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Ekonomihögskolan

# **The Stock-based Compensation Programs of Chinese Listed Firms: Determinants and Performance**

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## List of Abbreviations

<b>BODs</b>	<b>Board of Directors</b>
<b>BOSs</b>	<b>Board of Supervisors</b>
<b>CARs</b>	<b>Cumulative Abnormal Stock Return</b>
<b>CCP</b>	<b>China Communist Party</b>
<b>CSRC</b>	<b>China Securities Regulatory Commission</b>
<b>FASB</b>	<b>Financial Accounting Standards Board</b>
<b>GEM</b>	<b>Growth Enterprises Market</b>
<b>GMS</b>	<b>General Meetings of Shareholders</b>
<b>IPO</b>	<b>Initial Public Offering</b>
<b>ROA</b>	<b>Return On Asset</b>
<b>ROE</b>	<b>Return On Equity</b>
<b>PB</b>	<b>Price-to-Book ratio</b>
<b>PE</b>	<b>Price-to-Earnings ratio</b>
<b>SAR</b>	<b>Stock Appreciation Rights</b>
<b>SASAC</b>	<b>State-Owned Assets Supervision and Administration Commission of State Council</b>
<b>SBC</b>	<b>Stock-Based Compensation Financial</b>
<b>SOEs</b>	<b>State-Owned Enterprises</b>

# The Stock-Based Compensation Programs of Chinese Listed Firms: Determinants and Performance

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## **Abstract:**

The author analyzes the determinants of stock-based compensation in Chinese listed firms and subsequent performance within these firms. My study shows that non-tradable reforms changed the managerial objectives from accounting profit to market performance. The subsequent stock-based incentives in managers have induced measurable changes in behavior at the enterprise level. With regard to the subsequent agency problems in these firms, my study shows that, in addition to the general governance inefficiency, the unique institutional characteristics in Chinese listed firms are also responsible for the agency problems.

**Key words:** Stock-based compensation, non-tradable reforms, state ownership, small-cap firms

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## **I. Introduction**

### **I.1 General motivation**

One of the key ingredients in the economic modernization of China is the corporatization of State Owned Enterprises (SOEs). Following the Chinese corporatization reforms, managers have been given more discretion in making business decisions. They strive to maximize profitability and managerial decisions and policies are directed towards this objective. Benefits of such reforms also came from better methods of selecting managers and from linking managers' pay and career prospects to their firms' performance (Theodore et al., 1994). The form of managers' compensations has been transferred from cash or bonus into more advanced and long-term types of stock-based compensation.

The stock-based compensation program (SBC) adopted by public firms yielded unprecedented gains for senior managers. However, many executive scandals were

reported shortly after the programs were executed. Such scandals include that the firm's accounting performance increased abruptly shortly after the SBC programs has been adopted;<sup>1</sup> that shortly after the senior managers had exercised the option and after the firms had accrued awarding funds, the firms' profit dropped abruptly;<sup>2</sup> that the supervisor illegally voted for the compensation program in the board committee;<sup>3</sup> that senior managers heavily sold the firms' stocks shortly after the restricting period.<sup>4</sup>The above behaviors of managers make the compensation program less effective and, even worse, ruined the interest of shareholders in accounting treatment. All these disputable cases attracted a great deal of public attention to a fundamental question: what factors influence the firms' implementation of SBC programs, and did the SBC programs successfully stimulate better execution of senior managers?

To date, there has been no detailed analysis of the determinants and subsequent performance of SBC programs of Chinese listed firms, so I help to fill this void in the literature by examining SBC programs. This study is to explore what factors, in terms of institutional structure and governance characters, shape the landscape of the SBC programs, and the subsequent outcomes of the program.

This study has advantages over prior research because of its comprehensive and recent sample. Along with results for a comprehensive set of explanatory variables from a large recent data set, my study contributes to the literature new dependent variables for measuring the determinants and performance provided by SBC programs.

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<sup>1</sup> The earliest disputable case was reported in a real estate firm (stock symbol: 000006).The firm have its stock option executed at the November of 2005. The firm's ROA totals 2.38% in the first 3 quarters, then it jumped to 10.01% at the end of 2005.See China Economic Time, 29th Nov, 2006.

<sup>2</sup> In the beginning of 2008, a milk beverage firm (stock symbol: 600887) in its annual report announced a deficit. The deficit was directly induced by accruing funds for SBC programs. Same case was also found in Hainan Haiyao (stock symbol: 000566)

<sup>3</sup> This case refers to the example of Qingdao Hai-er, a home appliance producer (stock symbol: 600690), had its supervisor voted for the compensation program. Supervisors' voting for compensation program is against the law.

<sup>4</sup> Yong You Ruan Jian, a software producer (stock symbol: 600588) has 7 senior managers sold the awarding stock within one month after option granted. See Shanghai Securities news, 12th Nov, 2009.Same case was also reported in Dongbai Group (stock symbol: 600693). There is no official statistics of when the managers sold the stock at open market after the options or the stocks were granted. However, based on the regulations launched by CSRC, the enforced restricting period should be more than 6 months. The maximum proportion of awarding stocks that can be sold within a single year is 20%.

## **I.2 Method**

The motivation of this paper is based on anecdotal evidence; however, econometric empirical works are applied to make this study solidly based. The study is a static analysis based on panel data. The sample of this study contains 1692 company level observations from all industries for a 5-year time period from 2005 to 2009. Since the determinants of SBC programs will lead either to a choice to adopt the program or a choice not to adopt, exploring the determinants is a discrete choice problem which involves choices between two discrete alternatives. I therefore applied binary choice model, which had been applied by prior studies to explore the determinants of SBC programs. When exploring the subsequent performance of the listed firms after their adoptions of SBC programs, I relied on ordinary least squares estimations to test whether the adoption led to better executive performance or to rent-extracting behaviors of executives.

## **I.3 Potential limitations**

The available research on Chinese SBC programs is limited. One reason is that stock returns are a function of macro-events, which include sudden policy shifts by government to either stimulate or slow the economy, international trade disputes, and political crises. Policy influence on the stock market can be a significant difficulty for doing research. Other difficulties include limited market transparency. For example, the senior managers' turnover has proven to be quite high (Firth et al., 2002), which weakens and distorts the initial incentive of the program. However, the frequency of the turnover has not yet been comprehensively recorded, nor can the exact dates of the turnover of the senior managers be identified.<sup>5</sup> The limitation of information transparency restricted my study to the indirect measurement of subsequent performance of SBC programs.

It is noteworthy that, compared with manager-year observation data, the company level data does not permit analysis of how the SBC program is affected by recipients'

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<sup>5</sup> Generally, the SBC programs do not allow the recipients to sell the stock six months after resignation. It is not possible to trace exactly when the recipients sold their stocks and how much they had generated from the selling.

characteristics, such as age, stock ownership, and tenure. To test the determinants of SBC programs, I restrict my research to binary dependent variables that indicate whether the firms have adopted SBC programs. I do not take into account the frequency or compensation level under those programs.

The short time period of the dataset is also questionable. In order to measure the performance of SBC programs, lagged measures of performance over a certain time period are required. However, the subsequent performance record of sample firms have a short time period of only 4 years. The short sample period restricted my study to static analysis.

#### **I.4 Structure**

The remainder of this paper is organized into four sections. Section 2 is a brief outline of the history of SBC programs in China. In section 3, I review the prior empirical literature on agency problems, institutional approaches, profit management, and financial market theory. After the review of the literature, I then developed my own hypothesis of my research. The sample is described and variables are defined in Section 4, the hypothesis is tested also. In Section 5, a summary of test results are presented, along with the discussion. Section 6 presents a concluding statement.

## **II. The SBC programs in Chinese listed firms**

The first SBC program was executed the 18<sup>th</sup> of March, 2003. Dong-E E-Jiao, a medicine company in Shandong Province, announced that a certain amount of bonus was accrued in order to purchase stocks for its senior managers in the event that they meet certain requirements. This case can be regarded as a rudiment of stock option in Chinese stock market. In 2005, 47 list firms announced the intent of the program; a number of these programs have now been fully executed. There were also a number of programs that have been suspended or been postponed for different reasons. In 2006, 105 listed firms announced the intent of SBC programs. 45 out of the 105 firms were finally implemented by the end of June in 2010. From 2006 to 2009, there were a total number of 140 firms who had announced the program. This sample includes



those whose previous program were suspended or postponed. By now, 129 out of 260 firms who have announced the program are solely SOEs<sup>6</sup> or controlled by the state. The main regulator, the China Securities Regulatory Commission (CSRC), which is working as SEC in the U.S. and SFC in Hong Kong, subsequently issued a series of laws and regulations to smooth the procedure. International accounting standards have also been introduced to improve the accounting transparency.

## **II.1 The SBC programs**

The SBC programs is composed of stock options, stock appreciation rights (SAR), restricted stock and share repurchase. The stock options and restricted stock programs grant the managers the right to purchase stock at a pre-determined price level.<sup>7</sup> The difference between the two is the pricing method of the option (or stock).<sup>8</sup> The SAR enables the holder to receive the appreciation of the stock value over the exercise price. In contrast to stock option award and restricted stock award, the manager in a SAR program does not have to buy and resell the stock in the open market. In a stock repurchase program, the firms accrue a certain amount of funds in advance to purchase the awarding stock from both open market and treasury share pools. By this definition, the stock repurchase program reduces the number of outstanding stocks on the open market. In contrast, the stock option program is adopted by issuing new shares (including private offering of additional shares). This increases the number of outstanding shares. The SBC who take the form of stock repurchase have nothing to do with stock pricing.

Generally, a SBC program vests only after a specified period, which ensures that the recipients cannot leave with the underlying shares without first serving the company for a specified period. Although a senior manager becomes entitled to the awarding once the vesting period is over, the majority firms generally do not award

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<sup>6</sup> SOEs: State-owned enterprise.

<sup>7</sup> The price can be adjusted downward in the following cases: stock split, dividends distribute , issuing new shares.

<sup>8</sup> The fair value of stock options can be calculated by one of the following methods: first, the higher price of the following two-average market price in the last 30 working days before announcement day, the close market price of the last working day before announcement day; second, the Black-Scholes model. The fair value of purchasing stock in a SAR and restricted stock differs from case to case. It can be the asset value per share or apply the same methods from pricing of stock option.

the SBC all at once, but rather evenly split the total SBC into several rounds. In practice, the SBC is awarded round after round evenly throughout the whole awarding period. This procedure can last from a minimum of 1 year to a maximum of 10 years. The average length of SBC programs is around 5 years.<sup>9</sup>

The managers can cash out in the open market after the market value of the stock had increased. The bigger the difference between market price and exercise price, the more managers can benefit from awarding. This is why the SBC program is regarded as an effective way of improving the managers' performance since it ties the managers' wealth with that of the company. The table 1 summarizes the forms that SBC programs take, with the statistics of resources of awarding shares presented in the rows.

Table 1: Statistics of stock resources of SBC programs.

<b>Stocks resources for SBC</b>	<b>Treasury stocks</b>	<b>Issue new stock</b>	<b>Repurchase</b>	<b>Not defined</b>	<b>Total</b>
Stock options	5	110	0	0	115
SAR	3	0	0	2	5
Mixture of share repurchase and restricted shares	15	0	0	0	15
Share repurchase	0	0	1	10	11
Not defined	16	0	1	65	82
Restricted shares	4	15	10	1	30
Total	43	125	12	78	258

Sources: Gildata.

## **II.2 Financial reporting treatments for stock option and restricted stock**

The accounting treatment employed for SBC programs deserves mention as well. The absolute difference between the exercise price (of the option or restricted stock) and the fair market value of the firms' stock on the measurement date determines the compensation expense of the company.<sup>10</sup> In other words, once the managers have exercised the options, the firms bear the "accounting penalties" (Yermack, 1997). Set

<sup>9</sup> The statistics is calculated based on Gildata. See also the Appendix D.

<sup>10</sup> The measurement date is defined as the first date when both the exercise price and the number of shares awarded have been determined, which is often the date of grant.

stock option for example, if the exercise price is lower than the fair market value of the underlying stock, the option is regarded as “in-the-money”.<sup>11</sup> When the option is “in-the-money”, the difference between the exercise price of the option and the fair market value is simultaneously recorded as management fees on the income sheet and negative capital surplus on the balance sheet. In case that the option is “out-of-money”, the company does not recognize any compensation expense over the life of the option. The accounting treatment for restricted stock is quite similar to that of the stock option. A SAR program, similar to stock options (or a restricted stock), allows the recipients to realize the gains of the stock appreciation. This will generally reduce reported income of the listed firms also.

The firm records a negative capital surplus for the SBC programs at the end of each fiscal year to reflect the appreciation in stock price from the date of awarding.<sup>12</sup> The change in the management fees as well as the change in the capital surplus increases or decreases reported income and retained earnings, respectively. As a result, the price appreciation generally has an inverse effect on both annual earnings and shareholders’ equity. Such “accounting penalties” are not against the purpose of SBC programs; if the market value of the firms successfully increased to a level that is large enough to offset the “accounting penalties”, the program provides mutual benefit. Because of the existence of accounting penalties, the firms need an optimally designed compensation program that will lead to stronger incentives for subsequent performance rather than the possible rent-seeking behaviors.

### **III .Literature review and hypotheses**

#### **III.1 Institutional background**

The SBC programs, which is a newly-introduced concept applied in listed SOEs shows the governments’ intent of addressing incentive problems of listed SOEs, and

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<sup>11</sup> Also regarded as “at-the-money”.

<sup>12</sup> See “Accounting Standard for Business Enterprises “No. 11 - Share-based payment. FASB123R issued in 2005 also requires the option grants must be recorded as expense on income statement. The vesting period of the stock compensation varies from case to case , depending on the duration of compensation program. In countries where FASB is applied, the accounting standards recommend that market value of the option at the granting date should be recognized over the vesting period.

inculcating modern business practices in the minds of managers. The SBC program is unfeasible in a not-corporatized firm. The institutional prerequisites of a corporatized firm can be summarized as follows: first, in any decision-making process, the shareholders interest must be given the highest priority; second, the manager has the autonomy to serve the interest of shareholders; third, the stock owner is granted with the right to claim his or her interest over the stocks they hold. The above prerequisites might not be questionable in a capitalist economy, but China still differs from other capitalist economies in ownership structure and corporate governance. The following factors need to be considered in order to grasp the reality of corporatization and financial market development in China.

The Chinese listed companies are generally regarded as the incarnation of capitalist ownership and were propagated by government as the role-model of China's evolving modern enterprise system (Oppen et al., 2002). In spite of the fact that the government regularly emphasized its will to increase enterprise autonomy, it was unwilling to give up ownership rights even years after corporatization reform. The State, legal entities, and 'parent' SOEs used to retain sufficient shares so as to maintain voting control. For the firms that were 'carve-outs' from SOEs, the managers were not granted with enough autonomy (Goodman, 2000). In many cases it is the State, local, city, or regional government that has the controlling share stake. The original intent of Chinese Company Law<sup>13</sup> was to institutionalize a corporate governance structure modeled according to modern business corporation. But with regard to maintaining the government's dominant status within the enterprises, the Law remains vague and provides a certain leeway to continue the government's involvement and interventionist activities. The 15th CCP National Congress in 1998 stressed the party's unquestioned core leadership. Official statements from various members of China's top political leadership reinforce that a continuation of party involvement at the enterprise level is highly appreciated. Until the early 2000s, more than half of the listed Chinese firms have a dominant shareholder that helps shape the strategies and policies of the company. The dominant shareholder can exercise substantial control

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<sup>13</sup> See The Chinese Company Law, the 1<sup>st</sup> July 1994.

over a company by way of board representation as well as through voting rights (See Firth et al., 2006; Opper et al., 2002).

Despite an auspicious beginning through the creation of corporatized enterprises and an efficient financial market, however, this procedure was deeply flawed. While the initial adoption of corporatization in favor of creating an efficient capital market was an economically wise strategy, the government's conservative response to solving the problems associated with scarce capital resources-through its insistence on maintaining rigid political control over the resources-has created an inefficient capital market. Before 2000, listing at the domestic stock exchanges had been strictly controlled by the government through a quota system. It was the local government and line ministries who decided which enterprises would be listed (Opper et al., 2002). Prior to the non-tradable reform, within the listed Chinese firms who have private capital drawn into them, the government ensured their predominant status through transfer regulations that prohibit trading in state and legal person shares. The transfer regulations categorized the shares of listed firms into three major classes: state shares, legal entity shares, and private shares. State-owned shares are held by agencies such as the state asset management bureaus and local finance bureaus. Bureaucrats in the government agencies are prohibited from direct involvement in running the firms (Cao, 2000). These agencies do not have cash flow rights from the shares they hold. Given that the non-tradable stocks are of controlling status within the listed firms, and tradable shares are usually held by investors who have individually small stakes, Xu (2003) argues that SOEs will be less concerned about the stock market value of their investments because any transfer of their shares needs the approval of the central authorities and the transfer price is at book value or a small premium to book value.

The restructuring of the financial market took place in May 2004, when small-cap exchange was established as a composition of Shenzhen exchanges. The small-cap companies, in contrast with micro-cap companies, are those who do not meet the normal standard of IPO<sup>14</sup> and have a market capitalization less than 100 million Yuan. The growth enterprises market (GEM) was established on 31<sup>st</sup> March

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<sup>14</sup> IPO: initial public offering

2009, where small, newly-established enterprises with high growth opportunities can be listed and traded in the domestic stock market.<sup>15</sup> From then on, the micro-cap along with small-cap and GEM make all qualified Chinese enterprises, regardless of the type of ownership, able to get access to financial resources. Within the small-cap companies, there are still a number of state shares that remain non-tradable; however, the proportion of non-tradable shares in small-cap companies is much smaller than that of micro-cap firms, which was less than 10 percent at the end of 2004. The new Company Law also simplified the liquidation of stocks of shareholders. The non-tradable reform was applied among the listed firms from 2005. It was initially applied among small-cap firms whose state shares made up only a small proportion of all shares outstanding. From then on, the state shares steadily became tradable among micro-cap firms in both Shenzhen and Shanghai Exchanges.<sup>16</sup> By the end of 2007, 1298 firms listed on domestic stock exchanges had either initiated or completed the process of non-tradable share reform. These accounted for 98 percent of the total listed firms who are subject to the reform.

In response to the financial market restructure and non-tradable reform, the Property Law, which was launched in 1<sup>st</sup> October 2007, regulated the right of State, collectives, legal person and individual over property. It also made specific regulation of their real rights over shares.<sup>17</sup> The new Chinese Company Law, which was launched on 1<sup>st</sup> January 2006, removed a certain government involvement in the enterprise level and granted the managers more autonomy in managerial decision-making. The 17<sup>th</sup> CCP National Congress in 2007 further stressed the government's will to speed up the securitization of state enterprises. Non-tradable share reform removed the legacy restrictions which have been long imposed on stock liquidation in the Chinese stock market;<sup>18</sup> with the newly-introduced Property Laws which protects the shareholders rights, it is reasonable for us to expect that the firms' value will no longer be remotely related to market prices. It is noteworthy that the government still provides a certain leeway to continue its involvement and interventionist activities. The new Chinese Company Law set aside an individual section for specific provisions on SOEs The SASAC (State-Owned Assets

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<sup>15</sup> Requirement for registered asset and market capitalization are 20 million and 30 million Yuan, respectively.

<sup>16</sup> It is the April 29th, 2005 that the CSRC launched the non-tradable share reform.

<sup>17</sup> See Property Law of the People's Republic of China, Section II.

<sup>18</sup> See Hu Jintao's report at 17th Party Congress: "We will deepen the reform to introduce the corporate and shareholding systems in state-owned enterprises..."

Supervision and Administration Commission of State Council), which works as delegate of the state, still keep its fingers in enterprise managerial decision-making with regard to asset restructuring and nomination of senior managers.<sup>19</sup>

### **III.2 Agency Problems<sup>20</sup> and Corporate Governance**

The purpose of compensation contracts is to align the interests of the agent (the manager) with that of the principal (the firm's shareholders or, more generally, security holders). It is known that principal-agent problems arise from the agent having superior information about his effort to ability than the principal. An optimally designed compensation contract can help to minimize the firm's incentive problem and to reduce agency cost.<sup>21</sup>

The choice of the form in which managers are to be compensated becomes a potentially important issue for shareholders; however, shareholders do not set executive compensation. They elect directors, who have the exclusive right under corporate law to manage the corporation. Among the most important of directors' tasks is to set the level and structure of the compensation of senior managers (Fama and Jensen, 1983). This raises the issue of how the composition of the board affects the structure of managers' compensation, in terms of compensation level, compensation forms and compensation incentives.

The relation between top executive compensation and board composition has been examined in many prior empirical papers, with mixed findings that a percentage of the board being composed of external directors can have either a positive or negative impact on the compensation level (Finkelstein and Hambrick, 1989). The top executive has a higher compensation level when they have appointed a greater proportion of the board (Lambert et al., 1993). The quality of the compensation committee has also proved to have great influence on the effects of stock-based compensation (Sun et al., 2009). Besides board structure studies, ownership studies

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<sup>19</sup> See Company Law of the People's Republic of China, chapter two, Section IV.

<sup>20</sup> Fama, Eugene Francis. 1980. "Agency Problems and the Theory of the Firm." *The Journal of Political Economy*. 88(2): 288-307.

<sup>21</sup> The agency costs include the sum of contracting costs, monitoring costs, other costs incurred in achieving a certain level of compliance with the principal's interest.

suggest that the senior managers' ownership also influence the firms' compensation decision. Theories based in agency have identified a low level of managerial stock ownership as a symptom of corporate agency problems (see Berle et al. 1932; Jensen and Meckling, 1976). Senior managers with small holdings of their firms' stock appear to be the best candidates for motivation by stock option awards.<sup>22</sup> Senior manager's compensation is lower when their ownership is higher and when there is an internal member on the board who own at least 5 percent of the shares. (Lambert et al., 1993); Core (1997) argues that senior managers' compensation is increasing in insider control of share votes and decreasing in insider ownership of share value. Other Agency Problem conjectures relative to SBC include the use of stock options as incentives for senior managers nearing retirement to motivate them to maintain high levels of investment (see Eaton & Rosen, 1983; Lewellen et al., 1987); that corporations facing internal liquidity problems prefer stock compensation over cash salaries and bonuses (Matsunaga, 1995); that large firms tend to use stock options, because monitoring difficulty increases with firm size.

Caution must be used here, as compensation can take various forms. It can be cash based (in terms of salary, bonus or dividend), or stock-based (in terms of stock option, restricted stock or bonus accruing). Since the purpose of compensation contracts is to align the manager with the firm's shareholders, Paul (1992) argues that in an efficient market, the best way to minimize the firm's incentive problem is to pay the manager with the firm's securities and thereby harness the security market's powerful ability to reduce information asymmetry.

The above research is based on the presumption that firms are corporatized; however, the institutional arrangement of governance is very special for solely SOEs. The prior studies do not adequately acknowledge the same incentives of Chinese senior managers. Based on the special provisions in the new Company Law, which was launched in 2006, the Chinese SOEs differ from other kinds of firms in the following areas: first, the articles of the firms shall be formed by the SASAC or shall

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<sup>22</sup> Yermack, David. 1995. "Do Corporations Award Stock Options Effectively?" *Journal of Financial Economics*, 39(2-3):237-269.



be drafted by the BODs<sup>23</sup> and then be reported to SASAC for approval; second, there is no GMS in these firms, and the rights of the GMS shall be exercised by the SASAC. The SASAC may authorize the BODs to exercise some of the functions of GMS except for important issues such as merger, split-up, dissolution or bankruptcy etc.; fourth, The BODs and BOSs<sup>24</sup> shall be designated by SASAC, except for the representatives of employees. Fifth, the BODs have the right to hire or dismiss the manager. They can also hold the post of manager with the consent of the SASAC. Sixth, the BODs are prohibited from holding a post in any other firms. Based on the summary above, we can come to the conclusion that the solely SOEs are far from corporatized, and their managers still lack autonomy in the decision-making process.

The state-controlled enterprises enjoy more autonomy than solely SOEs, however, the government still keeps its finger in the decision-making processes, especially for those decisions that are of great importance. Moreover, since unequal rights were given to the shareholders of state shares, legal person shares and tradable shares, the application of SBC programs may prove to be controversial because it includes the swift and unequivocal transfer of assets from publicly owned state enterprises to private hands. The SBC programs adopted in state controlled enterprises are strictly regulated by SASAC (see Appendix B).

Another prerequisite for SBC adoption is that the capital market is developed so the market value management is of great importance for shareholders. After the non-tradable reform, the controlling shareholders realize their cash flow rights over the shares they owned. The amount of compensation they can generate from the open market is closely related to the market value (or the stock price) of the firm. Based on recent statistics, at the end of June 2010, there are 733 listed firms that have 100 percent tradable shares. The proportion of tradable shares consists approximately 64 percent of the whole shares in the two exchanges.<sup>25</sup> The conjectures I applied from Xu (2003) need to be updated according to the temporary market circumstance; that is, the shareholders become more interested in the market value of the firm in case their

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<sup>23</sup> BODs: Board of Directors

<sup>24</sup> BOSs: Board of supervisors.

<sup>25</sup> This percentage is measured with regard to the trading volume. Resource: Gildata.

shares are tradable in the open market. In order to extend prior literature, I examine the non-tradable reform and its association with the incentive to provide managers with SBC. It is reasonable to develop the following hypothesis.<sup>26</sup>

**H1: Firms with comparatively larger proportion of non-tradable shares are more likely to adopt SBC programs.**

The evaluation of managers' executive quality, on the basis of which the compensation is adopted, needs to be clarified here. In particular, the high quality executive refers to both accounting earnings and market value of the firm. There is a large empirical literature documenting the extensive use of accounting earnings as a basis for senior managers' compensation (Lambert and Larcker, 1987; Jensen and Murphy, 1990). There is also empirical research suggesting that stock performance<sup>27</sup> should play a major role in determining management compensation (Paul, 1992; Jensen and Murphy, 1990). By nature, accounting earnings can help to reveal how much value the manager has added on the firm's assets. In contrast, the stock price reflects how much value the managers have added to shareholders' wealth. The accounting earnings measure, when applied as an indicator of managers' efforts, have long been criticized as containing a significant portion of relative noise. Empirical studies suggested that boards of directors should rely more on stock-based compensation.<sup>28</sup> The market performance measures, however, may subject the manager to additional risk by making his compensation a function of industry-specific and economy-wide shocks that are beyond his control (Paul, 1992). Yermack (1995) argues that firms in highly regulated industries are less likely to use stock-based compensation as a source of managerial incentives, since the reduced range of managerial discretion in these industries diminishes the consequences of

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<sup>26</sup> The code of Corporate Governance for Listed Firms in China (article 18, chapter 2) states that management should be selected on the basis of competition and compensation should include incentive pay.

<sup>27</sup> Also refers to market value of the firms

<sup>28</sup> Paul, Jonathan M. 1992. "On the Efficiency of Stock-Based Compensation." *The review of Financial Studies*, 5(3): 471-502.

good or bad decisions.<sup>29</sup> Smith and Watts identify the utility, banking, and insurances industries as being heavily regulated.<sup>30</sup> These comments include the idea that CEO compensation is more related to stock return-based performance variables when accounting performance measures have a relatively high level of relative noisiness.<sup>31</sup> To extend this literature, I examine how industry factor determines the Chinese listed firm's choice of stock performance as a source of managers' compensation. The hypothesis is developed as follows:

**H2: Firms from highly regulated industries are less likely to adopt stock compensation programs.**

### **III.3 The Managerial Power Approach**

Contrary to the Agency Problems theory, the managerial power approach argues that managers have the power to influence their own pay, and that they use that power to extract rents. The managerial power, if it exists, can make efforts of diminishing the agency cost less effective. Rent-extracting is behavior extracting earnings without any corresponding contribution towards the production of activities necessary to generate those earnings (Cao, 2000). In the large body of empirical work on executive compensation, some studies have found that managerial power and the desire to camouflage rents can explain significant features of executive compensation (Bebchuk et al., 2002). This approach is also proved by a handful of Fortune 500 firms reporting having senior managers who served as members of their own compensation committees (Cowan and Leigh, 1992). In practice, the way in which managerial power used to serve managers' interests is setting favorable principles in the compensation program.

One of the profit management behaviors that relates to stock option compensation

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<sup>29</sup> Yermack, David 1995. "Do Corporations Award Stock Options Effectively?" *Journal of Financial Economics*, 39(2-3):237-269.

<sup>30</sup> Smith, Clifford W., Jr. and Ross L. Watts. 1992. "The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies." *Journal of Financial Economics* 32(3): 263-292.

<sup>31</sup> Lambert, Richard A. and David F. Larcker. 1987. "An Analysis of the Use of Accounting and Market Measures of Performance in Executive Compensation Contracts." *Journal of Accounting Research* 25(1): 85-125.

can be called as “spring loading” or “bullet dodging”.<sup>32</sup> “Spring loading” refers to the behavior of releasing “good news” shortly after the options were granted in order to make the stock price bounce, while “bullet dodging” means postponing the awarding day until after the disclosure of “bad news”. In other words, the senior managers can persuade investors to “long” the stock by sending favorable signals into the market (Yermack 1997; Kong and Xiao, 2007). After the stock price has increased, the CARs become positive, which means the options are “in-the-money”, and the senior manager can “cash out” by exercising the options. It is not reasonable to conclude that the senior managers intend to issue the options when the stock price is low, but that there will be a desire to push exercise prices as far down as is possible without generating too much outrage (Yermack, 1997; Bebchuk et al., 2002). Another type of profit management is “backdating”. Even though exercise price of the stock option is carefully designed and is backed with both solid accounting and math theories,<sup>33</sup> in practice, the executives can manage to make the option be “in-the-money” by lowering the option price for some reason.<sup>34</sup> The majority of options are reset “in-the-money”, as resetting is proven to have a strong negative relation with firm performance. Economists also find that the sensitivity of the CEO's option portfolio to stock price is significantly positively related to the propensity to misreport.<sup>35</sup> The third type of profit management can be measured by “unexpected income”, which is the SSE (sum of squared error) of the regression between accrual based income and the difference of average cash. Restate, mainly resulting from profit management, is also a problem, as available findings argue that improperly dated stock-option grants could lead to a restatement of prior financial results (Taylor, Colleen, 2006). The above comments are very likely applicable in China. As I have mentioned in the previous part of this paper, there are a handful of firms who reported

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<sup>32</sup> Relative literacy can be found in Kross(1982), Givoly and Palmon(1982), Yermack(1997), Aboody ,and Rosznik(2000).

<sup>33</sup> The vast majority of stock options are issued with the exercise price set equal to the fair market value on the awarding day.

<sup>34</sup> Based on the “Accounting Standard for Business Enterprises” No.11 Share-based payment, once the companies issued dividend and the stock price falls, the exercise of stock option should be adjusted down ward correspondingly.

<sup>35</sup> Burns and Kedia. “The Impact of Performance-based Compensation on Misreporting.” Working Paper, 2004.

abnormal jumps of accounting revenue after the announcement released, since the managers have to meet up with certain requirements to make them entitled to the awarding. Such incredible huge jumps also intrigued disputes in the popular media.

Since the amount managers earn by cashing out is the expense of the firms, both early exercising and heavy selling after awarding are regarded as suspicious behaviors of rent-extraction. In an investigation of options issued by a sample of 27 Canadian firms were subject to early exercise and, based on the historical exercise patterns, estimated the expected term to be between two to eight years with an average of 4.5 years (Coopers and Lybrand, 1993). Similar research can be found in empirical work of 65 U.S firms conducted by Hemmer et al.,(1994). It has also been found out that the timing of awards coincides with favorable movements in company stock prices (Yermack D., 1997; Kong and Xiao, 2007). This conjecture has also been proven in Chinese stock market. Xiao and Kong (2007) did research based on 46 firms who adopted the SBC programs before 2006. In their empirical works, they explored how the managers gain the CARs<sup>36</sup> shortly after the SBC program is disclosed.<sup>37</sup> They found out that there was short-term earnings management behavior among top managers. There are no comprehensive records of early exercising or heavy selling records available in Chinese stock market, only a number of anecdotal reports by domestic media.<sup>38</sup>

The SOEs and enterprises controlled by State have been long subject to insufficient supervision. Certain rent-extracting behaviors can be expected within such firms. Since the non-tradable reform is still in process, the supervisor still needs time to become familiar with the new incentive mechanism, and furthermore, to become familiar with the concept of market value management. The rent-extracting

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<sup>36</sup> CARs refer to cumulative abnormal stock returns. Yermack (1997) tested this variable in his article “Good Timing: CEO Stock Option Awards and Company News Announcements.” *Journal of Finance*, 52 (2): 449–476.

<sup>37</sup> Kong and Xiao. 2007. “A Research on The Earnings Management Before Stock Incentive Plan Disclosed.” Work paper, School of Management & Economics, Beijing Institute of Technology. (in Chinese).

<sup>38</sup> The main regulator, CSRC, has been aware of the possible “rent extraction” behaviors in SBC program. As a result, certain regulations were launched in 2006 and then refined in 2008. The regulations put restriction on the amount and time of stock selling (see Appendix B). However, a great number of regulations remains untested, further refinement are still expected.

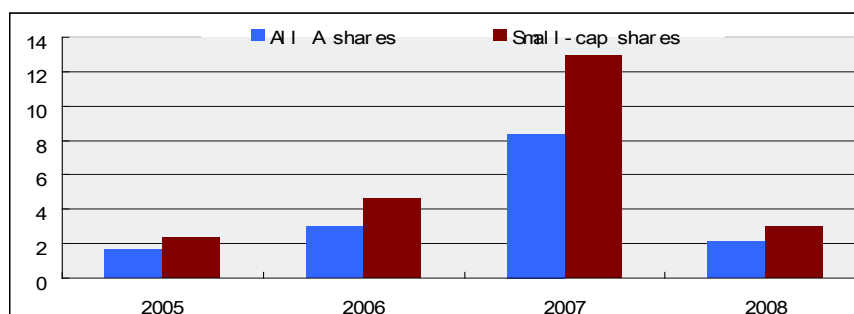
incentives of managers, if they exist, can make them more intent to set the SBC programs in a way of favoring their own interests. In the early phase of non-tradable reform, those firms are still the main players in the Chinese capital market. It is of great importance to detect how state ownership determines their incentives for SBC. I explore this conjecture by testing the hypothesis below:

**H3: The firms with larger proportion of state ownership are more likely to adopt the SBC programs.**

Very few prior studies mention the managerial power of managers in small-cap companies. The small-cap companies have long been subject to unqualified governance as well as unreliable accounting quality (Coulson, 2009). For example, they always fail to hire a qualified CFO and, accounting staff. The independent board is regarded as weak, unqualified or even non-existent. The relatives in these firms often play major management roles without obvious qualifications. Accompanied with the unreliable accounting quality and unqualified governance, the small-cap companies show the strong incentives of huge option grants-often following period of suspended IR (Investor Relations) activity. They are also subject to the “Head for the Exits” Syndrome, that is, the shell provider dumps every share within first few weeks of going effective, driving stock through the floor.

Despite the above criticisms, small-cap companies show the best growth opportunities. Domestic academics attribute the high growth opportunities to the following factors: first, the majority of small-cap companies are from new industries such as new energy, software services, pharmaceuticals, etc., which is more likely to benefit from government stimulation package; second, compared with the cyclic industries in the micro-cap market, the small-cap companies are to some extent resistant to economic cycles.

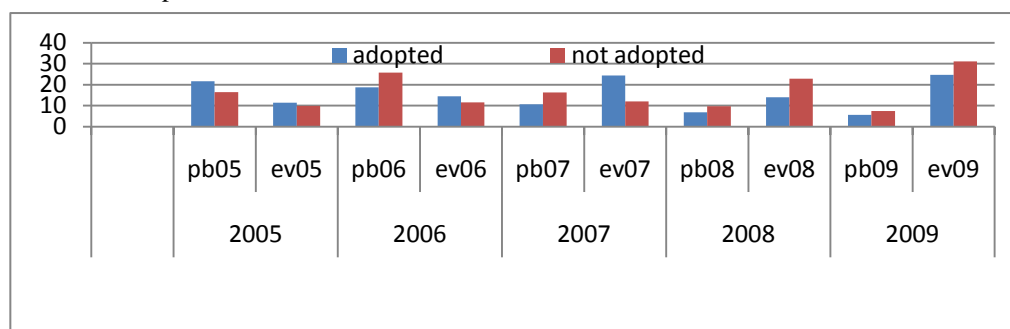
Figure 1: Comparison of growth opportunities, in terms of PB ratio, between all firms and small-cap firms.



Source: Gildata

The growth opportunity is also very popular among scholars in explaining the incentive of SBC. The conclusions reached are contract with each other. Some of them argued that stock option incentives are larger in firms with valuable growth opportunities (see Lewellen et al.,1987; Smith and Watts, 1992; Matsunaga, 1995). The logic behind these studies is that managers hold inside information about the value of growth opportunities. If the BODs find it difficult to monitor the managers, they prefer market-based pay mechanisms to salary and bonus in order to improve the managerial behaviors. Nonetheless, empirical evidence is mixed, as studies that run counter to these arguments can be found in Bizjak et al. (1993) and Yermack (1995). The figure 2 shows the difference of growth opportunity between firms who have already adopted the SBC programs and those who have not, as measured during a 5-years time period. The left figure shows that the EV/EBITDA ratio of the latter is bigger than that of the former before 2007. The opposite situation occurs from 2008. Meanwhile, we also find that the PB ratio of the latter is bigger than that of the former only in 2006. In the following 4 years; this ratio remains smaller for the latter firms. As I have shown in Appendix A of this paper, by the end of 2006, a total number of 152 firms have announced the SBC programs, and 33 out of the 152 firms finally executed their programs. During the year 2007, the stock index reached a historical peak level of 6124.04. In this very year, only 18 firms had announced the program. After the SASAC tightened the regulation of SBC programs for state controlled enterprises in 2008 the annual number of announced programs has never reached the level of 2006.

Figure 2: Comparison of growth opportunities, in terms of PB ratio and EV/EBITDA ratio, between firms who adopted the SBC and those who did not.



Source: Gildata

Collectively, whatever forms that managerial power takes, the only way for managers to cash out the compensation is by exercising the options or selling the stock in the open market. The managerial power, if it exists, can influence the timing of SBC program adoption, especially in the time period when the options are “in-the-money”. From year 2007, the growth opportunities, in terms of both PB ratio and EV ratio, are smaller for firms who adopted the SBC programs than for those who did not. This coincides with the fact that over sixty percent of the programs had been put forward by the end of 2007. It is reasonable to develop a hypothesis as below:

**H4: Those firms who have better growth opportunities are more likely to adopt the SBC programs.**

### III.4 The Financial Market Theory

A great deal of researches in this area is based on financial market theory. This theory is more on a micro level that mainly focuses on the market efficiency, on information transparency, on option pricing, and on individual behaviors. The efficient-market hypothesis (EMH) asserts that financial markets are “information efficient”. The prices are set in a fair, open, and transparent manner (Fama, 1970).<sup>39</sup>

<sup>39</sup> There are three major versions of the hypothesis: “weak”, “semi-strong”, and “strong”. Weak EMH claims that prices on traded assets (e.g., stocks, bonds, or property) already reflect all past publicly available information. Semi-strong EMH claims both that prices reflect all publicly available information and that prices instantly change to reflect new public information. Strong EMH additionally claims that prices instantly reflect even hidden or “insider” information.



Empirical studies have concluded that the Chinese stock market is weak-form and semi-strong-form efficient and that new information is rapidly incorporated in an unbiased fashion into stock prices (see Fan and Zhang, 1998; Hu, 1998; Yang, 1999). Such market form enhances the effect of managerial power in terms of sending signals into the market (e.g. “spring loading” or “bullet dodging”) and then influencing the expectation of investors. The efficiency is enhanced by the non-tradable stock reform. After the reform, unified equity rights and pricing were established and the secondary market started to reflect the value of the listed companies more accurately.

Kihlstrom and Matthews (1990) study the effect of stock compensation on the efficiency of the stock market equilibrium; Scholes (1991) contrasts tax and incentive motivations for stock compensation; R Holmstrom and Tirol(1990) study noise trading and its implications for the effectiveness of stock as a monitor in the moral hazard problem. Amakrishnan and Thakor (1984) show that the presence of moral hazard can lead firms to introduce security prices into managerial incentive contracts, and therefore, optimal project valuation will consider diversifiable risk as well as systematic risk. Kenneth et al. (1987) suggested that the level of the firm’s systematic market risk may also influence the design of its executive pay package. If the systematic risk, which is measured by BETA,<sup>40</sup> is large, the managers are likely to have less incentive for stock compensation because the events are not under the control of managerial decisions. Their studies have been reinforced by Lewellen et al.(1987), who argued that managers are likely to bear increased firm-specific portfolio risk as the emphasis on stock-related forms of compensation for them rise.

The financial market theory also gives plausible explanation for heavy selling after option exercises and early exercises. There has been much research suggesting that most option exercises occur long before expiration (see Huddart and Lang, 1996; Thomas et al.,1995) One of the explanations is that the managers are seeking to hedge

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<sup>40</sup> In contrast to systematic risk, the unsystematic risk (also named as specific risk) is total risk minus the systematic risk explained by BETA. In general, the risk refers to the deviation of expected return of assets.

the risk of an option award.<sup>41</sup> Other explanations include that the managers need to diversify their investment portfolios-that the managers do not like rewards that cannot be cashed immediately.<sup>42</sup> In support of this conjecture is the fact that managers have an incentive to liquidate their positions because they believe the stock to be overvalued, and they want to cash out as early as possible.<sup>43</sup> It can be argued that not all option exercises are triggered for this reason, since many exercises take place due to information-neutral events such as retirements, job changes, and option expirations. Carpenter and Remmers (1998) also suggest that senior managers should be reluctant to sell large number of stock, since the public may interpret the dispositions as negative signals about the firm's prospects.

The Chinese stock market has a short history of only nineteen years; it is still regarded as being underdeveloped. A large number of empirical studies reached an identical conclusion that the average PE is comparatively higher in underdeveloped stock markets. Despite firms' poor profitability, stock prices are high and the average PE ratio is also high when compared with those of other countries in the same time period. This is because the great business potential (another form of growth opportunity) of Chinese firms that stock prices often gives a more optimistic picture of a firm's financial standing than does accounting profit. Applying the conjectures from Yermack (2000), managers have the incentive to liquidate their positions because they believe the stock is overvalued. Yermack's conjecture is further supported by La porta (2000) who argued that firms in poorly developed capital markets should exhibit extreme sensitivity of payouts to growth opportunities, and try to hoard cash when they have good investments. It is reasonable to expect strong incentives of cashing out provided by Chinese senior managers after they have been awarded with SBC. The incentive can be amplified under the circumstance that the

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<sup>41</sup> The managers are not allowed to sell their options to others and the options usually do not become exercisable for several years. To hedge the risk of hold an option ,the managers can apply a hedging strategy ,that is he or she sell a number of shares equal to the number of options awarded, multiplied by the change in option value per unit change in stock price. See Black-Scholes (1973), Yermack (2000).

<sup>42</sup> Firth, Michael, Peter M.Y.Fung, and Oliver M. Rui. 2006. "Corporate Performance and CEO Compensation in China." *Journal off Corporate Finance*, 12 (4) 693-714.

<sup>43</sup> Yermack, David.2000."Taking Stock: Equity-based Compensation and The Evolution of Managerial Ownership." *Journal of Finance*, 55(3):1367-1384.

financial market coexists with largely untested legal systems. Also applying the conjectures from Firth et al.(2006), managers favor less on long-term compensations (e.g. stock options, restricted stock).Since stock investing is a new experience in China and it may take some time before people appreciate the advantages of holding investments for long term and managers learn to appreciate the benefits of executive stock options. Here I explore the above literature by testing the hypothesis of:

**H5: During the executing period, (approximate six months after the stock compensation has been awarded), the managerial sale can be large. Meanwhile, the turnover ratio of the stock increase correspondingly.**

#### **IV . Test structure**

##### **IV.1 Samples**

Empirical investigation of managers' incentives for SBC, regulation, institutional structures on one hand, and firms' institutional structure, governance structure and financing indicators on the other requires a wide range of data, some of which can be difficult to obtain-especially for the compensation data. This paper explores the prior hypothesis by using a company-level sample of 1888 listed firms in both Shanghai and Shenzhen Stock Exchange from 2005 to 2009.<sup>44</sup> The sample includes all micro-cap firms, small-cap firms, and firms listed in GEM. I dropped the sample firms who were listed after the 31<sup>st</sup> of December, 2009. This leaves 1692 samples. Some quarter data was missing, but I confine the data to those firms having at least the necessary data in annual reports. Among the 1692 firms, there are 258 firms who have announced an SBC programs or officially show the intent to do so.<sup>45</sup> In my examination of the subsequent performance of the sample firms, I drop 2 sample firms whose SBC is based on H shares.<sup>46</sup> Necessary variables are selected from both

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<sup>44</sup> The sample is collected by the end of 30<sup>th</sup> June 2010.The new listed firms after this date is not included in this paper.

<sup>45</sup> The comprehensive sample should consists of 260 firms; however, 2 firms' IPO took place after 31th December 2009 ,their case are therefore exempt from the sample pool.

<sup>46</sup> H shares are shares traded in Hong Kong exchanges. These two firms are Dong Fang Electric Corporation

annual reports and semi-annual reports. To make the result more reliable, I deliberately avoid generating complicated items by hand, except for items such as means, standard deviations, all other data are draw directly from the database.

## **IV.2 Dependent variables**

### *A. Adopt of SBC programs*

The status of the SBC programs can be very complicated, it deserves clarification in the very beginning of this empirical study. In practice, the status is divided into seven categories: vetoed, suspend intent, approved, announced, in vesting period, and finished (see table 2 below).<sup>47</sup> Recall the approval procedure which I have summarized in Appendix B, Once the program is approved by the board committee, it is labeled as “intent”. After the program is further approved by GMS, it approaches to next procedures of “approved”. After approval, the firm is obliged to make public announcement of its SBC programs. After being announced, the program heads to the “vesting period”. During this period, typically 3 to 5 years, a proportion of option (or shares) in the program are made available to the aimed people. Once the people awarded finally fulfill the requirement of execution, they are entitled to execute the program. Then the program approaches the final stage of “executed” (exercising the option, or purchasing the restricted stock, or being granted with stock). It is noteworthy that once the BODs have approved the program, although the program is not finally passed in GMS yet, they have shown their incentives for SBC. Since the incentive reference to the program is in line with my research purpose, it is not necessary to make specific of every status of the SBC programs when exploring the determinants of incentives. Based on the status of SBC programs, I introduce a dummy variable to measure the sample firms’ adoption behaviors. The variable is equal to one if the firm adopts the SBC programs, and is equal to zero otherwise

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(stock symbol:600875) and Shen Hua Group (stock symbol:601088) .

<sup>47</sup> The reasons for vetoed and suspend vary from case to case. However, official records of all these examples are not available yet. I viewed a number of veto announcements and suspend announcements issued by the individual firms. The available examples included that the managers fail to meet certain requirements of both accounting and marketing performance; that although requirements are met, one or more recipients resigned before the awarding day, and their stock compensation expired consequently; that the managers had violated certain laws or regulations, thus been deprived of the compensations.

Table 2: Statistics of status of the SBC programs.<sup>48</sup>

<b>Status*</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>	<b>VII</b>	<b>Total</b>
<b>Frequency</b>	1	15	67	88	42	12	33	258
<b>notes</b>						Compensation was awarded, no more round is available	At least one round of SBC was awarded <sup>49</sup>	

Source: Gildata

\*The status from I to VII is vetes,announced, suspended,intent,approved,finished,and vesting period,respectively.

### B. Managerial selling

I detect the managerial selling after execution (the variable of execution is different from that of adoption, which I will develop later) by using change of ownership through the examining period. Based on the argument that the senior managers have stronger incentive of realizing value from their equity holdings, the execution of SBC is expected to be associated with more managerial selling. In practice, I introduced two variables to measure the managerial net-selling. One is the number of shares which have been sold during the sample period minus that of shares which have been purchased during the same time period, with respect to a single firm.<sup>50</sup> Another variable measures the earnings from selling minus that of purchasing. The earnings can be negative, if the price of selling is lower than that of purchasing, and are positive otherwise.

Table 3: Measures of dependent variables

<b>Dependent Variables</b>	<b>Measure</b>
Adopt	For the firms who have adopted a SBC program, adopt=1, otherwise adopt=0..
Earnings from net-selling in 2009*	Senior managers' earning from liquidating their shares in 2009.
Number of shares sold in 2009**	Number of shares sold by senior managers in 2009

\* Unit: 10,000 Yuan;

\*\*Unit: 10,000 shares.

<sup>48</sup> Data of company level of all 256 firms' .For duplicate cases in a single firm, only account the newest status in. The data is updated by the end of 30<sup>th</sup> June 2010.

<sup>49</sup> The SBC program can be of several rounds, the compensation package is not granted all-at-once, but it was granted evenly during a time period of 1 to 5years.

<sup>50</sup> It is a summary of all the selling and purchases by all senior managers within a single firm.

### IV.3 Independent variables

#### A. Ownership

I proxy the state involvement in the listed firms by using proportion of ownership with respect to the nature of the shareholder. As I have developed before, the listed firms in China typically have three distinctive types of shares, that is, state shares, legal entity shares and individual shares. I put the former two types of shares together. The ownership of these 2 types of shares is regarded as state shares, while the left are regarded as non-state shares. Share classification rules deserve mention also. As I have discussed in Part III, there is also a proportion of state-owned shares that cannot be traded freely in the open market. Because the lack of liquidity, prior studies suggested that the stockholder cares less about the market performance, and care more about accounting profit instead. On this possibility, I add proportion of non-tradable shares as a measure for shares' liquidity in order to examine whether it has any impact on the incentives for SBC programs.

Table 4: Statistics of the ownership of 258 sample firms.<sup>51</sup>

<b>Ownerships*</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>	<b>VII</b>	<b>VIII</b>	<b>Total</b>
<b>Frequency</b>	<b>112</b>	<b>16</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>114</b>	<b>8</b>	<b>258</b>

Source: Gildata

\*The 8 types of ownerships are: government owned, States owned, states controlled, group owned, private owned, foreigner owned, individual owned, and other, respectively.

#### B. Industry

As I have discussed in part III, the industry of the firm plays an important role in determining the SBC programs. To explore the SBC incentive of firms in regulated industries, I have included 2 dummy variables of so-called regulated industries; that is, finance industry and the utility industry. These two variables are introduced to explore the prior conjectures that the firms in regulated industry provide less incentive for SBC programs.

<sup>51</sup> Duplicate cases in a single firm count only once.

### *C. Corporate governance*

The external director is highly recommended (see Mehran, 1995); however, it was not until 2006 that SASAC launched the code that the compensation committee should consist of external directors only (see Appendix B). Unfortunately, there are no statistics on the number of external directors. Their salaries are available only before 2007. The only data I can get for board structure is the number of independent directors. So I generate a variable of number of independent directors as proportion of board members to proxy the governance quality of the sample firms.

### *D. Growth opportunity*

In this paper, I apply the price-to-book (PB) ratio and the price-to-earnings (PE) ratio as proxy for firms' growth potential in order to test whether the adoption of SBC program coincides with the firms' high growth opportunity. My use of a price-to-book value ratio as a proxy for growth opportunity is similar to the approach of most prior studies (Yermack, 2000). The measurement of Tobin's Q is not available in the database, and I do not intend to take the risk of miscalculating by manual work. The only difference between Tobin's Q and PB ratio is book value of debt and preferred stock.<sup>52</sup>

### *E. Execution of SBC programs*

Another purpose of this paper is to examine the subsequent market performance, in terms of market performances of the firms after the adoption of SBC programs. Because only after the SBC is executed can the senior managers exercise the option (or be awarded with stocks), they can choose to liquidate their position or hold the stock further after the vesting period. This study requires the total sample pool to be segmented based on the seven categories of status of the SBC programs (see table 2 above), that is, the former five categories (vetoed, intent, approved, announced, and suspended) combined together with the proxy status of firms who did not execute the program, while the latter two categories (finished or in vesting period) proxy the status of firms who did execute the program. Based on the status of the SBC

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<sup>52</sup> Tobin's Q equals sum of book value of debt, preferred stock and market value of common stock divided by book value of assets, while price-to-book equals price of stock divided by book value per share.

programs,. I generate one variable measures execution of the SBC programs, which is equal to 1 if the firm executes the program and zero otherwise.

#### F. *Managerial power*

It is noteworthy that a large proportion of SBC impose liquidation restrictions on managerial selling (see Appendix B). The restriction period is indefinite, but usually between 6 and 12 months. The proportion of awarded shares that can be liquid, on average, is less than 25 percent in the first year after awarding, and is approximately 20 percent in the following 3 to 5 years. Meanwhile, there are several SBCs that generated without restricting period. In these cases, the SBC programs are generally a composition of tradable reform; that is, the company set aside a proportion of newly-tradable shares as an award to senior managers. These shares can be liquidated without any restrictions.

If SBC has a restricting period, the number of managerial non-tradable shares increases. The number of managerial non-tradable shares can be generated from the following equation:<sup>53</sup>

$$\frac{\begin{aligned} & \text{prior\_untradable\_shares} \\ & + \\ & \text{Stock\_awarded} \\ & - \\ & \text{Stock\_liquidated} \end{aligned}}{\text{untradable\_managerial\_stocks}}.$$

Because the number of stocks awarded is generally larger than that of stocks sold, the awarding will increase the number of non-tradable managerial shares. The table 1 summarizes the types of SBC and corresponding resources of shares generated for SBC. SBCs that used treasury stocks and repurchased shares does not pose liquidation restrictions on senior managers.<sup>54</sup> In other cases where SBC are awarded by issuing new shares to senior managers, the liquidation restriction is introduced according to the domestic security law. The proportion of shares held by senior managers was proven to have significant influence on manager's incentive for all

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<sup>53</sup> The prior untradeable shares of senior managers can be gained from various sources including initial offering, directional add-issuance, restricted stock, and SBC programs.

<sup>54</sup> Employees other than senior managers who had been awarded with SBC are not subject to liquidation restrict. Since the number of shares awarded to these group consist a comparatively small proportion of market capitalization.



forms of compensation.<sup>55</sup> Unfortunately, Gildata only provides information on the summarized number of non-tradable shares of all senior managers. This number includes the all types of non-tradable shares which contain those granted from SBC programs and those granted from other sources. I introduce this variable as a weak proxy for managerial power.

In collection, the summary of independent variables are summarized in table 5:

Table 5: Measurements of independent variables

<b>Independent Variables</b>	<b>Measure</b>
<b>execute</b>	If the status of SBC programs = intent, approved, announced, in vesting period, and finished, then execute=1, or execute=0 if otherwise.
<b>non-tradable</b>	Number of <i>non-tradable shares</i> as a proportion of all shares outstanding, averaged form 2005 to 2009.
<b>state_pro</b>	Sum of <i>state shares and legal entity shares</i> as a proportion of all shares outstanding, averaged form 2005 to 2009.
<b>block holder</b>	The level of ownership of the <i>largest</i> shareholder.
<b>sm_pro</b>	Sum of senior managers' <i>non-tradable shares</i> as a proportion of all shares outstanding.
<b>ID</b>	The number of independent directors as a proportion of the board members.
<b>small_cap</b>	If the firm is listed in small_cap exchange, the small_cap=1, otherwise small_cap=0.
<b>Ind_finance</b>	If the firm is in the industry of finance and insurance ,the ind_finance=1,otherwise ind_finance=0
<b>Ind_utility</b>	If the firm is in the industry of utility ,the ind_utility=1,otherwise ind_utility=0
<b>mean_pb</b>	Price-to-Book ratio averaged from year 2005 to 2009.

#### **IV.4 Control variables of governance structure and accounting indicators**

Prior studies have indicated that governance structure, size and market-to-book are potentially important determinants of firms' performance. I include the control variables of firm size, number of employees, and average annual income of all senior managers in my models. The Agency Cost of Debt studies suggest that the proportion of debt determines the intent of stock-based compensations. If the managers have strong incentives to maximize the shareholders' value, debt holders will demand

<sup>55</sup>Yermack David.,2000,"Taking Stock: Equity-based compensation and the Evolution of Managerial Ownership", The Journal of Finance,55(3):.1367-1384.

higher risk premium for supplying capital, for fear that managers will pursue overly risky investment projects that transfer wealth from debt holders to equity holders.<sup>56</sup> This comment is proven by another argument that there is an inverse association between leverage and the intensity of managers' incentives.<sup>57</sup> Applying prior studies from the agency cost of debt, I also introduce the financial leverage into the control variables.

As I have discussed in Section 2, the government pose limited quota on firms' listing. Since there is an intense competition among enterprises, the order of listing reflects the degree of government favoritism and the closeness of the government-enterprise connection to a certain extent (Cao, 2000). So I add year of IPO as another proxy for government-enterprise connection.

Because the senior managers' compensation varies with performance, additional control variables concerning accounting earnings include growth rate of net income (NI) and return on assets (ROE). ROE is highly recommended in determining executive compensation (see Appendix B). Accounting returns provide information to the board about the value added to the firm by the senior managers; therefore, senior managers have incentives to make major corporate decisions and/or report income in such a way to affect ROE and, thus, their compensations.<sup>58</sup>

Table 6: Measurements of control variables

<b>Control Variables</b>	<b>Measurement</b>
<b>age</b>	Number of years after the firms were listed
<b>mean_emp</b>	Natural logarithm of number of employees (averaged from year 2005 to 2009).
<b>mean_growth</b>	The annual growth rate of NI (net income), averaged from 2005 to 2009.
<b>mean_pay*</b>	Sum of pay for <i>all</i> senior managers, averaged form 2005 to 2009.
<b>mean_lev</b>	Financial leverage in terms of assets divided by equity, averaged from year 2005 to 2009.
<b>mean_roe</b>	Return-to-Equity ratio averaged from year 2005 to 2009.

\* Unit: 10,000 Yuan;

<sup>56</sup> Yermack, David. 1995. "Do Corporations Award Stock Options Effectively?" *Journal of Financial Economics*, 39(2-3):237-269.

<sup>57</sup> John, Teresa A. and Kose John.z. "Top-management Compensation and Capital Structure." *Journal of Finance* 48(3): 949-974.

<sup>58</sup> See Defeo, Victor J., Richard A. Lambert, and David F.Larcker. 1989. "The Executive Compensation Effects of Equity-for-Debt Swaps." *Accounting Review*, 64(2),201-227.

#### **IV.5 Manipulation and descriptions of variables**

Some manipulation of the data was required before the hypothesis could be estimated. One of the variables that suffers from the 'guide charts' problem is the firm size, as approximated by number of employees. Because this study covers nearly 1700 sample firms, the divergence of number of employees is dramatic. I do regression via the natural logarithm of the firm size to address this issue. Strictly speaking, firm size is an endogenous variable that depends on economies of scale in both production and organization of the firm. Given my limited knowledge of determinants of size, and for fear that my results may exhibit heterogeneity among firm sizes, I apply per-share-based variables in order to address this issue. Meanwhile, I eliminated the multiple observations for firms in subset sample, which suggests that the t-statistics may be not in danger of being overstated. Moreover, a slight timing problem arises because the adoption of SBC programs may not happen with same density in the sample period, and this will tend to induce error in measurements. To mitigate these issues, I average majority observations available for a given firm and then use the average of the observations in the regressions (the same manipulation can be seen in Smith and Watts, 1992). This forced me to drop the year controls from the regressions. As we can see from table 8, the relations of change of growth opportunity with control variables, though somewhat diminished, is still significant.

Table 7 reports the descriptive statistics for the variables used in the estimated model. Statistics for entire sample pool is in column 2, 3, and 4; statistics for sub-sample are in column 5, 6, and 7. The employees of the firms in my sample ranges from a total number of 12.5 to 482435, with a mean of 5233.71. The year of IPO are almost equal in both samples, which are 9.39 years and 9.05 years, respectively. The proportion of state shares in sub-sample is 14.1 percent, which is 2 percent smaller than that of the total sample (16.17%). The statistics of the proportion of non-tradable shares is larger in the sub-sample (37.14%), which is almost the same as that of the total sample firms (35.23%). The managerial non-tradable shares in the sub-sample are 0.61 percent, which is more than double that of the total sample (0.29 percent). The ownership concentration, in terms of block holders' ownership, of the two sample

pools show almost no difference, and is almost same in total sample and sub-sample. The financial leverage in sub-sample firms (2.48 times) is much smaller than the average level (3.60 times). The sample firms of my study cover all 22 industry categories based on the CSRC industry classification.<sup>59</sup> Based on the statistics of industry frequency of sample firms, the machine and mechanical industry, and information technology industry rank as the top two frequencies, while the industries of media and furniture rank at the bottom ( see Appendix C ).

Table 7: Descriptive statistics for the independent variables

Variable	All sample firms			Firms adopted the SBC programs		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
<b>age</b>	1692	9.39	5.07	258	9.05	4.48
<b>id</b>	1692	36.98	6.82	258	38.26	8.65
<b>blockholder</b>	1692	37.21	14.81	258	38.64	16.27
<b>state_pro</b>	1692	0.1617	0.1652	258	0.141	0.1563
<b>sm_pro</b>	1692	0.0029	0.014	258	0.0061	0.0198
<b>nontradable</b>	1692	35.225	14.0154	258	37.1433	13.7933
<b>mean_emp</b>	1692	7.38	1.73	258	7.45	1.29
<b>mean_lev</b>	1670	3.60	17.09	258	2.48	2.29
<b>mean_roe</b>	1493	6.14	45.99	254	12.10	9.66
<b>mean_growth</b>	1544	-87.67	929.71	251	-8.17	543.19
<b>mean_pay*</b>	1273	241.72	284.86	206	376.90	407.24
<b>mean_pb</b>	1434	11.14	48.47	250	13.35	38.92
<b>mean_pe</b>	941	148.91	224.03	205	140.12	211.58
<b>sell*</b>	1628	495.92	3300.06	241	21.13	319.36
<b>turnover**</b>	1692	2.41	11.68	258	0.47	7.01

Source: Gildata

\* Unit: 10,000 Yuan;

\*\*Unit: times (times of selling minus that of purchasing during the sample period).

Moreover, the statistics of the NI growth rate in both total sample and sub-sample shows that, on average, firms in both sample pools exhibit a negative growth rate of NI. The averaged NI growth rate in sub-sample firms is 8.17%, which is one tenth that of all sample firms (-87.67%). The statistics of the ROE ratio shows that accounting profit quality of firms who adopted SBC is, on average, almost 2 times

<sup>59</sup> The author here applies the industry classification introduced by CSRC, which categories the Chinese listed companies into 22 industries.

that of the average level. The descriptive statistics of both PB ratio and PE ratio show that, on average, the level of both PB ratios of firms in sub-sample is more than 2 times higher than that of the firms in total sample, while the PE ratio is 4 times lower for firms in the sub-sample.

#### IV.6 Model specification

The above sections include a set of variables representing the economic determinants of the incentive of compensation which are intended to completely capture the cross-sectional determinants of SBC. I construct the following models to investigate my hypotheses. I first state the model to test the determinants of adoption of a SBC program, which is derived from Core (1999). The benchmark model is reformed by replacing the dependent variable of compensation level by the binary choice variable of incentive. The dependent variable is regressed against the institutional structure variables while controlling ownership structure, standard profit determinants, and board-of-director characteristics. The model is:

$$\begin{aligned}
 \text{Adoption} = & \alpha + \beta_1 \text{age} + \beta_2 \text{emp} + \beta_3 \text{id} + \beta_4 \text{blockholder} \\
 & + \beta_5 \text{lev} + \beta_6 \text{ROE} + \beta_7 \text{growth} + \beta_8 \text{RE} + \beta_9 \text{PB} \\
 & + \beta_{10} \text{state\_ownership} + \beta_{11} \text{nontradable\_sm} \\
 & + \beta_{12} \text{pay} + \lambda \text{industry\_controls} + \varepsilon_i
 \end{aligned} \tag{1}$$

E.q. (2) is structured to test the causality going from incentive mechanisms to managerial behaviors. Following Mehran (1995) and Yermack (1955), I use two groups of variables to measure firms' future market performance induced by SBC programs in my analyses. The first group of variables measure *earnings* generated from net-selling after awarding, while the second group of variables measures *the number of shares* sold after awarding.

$$\begin{aligned}
 \text{net - selling}_{09_i} = & \alpha + \lambda \text{finish}_{08} + \beta_1 \text{age} + \beta_2 \text{emp} + \beta_3 \text{id} \\
 & + \beta_4 \text{blockholder} + \beta_5 \text{PE}_{08} + \beta_6 \text{state\_ownership} \\
 & + \beta_7 \text{nontradable\_sm} + \varepsilon_i
 \end{aligned} \tag{2}$$

## V. Results and discussion

### V.1 Test the determinants of SBC programs.

The 8 below presents the probit estimation for the model of the adoption of SBC programs over explanatory variables, which is described by eq. (1). The model is tested again with and without industry dummy variables.

Table 8: Maximum likelihood estimates for determinants of SBC programs.

Dependent variable	Adoption of SBC prgrams
State ownership	1.12*** (3.27)
Managerial untradeable shares	-6071.87 *** (-4.54)
Industry of Finance	-1.41 * (-1.75)
Industry of Utility	0.10 (0.46)
Growth opportunity of PB ratio	0.01 ** (2.11)
Block holder' ownership	0.01 (-1.51)
Independent directors	0.01 (1.52)
Financial leverage	-0.09 ** (-2.35)
ROE ratio	0.02 ** (2.33)
Year after IPO	-0.04 *** (-2.97)
Firm size	-0.08 * (-1.94)
Senior managers' annual pay level	0.00 *** (5.36)
intercept	-0.45 (-1.03)
Number of observations	1171
Chi-square	0.1832

\*p<0.10; \*\*p<0.05; \*\*\*p<0.01;

There are several important observations that emerge from table 8 implying that incentive for stock compensation has a significant association with institutional structure of Chinese listed companies, after controlling for general economic determinants. The hypothesis 1 outlined in Section III is strongly supported by the coefficient of senior managers' non-tradable share, which is negative with the adoption of SBC programs (at 1% level). The total number of untradeable shares is dropped to avoid multicollinearity with the key variable of number of managerial untradeable shares. It is tested again in the following robust section. The coefficients of industry dummy variables provide some support for hypothesis 2. In all 22 industries there is evidence that firms provide incentives of stock compensation in the finance industry. This result, however, is partly consistent with studies of Smith and Watts (1992), showing that managers in utility and financial industries provide lower compensation incentives. The dummy variable of the utility industry does not present significant association with SBC programs. This might be because the industrial classification in this paper is highly aggregated; it fails to capture the specific governance quality of individual firms. The industry classification standard applied in Gildata is different from that applied in prior studies.<sup>60</sup> In accordance with hypothesis 3, the proportion of state shares yields a positive and significant impact (1% level) on stock compensation incentives. The sign of the averaged PB ratio is positive and statistically significant (5% level), supporting the hypothesis 4 that firms with larger growth opportunities use more incentive plans. The result is also in line with the prior findings of Smith and Watts (1992) and Chourou et al.(2008).

Among the variables associated with agency-related conjectures, my findings are almost consistent with the prior studies. Consistent with the findings of Jensen and Meckling (1976), I find a negative relation between firm sizes, in terms of employee number and incentives for SBC. Consistent to prior findings that the higher the ownership by largest shareholders or higher managerial ownership has lower need for granting equity-based compensation to CEOs (Lamia et al., 2007; Mehran, 1995). The share proportion of blockholders shows negative impact on managers' incentives.

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<sup>60</sup> The CSRC industry classification is different from GICS standard, which is widely used in developed country.

The coefficient is significant at the 13% level of trust. I also find a negative and statistically significant association between financial leverage and incentives for SBC which is consistent with the prediction of a negative relation in John and John (1993). The coefficient of averaged ROE, which is a proxy for the managers' contribution to the firms, is positive and statistically significant in the model. This observation is also in line with previous studies that earnings management influences stock compensation (Matsunaga, 1995). Because the ROE is introduced in the model, the annual growth rate of NI is dropped to avoid multicollinearity.<sup>61</sup>

## **V.2 Performance after SBC programs have been adopted**

One policy implication of my study is that higher SBC could generate higher market performance, and an increase in market performance could be paid out to workers as higher SBC; the causality has to be working in both directions. Conceivably, a correlation between SBC and market performance might merely reflect the fact that the workers get a share of any rents that go to the firm, and the SBC may not be awarded in such a way as to generate incentives. One example is that managers manipulate some parameter of the firm's operating or reporting strategy to increase CARs. The CARs in prior studies of Yermack (1997) and Kong and Xiao (2003) measure only the accrued earnings but not cash flow-based earnings. It is, by nature, an unrealized earning which can be detected only through the balance sheet. The managers can realize it only after selling the share in the open market.

The following findings are accompaniments to the prior findings. By detecting the managers' selling behaviors in the open market, we can observe the cash flow based earnings rather than accrued earnings that generated from managerial selling (see table 9 below). I first pick up all the firms who had their SBC executed at least one round and make them a distinct group. This group of firms can help me to detect whether senior managers have intensive to realize the value of the stock after SBC was awarded. Recall that there is a restricting period after the execution of SBC programs. I confined the sample firms to those who had their first round of SBC awarded before

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<sup>61</sup> ROE = NI/TE, where TE refers to total equity.



the end of 2008(the number of these firms is 37, see table 9). The statistic number exhibits that, during the time period from 2007 to 2009, the senior managers in the firms who have executed the SBC programs show much willingness to liquidate their shares. The average number of shares sold from 2007 to 2009 by senior managers who had executed the SBC programs is 216800, which is slightly less than the average level; but their earnings from the net-selling are much more than the average level. The numbers in column 2 and 3 exhibit that senior managers who have executed the SBC have generated, on average, eight times earning from net-selling than the average level.

Table 9: Statistic of managerial net selling.

	Net-selling of shares after execution*			Earnings of net-selling after execution**		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
All sample firms	1692	29.37	164.60	1628	495.92	3300.06
firms whose SBC has been executed before 2008	37	16.22	23.68	37	2985.03	6235.29
firms whose SBC has been executed before 2007	28	21.68	32.69	28	4236.49	7796.1

\* Unit: 10,000 shares(number of shares sold minus that of purchased during the sample period);

\*\*Unit: 10,000 Yuan (earnings of selling minus that of purchasing during the sample period).

The heavy selling, if it is true, can severely negate much of the impact of SBC since the long-term interest tie breaks between senior managers and the firms. To check whether the causality goes from compensation to cashing out, we generate the test in table10. Columns 2 and 3 in table10 report the results of regressing managerial net selling after year 2008 against the dummy variable of execution. In support of hypothesis 5, the result indicates a positive association between execution and the managerial net selling. The coefficient of the execution further supports this conjecture, at least within the sample period; the senior managers, rather than hold the share for a long time period, prefer to realize the value soon after the share was granted. In support of the prior conjectures of Mehran (1995), the coefficients of block holders' ownership is consistently and negatively related to the net selling after

awarding. The coefficient of the small-cap variable shows that, compared to those in all other sample firms, senior managers in small cap companies show great incentive to realize the value of the shares they hold; the coefficients of this variable are both significant at 1% level. The coefficient of state ownership also confirms my conjecture that the senior managers in state owned firms are more likely to liquidate their shares.

Table10: OLS estimate of managerial net-selling after execution of SBC programs.

Dependent variables	Earnings of net-selling in 2009	Number of shares sold in 2009
Executed before 2008	2760.83 *** (6.75)	15.40 *** (9.78)
State ownership	778.93 ** (1.87)	-1.46 (-0.91)
Managerial untradeable shares	37789.97*** (8.99)	133.85 *** (8.28)
PE ratio of 2009	-0.04 (-0.27)	0.00 (0.52)
Small-cap	893.31 *** (5.52)	4,20 *** (6.74)
Number of years after IPO	3,27 (0.29)	0.04 (0.97)
Firm size	-106.51** (-2.56)	-0.32 ** (-2.01)
Block holders' ownership	-10.88 ** (-2.42)	-0.02 (-11.)
Independent directors	-3.36 (-0.40)	0.03 (0.80)
Intercept	1182.73** (2.52)	2.20 (1.22)
number of observations	1501	1501
R-square	0.1345	0.1760

\*p<0.10; \*\*p<0.05; \*\*\*p<0.01;

It is not meaningful to investigate the subsequent accounting performance by regressing accounting profit indicators, such as ROE against the corresponding explaining variables or controlling variables. This is partly because the accounting profit is not always subject to managerial decision-making behaviors. Furthermore,

anecdotal evidence has shown that the accounting profit standards imposed on the managers are regarded as of low level. The managers can meet the standards without difficulty. Considering the above possibilities, I do not expect to see a significant outstanding accounting performance of firms who had executed the SBC programs. The statistic summarized in the table 11 below confirms my expectation that the accounting performance of those who executed the SBC programs can hardly be regarded as proved.

Table 11: Comparison the accounting profit performance

Variable	Sample pools	Obs	mean	Std.Dev	Min	Max
Averaged ROE(%) of year 2008 and 2009	all sample firms	1628	4.53	103.76	-4020	545.98
	firms finished the SBC programs in 2007	27	0.75	25.50	-87.15	42.19
ROE (%) of 2009	all sample firms	1637	0.35	200.81	-7989	157.62
	firms finished the SBC programs in 2008	37	-2.83	52.32	-264.3	51.89

### V.3 Robust

Robustness tests also support my results. I repeat the analysis after transforming the independent variable of averaged PB ratio into averaged PE ratio, and replace the proportion of untradeable shares with the proportion of tradable shares (of top 10 block holders). Coefficient estimates exhibit almost the same results, that is, the averaged PE ratio (also a proxy of growth opportunity) presents a positive and significant impact on the SBC incentive.

In the following table 12, I repeat the one-year analysis from column 2 using cumulative 2-year totals for net-selling behavior after the awarding of SBC. This estimation has two purposes: first, the 2-year analysis should reduce some bias due to the discrepancy. Second, the analysis is free by construction of serial correlation of managers' annual observations. The 2-year results in table 12 are similar to table 10's analysis based on annual data. As we can see from the following table ,the dependent variable are replaced by 2-year accumulated amount of net-selling and 2-year accumulated earnings generated from net-selling.

Table12: OLS estimate of managerial net-selling after execution of SBC programs.

Dependent variables	Earnings of net-selling averaged from 2008 to 2009	Number of shares sold averaged from 2008 to 2009
Executed before 2007	4243.97*** (7.01)	21.63*** (9.52.)
State ownership	1242.95** (2.20)	-1.23 (-0.58)
Managerial untradeable shares	52189.78*** (8.69)	185.55 *** (8.23)
PE ratio of 2009	-0.13 (-0.46)	0.00 (-0.70)
PE ratio of 2008	-0.00 (0.01)	0.00 (0.50)
Small-cap	1089.84 *** (4.98)	4.68 *** (5.69)
Number of years after IPO	0.51 (0.03)	0.05 (0.92)
Firm size	-110.56* (-1.95)	-0.22 (-1.05)
Block holders' ownership	-16.63 *** (-2.73)	-0.02 (-1.03)
Independent directors	-7.90 (-0.70)	0.01 (-0.16)
intercept	1542.39 ** (2.44)	2.61 (1.10)
number of observations	1325	1325
R-square	0.1304	0.1624

\*p<0.10; \*\*p<0.05; \*\*\*p<0.01;

## VI .Conclusion

I briefly trace the history of SBC in Chinese listed firms. I also explored how ownership structure and institutional characteristics can have an impact on SBC. These key variables are used as explanatory variables in my empirical models. I found that listed firms, regardless of the characteristics of ownership, especially those with large proportion of tradable shares appear to embrace market performance-related pay schemes for compensating their senior managers. The state ownership is found out to strengthen the incentive of SBC. This is partly because the sooner-to-be-finished non-tradable reform granted the senior managers with the cash flow rights over the equity of the firm. This reform imposes market value

maximization objectives on the firms, and this, in turn, induces firms to take the stock-based compensation. The market value maximization objectives inculcated the modern corporatization into the mind of managers, and tie the interest of agency and principal together.

While the stock-based compensation strategy theoretically should have yielded positive results, it failed to do so because the property rights still remain unclear. The supervisors still keep the important decisions of SOEs under their radar screen to stay within the range of legitimacy and acceptability. Since remote supervisors lack the necessary knowledge of insider information of the SOEs, the reform costs are proven to be unavoidable. In this newly-introduced SBC programs, the lack of restrictions on the amount and timing of stock selling can be explained by the managerial power approach. Under this approach, the design of SBC programs is largely influenced by the managerial power to serve the managers' own interest at the cost of public shareholders.

The subsequent performance of sample firms in my study also reveals important issues; that is, state ownership shows great incentive to realize the value of their equity rather than to hold them. Based on the conclusion reached by Yermak (2000), recipients have stronger incentives to cash out in case they believe their stock to be overvalued. The managers in these firms embrace insider information about the real performance of the firms. In case the suspicious profit management exists, the managers would like to realize the overestimated value of their stocks. As an emerging financial market, the higher PE ratio is expected. This in turn further strengthens the managers' intent to liquidate. There are also important conclusions in my findings with regard to small-cap firms. The development of small-cap firms is encouraged by the government for the purpose of developing private capital and furthermore, the entrepreneurship of Chinese corporations. The significantly high PE ratio in small-cap firms indicate that the market has positive expectation of them. The comparatively high CARs in these firms should not be disputed because CARs are common and reasonable in emerging markets. What matters most is the performance after SBC in these firms. My findings suggest that the small-cap firms, which are

more like corporatized firms with regard to SOEs, suffer the same inherent agency problems as those in developed countries. More improvement in governance quality can be expected in Chinese small-cap firms.

Summarizing my major findings, the paper gives empirical evidence through a comprehensive database. My analysis leads to the conclusion that the SBC programs have in fact met with significant success. Managers' incentives have induced measurable changes in behavior at the enterprise level, while enterprises remain subject to many of the problems associated with unique institutional characteristics in terms of state ownership and share classification rules. Despite the newly enacted regulations that prohibit the managers from opportunistic behaviors, agency problems persist because of ineffective monitoring, whether through corporate governance mechanisms or through legal machineries that allow shareholder rights to be enforced. In an emerging capital market, high growth opportunities are more likely to provoke managerial short-term behaviors; this is reasonable for individual utility maximization but is harmful to shareholders' interest. China's government should encourage, or even mandate, better and improved financial disclosures, while managers should be given more supervision-this needs to be balanced with greater accountability. Improved financial transparency will help investors in their monitoring and oversight rules.

My measure of incentives from SBC is imperfect, because it does not take into account the duplicated cases. Until recently, I relied on indirect estimates of the incentives provided by prior SBC programs and restricted the method into binary choice model. Further research might investigate such issues as how frequently boards of directors establish and enforce policies that require managers to maintain minimum ownership. As the cases will accumulate in the near future, case-level research can be induced to conduct a more in-depth study of managerial behaviors in terms of option exercise, stock selling and turnover frequency.

## Reference:

- Arya Avinash and Sun Huey-Lian. 2004. "Stock Option Repricing: Heads I Win, Tails You Lose." *Journal of Business Ethics*, 50(4): 297-312.
- Barlas, Stephen. 2006. "SEC Set to Issue New 404 Guidance." *Strategic Finance*, 88(6):24-26.
- Bebchuk, Lucian Arye, Jesse M. Fried, and David I. Walker. 2002. "Managerial Power and Rent Extraction in the Design of Executive Compensation." *University of Chicago Law Review*, 69(3): 751-846.
- Berle, Adolf A., H. W. Ballantine and Gardiner C. Means. 1932. "the Modern Corporation and Private Property." *California Law Review*,21(1):78-79.
- Bizjak,J.M., J. A. Brikley and J. L. Coles, 1993. "Stock-based incentive compensation and investment behavior." *Journal of Accounting and Economics* ,16(1-3):
- Brenner, Menachem, Rangarajan K. Sundaram, and David Yermack. 2000. "Altering the terms of executive stock options". *Journal of Financial Economics*, 57 (1): 103-128.
- Burns, Natasha and Simi Kedia. 2006. "The Impact of Performance-based Compensation on Misreporting." *Journal of Financial Economics*,79(1):35-68
- Cain,A. 2006. "PCAOB Issues Stock Option Audit Questions." *Internal Auditor*, 63(6): 21.
- Cao, Lan. 2000. "Chinese Privatization: Between Plan and Market." *Law and contemporary Problems*, 63(4): 13-62.
- Capenter, Jennifer N. and Barbara Remmers. 1998. "Stock Price Performance Following Insider Option Exercise." Unpublished manuscript, New York University.
- Chen Gongmeng, Michael Firth and Yu Xin. 2008. "Control Transfers, Privatization and Corporate Performance: Efficiency Gains in China's Listed Companies." *Journal of Financial and Quantitative Analysis*, 43(1): 161-190.
- Lewellen, W., C.Lorder, and K. Martin. 1987. "Executive Compensation and Executive Incentive Problems. An Empirical Analysis." *Journal of Accounting and Economics*, 9(3): 281-310.
- Chourou, Lamia, Ezeddine Abaoub and Samir Saadi. 2008. "The Economic Determinants of CEO Stock Option Compensation." *Journal of Multinational Financial Management*.18 (1): 61-78.
- Coopers and Lybrand. 1993. *Stock Options: Accounting, Valuation and Management Issues*. New York(1993).

- Core, John E., Robert W. Holthausen, and David F. Larcker. 1999. "Corporate Governance, Chief Executive Officer Compensation and Firm Performance." *Journal of Financial Economics*, 51(3):371-407.
- Core, John E., Wayne R. Guay, and David F. Larcker. 2003. "Executive Equity Compensation and Incentives: A Survey." *Economic Policy Review*, 9(1): 27-51.
- Coulson, Crocker. 2009. *Small Cap China Hell: How We Got Here and How Can We Get Out?* Work paper, CCG.
- Cowan, and Alison Leigh. 1992. "Board Room Back Scratching?" New York Times, June 2, D1.
- Defeo, Victor J., Richard A. Lambert, and David F. Larcker. 1989. "The Executive Compensation Effects of Equity-for-Debt Swaps." *Accounting Review*, 64(2),201-227.
- Fama, Eugene Francis. 1980. "Agency Problems and the Theory of the Firm." *The Journal of Political Economy*. 88(2): 288-307.
- Fama, Eugene Francis. 1970. "Efficient Capital Markets: A Review of Theory and Empirical Work". *Journal of Finance*, 25 (2): 383-417.
- Fan, Long Zhen, and Zhang, Zi Gang.1998. "Empirical Research on Capital Market Efficiency for the Shenzhen Stock Exchange." *Journal of Industrial Engineering*." 1: 35-38.(in Chinese).
- Finkelstein, Sydney and Donald C. Hambrick. 1989. "Chief Executive Compensation: A Study of the Intersection of Markets and Political Processes." *Strategic Management Journal*, 10(2):121-134.
- Firth, Michael, Peter M.Y.Fung, and Oliver M. Rui. 2006. "Corporate Performance and CEO Compensation in China." *Journal of Corporate Finance*, 12 (4) 693-714.
- Forelle, Charles.2006. "Rambus.Finds Options Questions." *Wall Street Journal-Eastern Edition*, 247(150): A12-0.
- Gangl Walter T. 2006. "Back-Dated Options=Back-Dated Minutes." *The Corporate Governance Advisor*, 14(5): 21-24.
- Gao, Jun. 2009. "An Empirical Study on the Effects of the Non-tradable Share Reform to the Cash Dividends Policy of Listed Companies in China: Based on Data Mining Technology." *2009 International Conference on E-Business and Information System Security*, page:1-5.
- Goodman, David. 2000. "The Localism of Local Leadership Cadres in Reform Shanxi." *Journal of contemporary China*, 9(24): 159-183.



- Hemmer, Thomas and Steve Matsunaga. 1994. "Estimating the 'Fair Value' of Employee Stock Options with Expected Early Exercise." *Accounting Horizons*, 1994.8(4): 23-42.
- Hemmer, Tomas, Steve Matsunaga and Terry Shevlin.1996. "The Influence of Risk Diversification on the Early Exercise of Employee Stock Options by Executive Officers." *Journal of Accounting and Economics*, 21 (1): 45-68.
- Hu, Z., 1998. "Absence of the System and the Ineffectiveness of Motivation: An Explanation to the Agency Problem in the State Owned Enterprises." *Investment Research* 1998(1): 27-34. (in Chinese).
- Huddart S.and M.Lang. 1996. "Employee Stock Option Exercises: An Empirical Analysis." *Journal of Accounting and Economics*, 21(1): 5-43.
- Jensen, Michael C. and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3(4): 305-360.
- John, Teresa A. and Kose John.1993. "Top-management Compensation and Capital Structure." *Journal of Finance* 48(3): 949-974.
- Jonathan, Eaton and Harvey Rosen.1983. "Agency, Delayed Compensation, and the Structure of Executive Remuneration." *Journal of Finance*,38(5):1489-1506.
- Kihlstrom, R.E. and S.A.Matthews "Managerial incentives in an entrepreneurial stock market model." *Journal of Financial Intermediation*, 1(1):57-79.
- Kong and Xiao. 2007. "A Research on The Earnings Management Before Stock Incentive Plan Disclosed." Work paper, School of Management & Economics, Beijing Institute of Technology. (in Chinese).
- La Porta, Rafael, Florencio Lopez-de-silanes, Andrei Shleifer, and Robert W.Vishny. 2000. "Agency Problems and Dividend Policies Around the World." *The Journal of Finance*,55(1): 1-33.
- Lambert, Richard A. and David F.Larcker. 1987. "An Analysis of the Use of Accounting and Market Measures of Performance in Executive Compensation Contracts." *Journal of Accounting Research* 25(1): 85-125.
- Lewellen, Wilbur, Claudio Loderer and Kenneth Martin. 1987. "Executive Compensation and Executive Incentive Problems-An Empirical Analysis." *Journal of Accounting and Economics*, 9(3): 287-310.

- Matsunaga, Steven R.1995. "The Effects of Financial Reporting Costs on the Use of Employee Stock Options." *Accounting Review*, 70(1):1-26.
- Merhran, H. 1995. "Executive Compensation Structure, Ownership, and Firm Performance." *Journal of Financial Economics*,38(2):163-184.
- Ofek, E. and D. Yermack. "Taking Stock: Equity Based Compensation and the Evolution of Managerial Ownership." *Journal of Finance*, 55(3):1367–1384.
- Opper Sonja, Sonia M.L. Wong and Ruyin Hu. 2002. "Party Power, Markets and Private Power: Chinese Communist Party Persistence in China's Listed Firms." *The Future of Market Transition*, 19:103-136.
- Paul, Jonathan M. 1992. "On the Efficiency of Stock-Based Compensation." *The review of Financial Studies*, 5(3): 471-502.
- Peter, A. Brous and Vinay Datar. 2007. "The Value of Transparency: Evidence from Voluntarily Recognizing the Expense Associated with Employee Stock Options" *Business and Society Review*, 112(2): 251–269
- Qian Y., 1998. "Government Control in Corporate Governance As A Transitional Institution: Lessons from China." Working Paper, Stanford University.
- Ratliff, Paulette A. 2005. "Reporting Employee Stock Option Expenses: Is the Debate Over?" *CPA Journal*, 75(1): 38-44.
- Smith, Chlifford W., Jr. and Ross L.Watts.1992. "The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies." *Journal of Financial Economics* 32(3): 263-292.
- Stein, Jeffrey M. and Sara Walden Brown. 2006. "Backdating Stock Options: A Crisis in Confidence." *The Corporate Governance Advisor*, 14(5): 1-9.
- Sun, J., S.F.Cahan, and D.Emanuel.2009. "Compensation Committee Governance Quality, Chief Executive Officer Stock Option Grants, and Future Firm Performance." *Journal of Banking & Finance*,33(8):1507-1519.
- Theodore, Groves, Yongmiao Hong, John McMillan, and Barry Naughton. 1994. "Autonomy and Incentives in Chinese State Enterprises." *The Quarterly Journal of Economics*, 109(1): 183-209.
- Taylor, Colleen.2006."SEC Probing More Than 100 Companies." *Electronic News*,52(37):38-39.

Yang, Z., 1998. “Empirical Studies on the Chinese Stock Market.” Xuelin Publishing House (in Chinese).

Yermack, David 1995. “Do Corporations Award Stock Options Effectively?” *Journal of Financial Economics*, 39(2-3):237–269.

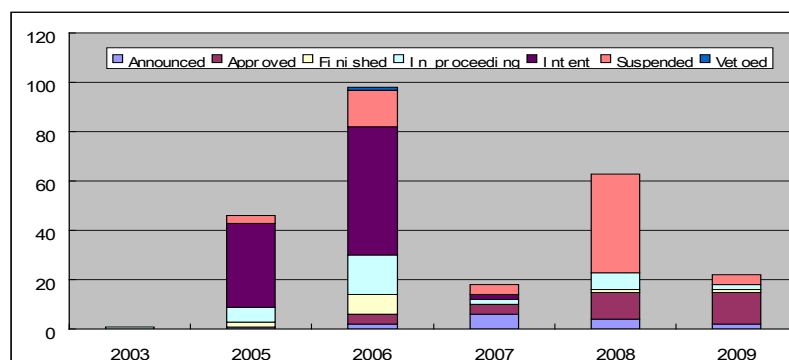
Yermack, David 1997. “Good Timing: CEO Stock Option Awards and Company News Announcements.” *Journal of Finance*, 52 (2): 449–476.

Yermack, David 2000. “Taking Stock: Equity-based Compensation and The Evolution of Managerial Ownership.” *Journal of Finance*, 55(3):1367-1384.

Zhang, W. 1998. “China’s SOE Reform: A Corporate Governance Perspective.” Working Paper. Peking University.

## Appendix

Appendix A: The annual statistics of the programs status <sup>62</sup>



Appendix B: Rules launched by SASAC with regards to SBC programs of state controlled enterprises.

Rules and regulations	Issue Time	
<b>Upper limit of numbers of shares awarded</b>	Maximum proportion of 10% of the all shares outstanding	Sep.2006
	For the first round of program, this number should be less than 1% of all shares outstanding.	Sep.2006
	For A shares, the earnings from option exercising should be less than 30% of the total annual salary <sup>63</sup> .	Oct.2008
<b>Approval procedure</b>	The SBC should be handed to SASAC first. The approval period will last for a maximum of 20 working days. Then the SBC will be hand to general meeting of shareholders (GMS) for final approval.	Sep.2006

<sup>62</sup> The data is updated to 30<sup>th</sup> June 2010.

<sup>63</sup> For H shares ,the earnings from option exercising should be less than 40% of the total annual salary; For particular H shares ,the earnings from option exercising should be less than 50% of the total salary

## Appendix B continued

<b>Rules and regulations</b>	<b>Issue Time</b>
The proportion of external directors consists at least fifty percent of the board committee.	Sep.2006
<b>Prerequisites</b> Without the permission of committee, BODs who own over five percent of all outstanding shares are not allowed vote for SBC programs.	Sep.2006
The compensation committees should consist of outside directors only.	Oct.2008
<b>Vesting period and restricting period</b> A minimum of three years vesting period is required before execution.	Oct.2008.
A recipient is obligate to hold a minimum proportion of twenty percent awarding shares until retirement or resignation.	Sep.2006
A recipient can only liquidate a maximum of 20 percent awarding shares within a single year.	Oct.2008
A minimum of six months restricting period is required, after the SBC program is executed	Oct.2008
<b>Standards</b> Within the vesting period, the firm's accounting performance should rank top fifty percent within the same industry.	Oct.2008
On the time of execution, the firm's accounting performance should rank top twenty-five percent within the same industry. <sup>64</sup>	Oct.2008
<b>Option Pricing</b> Specific methods are required for pricing (including price adjustment after issuing dividends, stock splitting etc.)	Sep.2006
<b>Forms of SBC</b> Stock options, private offering of additional shares (including repurchased shares and treasury shares), bonus accruing for option.	Sep.2006

\* Recourse: SASAC [2006] NO.8, SASAC [2006], NO.175, and SASAC [2008] NO.171.

### Appendix C: Industry frequency statistics of the sample firms\*

<b>Industry</b>	<b>Frequency</b>	<b>Percent</b>
Mining	36	2.1
Communication and Cultural Industry	14	.8
Utilities	67	4.0
Electronics	75	4.4
Real estate	91	5.4
Textiles & Apparel	71	4.2
Machinery	269	15.9
Construction	38	2.2
Transportation	68	4.0
Finance and insurance	32	1.9

<sup>64</sup> High-tech firms are not subject to this principle.

Appendix C continued

<b>Industry</b>	<b>Frequency</b>	<b>Percent</b>
Metals & Non -metals	144	8.5
Furnishings	6	.4
Agriculture, forestry, livestock farming, fishery	39	2.3
Wholesale and retail trade	97	5.7
Comprehensive construction	22	1.3
Petrochemicals	176	10.4
Food and Kindred Products	67	4.0
IT	120	7.1
Pharmaceuticals	107	6.3
Paper & Printing	35	2.1
Social Service	50	3.0
Comprehensive	68	4.0
<b>Total</b>	<b>1692</b>	<b>100.0</b>

\*CSRC industry classification.

Appendix D: Example of managerial net selling and share turnover ratio with regard to 11 sample firms who had executed at least one round of SBC.

<b>Stock Symbol</b>	<b>Awarding round</b>	<b>Deadline of restricting period</b>	<b>Number of managers awarded with SBC</b>	<b>Number of managers who sold the share after restricting period</b>	<b>accumulated number of shares sold**</b>	<b>accumulated number of shares awarded**</b>
000012	-	2010-06-25	N/A	2	-15	1190
000063	2 <sup>nd</sup> round	2010-06-04	19	7	-42.87	2529.807
	1 <sup>st</sup> round	2009-07-23				1526.929
600315	-	2010-04-28	8	2	-6	56.16
600499	2 <sup>nd</sup> round	2010-02-22	21	7	-131.98	669.5
	1 <sup>st</sup> round	2008-10-27				515
000069	2 <sup>nd</sup> round	2009-10-15	14	14	-263.32	284.94
	1 <sup>st</sup> round	2008-10-13				301.6
600588	3 <sup>rd</sup> round	2009-09-28	24	16	-104.433	48.4595
	2 <sup>nd</sup> round	2009-08-10				150.4776
	1 <sup>st</sup> round	2008-08-08				203.892
000061	-	2009-04-07	11	9	-565.37	1305.6
000006	-	2009-02-12	6	2	-81.9	1217.599
002032*	-	2008-11-14	21	4	-1376.69	1200
600460	-	2008-11-03	4	4	-36.9	12.65029
000939		2008-07-07	4	0		370.8366

Sources: sample firms' announcements

\*Small-cap firm

\*\*Unit: 10,000 shares