firms in the group involved.

	Before				After				Chg. In
	Full	SOE	Non-SOE	SOE - non-SOE	Full	SOE	Non-SOE	SOE - non-SOE	Diff.
Panel A. Corporate Governance									
Related-party	448	303	145	158	367	239	128	111	-47
Transactions	43.4%	47.9%	36.3%	11.5%	35.6%	37.8%	32.1%	5.7%	-5.8%
Related-party Trans.	307	203	104	99	247	162	85	77	-22
w/t Large Holders	29.7%	32.1%	26.1%	6.0%	23.9%	25.6%	21.3%	4.3%	-1.7%
Large Shareholder	437	279	158	121	171	126	45	81	-40
Borrowing (%)	42.3%	44.1%	39.6%	4.5%	16.6%	19.9%	11.3%	8.6%	4.2%
Management	695	428	267	161	570	363	207	156	-5
Shareholding	67.3%	67.6%	66.9%	0.7%	55.2%	57.3%	51.9%	5.5%	4.8%
Panel B. Dividend Policy									
Cash Dividend	532	360	172	188	484	335	149	186	-2
Payout	51.6%	56.9%	43.1%	13.8%	46.9%	52.9%	37.3%	15.6%	1.8%

Table 7. Changes in Corporate Governance and Dividend Payout

This table reports changes in corporate governance and dividend payout. For related-party transaction, the median ratio of transaction amount to operating revenue is reported. For large shareholder borrowing, the median ratio of loan value to operating revenue is reported. For management shareholding, the median ratio of shares held by management to total number of shares outstanding is reported. The signed rank test is applied to test the statistical significance of the medians. The Wilcoxon z-test is applied to test the significance of the changes in medians.

	Before				After				Diff. for
	Full	SOE	Non-SOE	SOE - non-SOE	Full	SOE	Non-SOE	SOE - non-SOE	Full Sample
Panel A. Corporate Governance									
Related-party	6.921	5.538	11.490	-5.952	7.158	6.120	9.401	-3.281	0.801
Transaction (%)	(50288***)	(23028***)	(5293***)	(3.9***)	(33764***)	(14340***)	(4128***)	(2.0**)	(0.3)
Related-party Trans.	5.805	5.538	7.277	-1.739	7.363	6.621	9.360	-2.739	1.558
with L. Shareholders	(23639***)	(10353***)	(2730***)	(1.5)	(15314***)	(6602***)	(1828***)	(1.3)	(1.3)
Large Shareholder	1.112	1.056	1.250	-0.194	0.113	0.097	0.249	-0.152	-0.999
Borrowing (%)	(47852***)	(19530***)	(6281***)	(0.4)	(7353***)	(4001***)	(518***)	(1.6*)	(7.8***)
Management	0.018	0.016	0.022	-0.006	0.011	0.009	0.018	-0.009	-0.007
Shareholding (%)	(120930***)	(45903***)	(17889***)	(3.2***)	(81368***)	(33033***)	(10764***)	(4.4***)	(3.4***)
Herfindahl Index of	0.201	0.253	0.141	0.112	0.128	0.162	0.092	0.007	-0.073
Top10 Shareholders*	(199585***)	(74666***)	(30189***)	(8.9***)	(266514***)	(100331***)	(39900***)	(8.7***)	(12.2***)
Panel B. Dividend Policy									
Dividend Payout	49.180	49.058	50.000	-0.942	32.258	32.895	29.412	3.483	-16.922
Ratio (%)	(70889***)	(32490***)	(7439***)	(0.4)	(58685***)	(28140***)	(5588***)	(0.7)	(7.4***)
Dividend Yield (%)	1.406	1.406	1.406	0.000	0.764	0.781	0.757	0.024	-0.642
	(73848***)	(33398***)	(7966***)	(0.1)	(63378***)	(30538***)	(5968***)	(1.3)	(9.4***)

Table 8. Tests on Changes in Operating Revenue for Groups

This table reports the results of the Wilcoxon tests on operating revenue for sub-groups. The sample was winsorized at 1 percent, and its size reduces to 1,012 firms. The Wilcoxon z-tests is applied to test for any significant changes in the medians of paired observations, and for any significant differences in the changes between two groups. The proportion z-test is applied to test whether the proportion of positive (negative) changes is greater than 50% if the odd is greater (less) than 1. *, **, *** represent the 10%, 5% and 1% significance levels, respectively.

Sample	Obs.	Before		After		Change		Wilcoxon Test		Increase %>=50%?	
		Mean	Median	Mean	Median	Mean	Median	Paired Observation	Between Groups	Odds	Z-stat
Full Sample	1012	1.3084	0.6390	2.9168	1.1462	1.6083	0.4332	175550***		769/243	16.53***
Non-SOEs	397	0.8613	0.4499	1.7122	0.7378	0.8509	0.2511	22792.5***	5.66***	278/119	7.98***
SOEs	615	1.5970	0.8054	3.6943	1.4629	2.0973	0.5748	70365***		491/124	14.8***
Shenzhen Listed	385	1.2702	0.6348	2.7822	1.1493	1.5120	0.4331	26084.5***	0.0284	290/ 95	9.94***
Shanghai Listed	627	1.3319	0.6391	2.9994	1.1432	1.6675	0.4341	66379***		479/148	13.22***
Unregulated	929	1.3231	0.6330	2.9354	1.1154	1.6123	0.4273	146955.5***	0.9340	703/226	15.65***
Regulated	83	1.1439	0.7647	2.7080	1.3890	1.5641	0.5095	1275***		66/ 17	5.38***
With Foreign Shares	946	1.2371	0.6237	2.7573	1.1042	1.5202	0.4254	153515.5***	1.1271	721/225	16.13***
Without Foreign Shares	66	2.3301	1.0812	5.2016	1.8293	2.8715	0.6323	752.5***		48/ 18	3.69***
Not Cross-listed in Hong Kong	993	1.2502	0.6306	2.7657	1.1142	1.5155	0.4247	168034.5***	3.05***	753/240	16.28***
Cross-listed in Hong Kong	19	4.3493	2.8068	10.8117	5.3943	6.4624	2.5876	84***		16/ 3	2.98***
Issued B-shares	943	1.2305	0.6119	2.7965	1.1142	1.5660	0.4341	156000***	0.4254	723/220	16.38***
Not issued B-shares	69	2.3730	1.3682	4.5601	1.4298	2.1871	0.3988	610.5***		46/ 23	2.77***
Tradable Shareholders Control	182	1.4524	0.8551	3.0018	1.2926	1.5494	0.4337	5959.5***	0.9002	142/ 40	7.56***
Non-tradable Shareholders Control	830	1.2768	0.6083	2.8981	1.1042	1.6213	0.4279	116875.5***		627/203	14.72***

Table 9. The Effect of Privatization

This table reports SOEs' improvements in operating revenue three years before and after the Split-share Structure Reform. The effect of privatization is measured as SOEs operating revenue improvement minus the median changes in the operating revenues of the non-SOE benchmark portfolios matched to the SOEs by size and industry, or by size and book-to-market ratio, respectively. The results of the Wilcoxon signed rank tests are reported in the brackets. *, **, *** represent the 10%, 5% and 1% significance levels, respectively.

	Improvement for SOEs	Privatization Effect-Size x Industry	Privatization Effect-Size x B/M Ratio
Full Sample	0.836	0.063	0.032
	(77858***)	(19011***)	(16796***)
Size Decile 1	0.679	0.301	0.196
	(1324***)	(808***)	(1614***)
Size Decile 2	0.600	-0.269	-0.431
	(2323***)	(612*)	(626*)
Size Decile 3	0.689	0.098	0.323
	(2858***)	(1130***)	(1746***)
Size Decile 4	0.595	-0.170	-0.014
	(3556***)	(116)	(917**)
Size Decile 5	1.636	0.480	0.042
	(623***)	(2545***)	(892)
B/M Decile 1	1.315	0.293	0.440
	(2007***)	(861***)	(967***)
B/M Decile 2	0.838	0.070	-0.169
	(3381***)	(1061***)	(292)
B/M Decile 3	0.888	0.238	-0.108
	(3790***)	(1296***)	(161)
B/M Decile 4	0.631	-0.083	0.064
	(3333***)	(218)	(1057**)
B/M Decile 5	0.688	-0.118	0.054
	(3257***)	(244)	(770*)
Utilities	0.934	0.921	0.085
	(1024***)	(789***)	(191)
Real Estate	0.958	-0.477	0.340
	(190***)	(2)	(70)
Comprehensive	1.108	0.606	0.272
	(1619***)	(996***)	(629***)
Manufacturing	0.777	-0.129	-0.029
	(28917***)	(1943)	(5605***)
Commercial	0.599	0.064	0.006
	(534***)	(78)	(32)

Table 10. Change in Operating Revenue

This table reports the quantile regression results of the change in operating revenue for the full sample. The regression method follows that in Koenker and Bassett (1978) to allow for accurate estimation of coefficients without imposing normal distribution assumptions on the dependent variable and residual. The ordinary least square (OLS) regression results reported for reference. The data are winsorized at 1 and 99 percentiles for OLS regressions. The t-statistics are reported in the brackets. *, **, *** represent significance levels of 10%, 5% and 1%, respectively.

	（A） 25% Quantile	（B） 50% Quantile	（C） 75% Quantile	（D） OLS
No. of Obs.	1032	1032	1032	1002
Intercept	-160.83	-170.45	-263.58*	-214.34
	(3.7***)	(2.9***)	(3.1***)	(2.2**)
SOE Dummy	17.87	20.95	17.49	27.90
	(2.3**)	(2.3**)	(1.0)	(1.7*)
Non-tradable/Tradable Ratio	-0.10	-0.07	-0.11	-0.11
	(2.2**)	(1.0)	(0.9)	(1.1)
Consideration	-0.63	-1.00	-1.62	-1.21
	(5.6***)	(4.5***)	(4.9***)	(3.1***)
Approval Rate	1.22	1.79	4.04	3.41
	(2.6***)	(2.8***)	(4.1***)	(3.2***)
Log (Market Cap.)	28.43	35.13	36.71	22.87
	(5.7***)	(5.6***)	(3.3***)	(2.3**)
Regulated Industry Dummy	-1.96	21.48	33.43	22.01
	(0.1)	(1.3)	(1.0)	(0.8)
H-share Dummy	12.99	-8.62	-90.24	-21.92
	(0.3)	(0.4)	(1.6)	(0.5)
B-share Dummy	-36.06	-67.06	-50.85	-45.04
	(2.7***)	(3.2***)	(1.2)	(1.4)
Exchange Dummy	0.74	4.23	18.01	-2.00
	(0.1))	(0.5)	(1.1)	(0.1)
Year Dummy 2005	102.45	127.30	209.95	145.75
	(5.8***)	(6.0***)	(5.1***)	(4.3***)
Year Dummy 2006	36.26	26.76*	25.03	8.13
	(2.9***)	(1.9)	(0.7)	(0.3)
Wald Test for SOE Dummy	6.05***	6.59***	0.97	F-statistic =6.0*** Adj. R^2=6.91%

Table 11. Change in Operating Revenue for SOEs

This table reports the regression results of change in operating revenue for SOEs. The columns in part (A) report the results of the changes in operating revenues for SOEs adjusted by the median changes in operating revenues for the non-SOE portfolios matched by size and industry. The columns in part (B) report the results of the changes in operating revenues for SOEs adjusted by the median changes in operating revenues of the non-SOE portfolios matched by size and book-to-market ratio. The t-statistics are reported in the brackets. *, **, *** represent significance levels of 10%, 5% and 1%, respectively.

	（A）Size-industry adjusted %				（B）Size-book/market adjusted %			
	25% Quantile	50% Quantile	75% Quantile	OLS[(a)]	25% Quantile	50% Quantile	75% Quantile	OLS[(a)]
Observations	624	624	624	606	624	624	624	606
Intercept	-140.81	-84.08	-110.89	-159.18	-140.81	-80.08	-110.89	-154.14
	(2.1**)	(1.0)	(0.9)	(1.4)	(2.1**)	(1.0)	(0.8)	(1.4)
Non-tradable/Tradable Ratio	-0.22	-0.28	-0.37	-0.34	-0.22	-0.28	-0.37	-0.30
	(4.7***)	(2.9***)	(2.6***)	(3.2***)	(4.5***)	(3.2***)	(2.6***)	(2.7***)
Consideration	-0.47	-0.95	-1.75	-1.50	-0.47	-0.95	-1.75	-1.43
	(1.9*)	(2.7***)	(4.7***)	(3.0***)	(2.1**)	(2.4**)	(4.2***)	(2.9***)
Approval Rate	0.90	1.22	2.58	2.59	0.90	1.22	2.58	2.42
	(1.3)	(1.2)	(1.7*)	(2.2**)	(1.2)	(1.2)	(1.7)	(2.0**))
Log (Market Capital)	14.13	10.60	28.68	9.87	14.13	10.60	28.68	6.27
	(2.2**)	(1.3)	(2.0**)	(0.9)	(2.0**)	(1.4)	(1.9*)	(0.6)
Regulated Industry Dummy	20.40	41.89	67.78	45.53	20.40	41.89	67.78	41.54
	(1.0)	(1.2)	(1.2)	(1.6)	(1.0)	(1.3)	(1.2)	(1.4)
H-share Dummy	41.14	1.29	-72.81	-21.90	41.14	1.29	-72.81	-55.95
	(0.9)	(0.0)	(1.1)	(0.6)	(1.0)	(0.0)	(1.2)	(1.2)
B-share Dummy	-79.75	-94.12	-82.16	-82.39	-79.75	-94.12	-82.16	-58.88
	(4.1***)	(4.0***)	(1.6)	(2.5**)	(4.3***)	(4.1***)	(1.5)	(1.8*)
Exchange Dummy	-5.82	9.05	25.18	-3.83	-5.82	9.05	25.18	0.65
	(0.6)	(0.6)	(1.1)	(0.2)	(0.5)	(0.7)	(1.2)	(0.0)
Year dummy 2005	97.50	130.70	253.28	135.58	97.50	130.70	253.28	143.02
	(3.3***)	(3.0***)	(4.5***)	(3.4***)	(3.5***)	(3.1***)	(4.8***)	(3.5***)
Year dummy 2006	30.98	35.86	50.25	32.44	30.98	35.86	50.25	55.56
	(1.5)	(1.3)	(1.3)	(1.0)	(1.3)	(1.3)	(1.4)	(1.4)
Wald Test for Size	4.21**	1.86	3.81**	F-stat=6.05***	4.03**	1.52	3.36*	F-stat=3.72***
Wald Test for Consideration	4.15**	5.23**	21.9***	Adj. R^2= 10.47%	4.41**	6.99**	17.3***	Adj. R^2=5.93%
Wald Test for Approval	4.25**	1.25	2.95*		1.53	1.35	2.75	
Wald Test for Non-tradable/T Ratio	4.71**	8.96***	6.77***		20.3***	10.4***	6.80***	

Table 12. Post-Reform Sales of State-owned Shares

This table summarizes the post-lockup sales of state-owned shares as of October 2011 in Panel A. The two-tail t-test is applied to examine the statistical significance of the variables. Panel B reports the Pearson correlations between the sales and SOE operating revenue growth. *, **, *** represent significance levels of 10%, 5% and 1%, respectively.

Panel A Summary of Actual Post-Reform Sales of State Shares

Industry	Obs.	Number (Percent) of Firms Sold State Shares	Avg. Number of Sales for Each Firm	Avg. Shares Sold for Each Firm (in millions)	Avg. Shares Sold/ Owned for Each Firm (%)	Avg. Shares Sold/ Share Outstanding for Each Firm (%)	Percent of State Shareholders Involved
Full Sample	633	160 (25.3%)	1.16 (9.0***)	5.13 (9.6***)	2.95 (5.8***)	0.44 (11.0***)	31% (12.7***)
Utilities	69	10 (14.5%)	0.64 (2.6***)	3.69 (2.7***)	2.66 (1.7*)	0.25 (2.5***)	20% (3.0***)
Real Estate	31	8 (25.8%)	0.68 (2.4**)	4.72 (2.4**)	1.24 (2.4**)	0.59 (2.1**)	26% (3.2***)
Comprehensive	87	25 (28.7%)	1.22 (4.5***)	4.87 (4.7***)	2.32 (3.2***)	0.47 (5.4***)	38% (4.9***)
Manufacturing	394	108 (27.4%)	1.36 （7.2***）	5.94 (7.7***)	3.01 (5.0***)	0.46 (9.3***)	33% (10.6***)
Commercial	52	9 (17.3%)	0.48 (2.4**)	1.53 (2.6***)	4.91 (1.4)	0.34 (2.3**)	19% (3.1***)

Panel B Correlation Between Changes in Real Revenue and Sales of State Shares

	Number of Firms Sold State Shares	Avg. Shares Sold for Each Firm (in millions)	Avg. Shares Sold/ Owned for Each Firm (%)	Avg. Shares Sold/ Share Outstanding for Each Firm (%)	Percent of State Shareholders Involved
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-B/M Ratio Adjusted	-0.09**	-0.11***	0.00	-0.08*	-0.10***

Figure 1. Timeline of a Typical Privatization Process

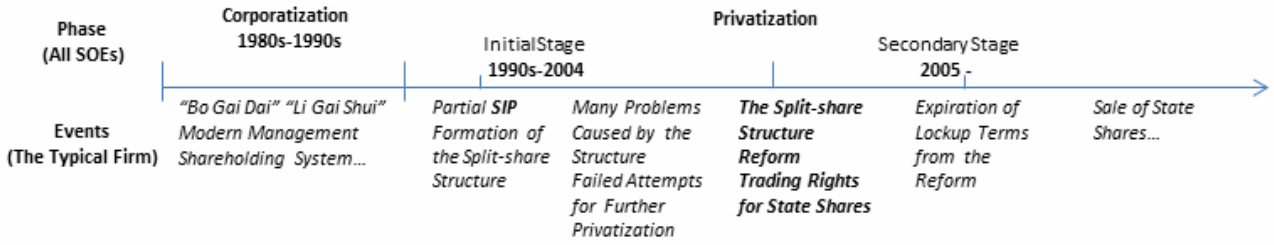


Figure 2. Coefficient Estimation for the SOE Dummy in the Operating Revenue Regressions for Different Quintiles.

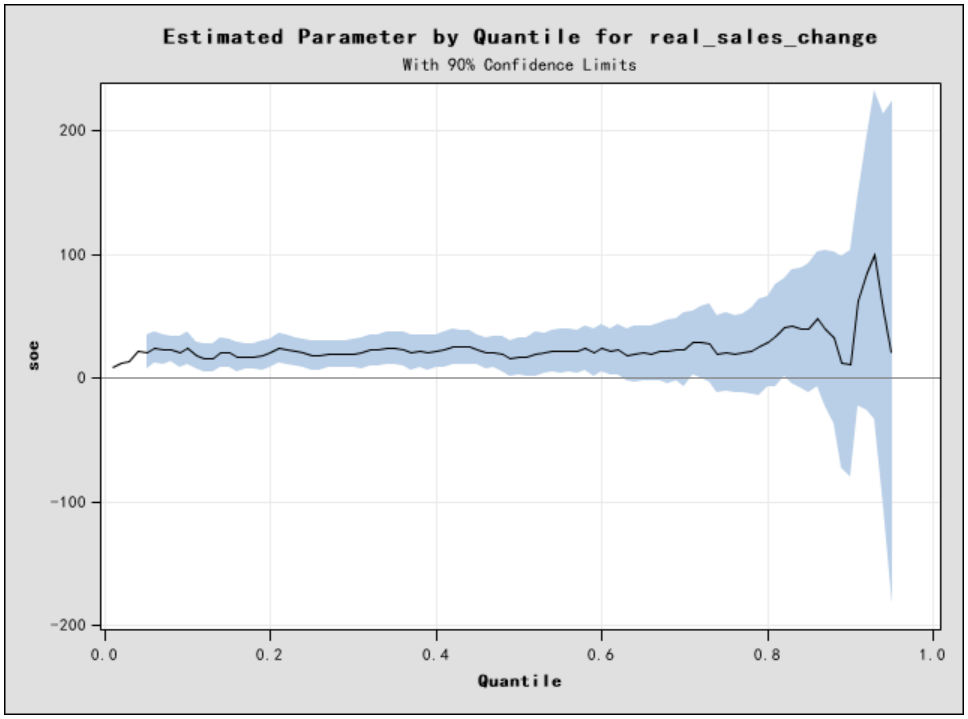
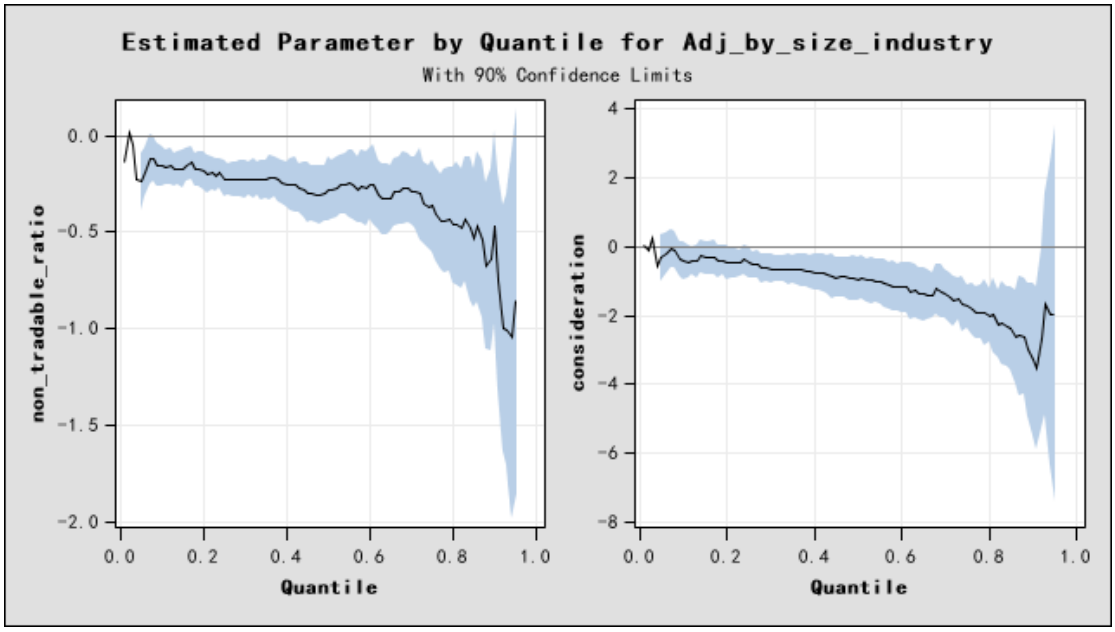
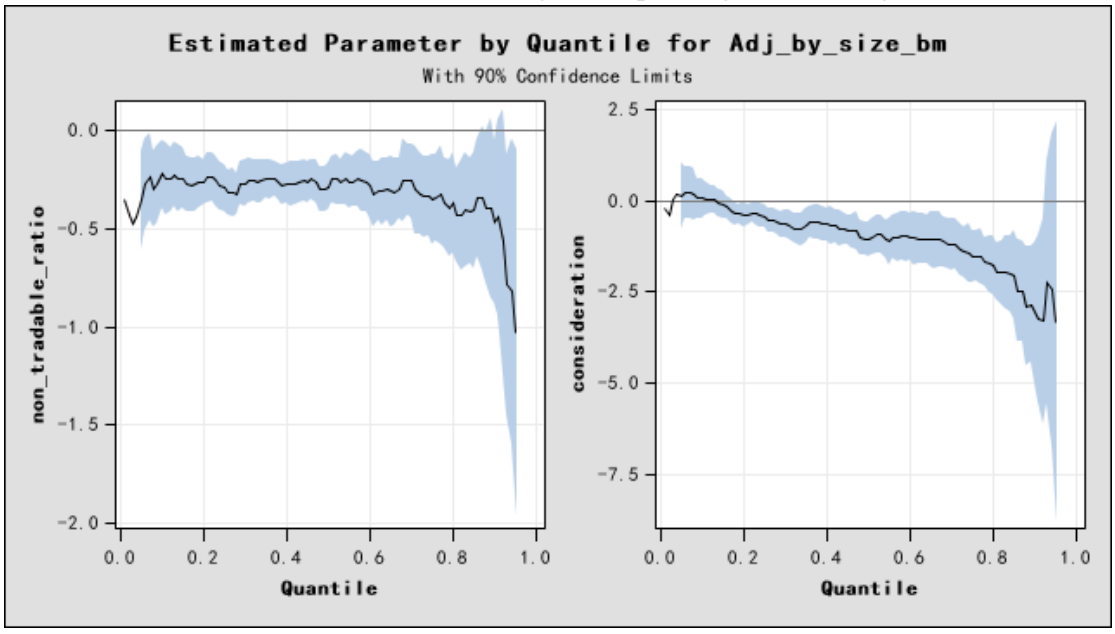


Figure 3. Coefficient Estimation for Non-tradable/Tradable Share Ratio and Consideration Value for Different Quintiles.

A. For Size-Industry Adjusted Operating Revenue Regressions



B. For Size-Book/Market Ratio Adjusted Operating Revenue Regressions