Study on the Market Reaction of Stock Option of Listed Companies in China

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Abstract. Stock option is a useful means to motivate the management to increase their efficiency and effectiveness. This paper investigates the market reaction during the period before and after the announcement date, taking the list Corporations which have announced option plans in Shanghai and Shenzhen stock markets from January 1, 2011 to September 21, 2012 as samples for event study. Through the event study and T-test, we find that there are positive market responses to the announcement of stock option plans to the management in China. Our research is of importance to both investors and listed companies.

Introduction
With the separation of ownership and operation of the enterprises, the principle agent theory came into being. The shareholders entrust operators to run business and strive to achieve their goals, but the interests between operators and shareholders are not completely consistent. In recent years, more and more enterprises began to use stock option as an incentive method. By using this method, they believe that it may prevent the operator from utilizing information superiority for their own profit; second, it can protect the interests of shareholders; third, it also may reduce agent cost and coordinate the conflict between shareholders and managers; last but not least, it can improve corporate performance and increase business efficiency. In China, it is until 2005 the reform of the shareholder structure that the stock option plan was really able to spread out. Therefore, it is necessary for us to study the effect and the market reaction of stock option plans from the perspective of market investors.

Review of the Literature
Foreign experts started to work on this issue in 1960s. From the empirical point of view, they show different results. For example, Mehran (1995) listed 153 USA manufacturing companies as samples, and then a positive correlation between management shareholding ratio and comprehensive performance was founded, that is to say the operator ownership was well correlated with corporate value; Morck (1988)suggested that the equity incentive was related to the range of corporate value. However, McConnell (1986) considered there existing a significant nonlinear relationship between stock option plan and firm performance.

Chinese researchers began to touch on this problem in 1990s. There also came diverse conclusions. For instance, Li (2000) believed that most of the listing corporations stock option plans cannot take effect because that empirical studies show stock options have no observably correlative relationship with the firm performance; Wei (2000).Yu and Gu (2001) thought that there existed low correlation between Chinese listing Corporation executives shareholding and firm performance; Cheng, Yue (2008) suggested that a notable positive correlation was non-existent; while Xia and Zhang (2008)showed just the opposite.

By comparing the literatures domestic and abroad, we find that the relationship between stock option plans and firm performance are proved in foreign capital markets, but not in China. Furthermore, the domestic researchers are mainly focused on the samples in the period of reform of non-tradable shares, yet studies after financial crisis are not a lot. Most importantly, the majority of
the researches merely focused on the level of corporate interests to explore the stock option effect on corporate performance; however they ignore the market reaction which is also a very important factor on this issue.

In this paper, we analyze the market reaction of stock option plans from the perspective of market investors through an empirical analysis.

**Research Design**

**Research Method**

To observing the reaction of the announcing of stock option plans, we use the event study method. In achieving this goal, two indexes are adopted: Abnormal Return (AR), Cumulative Abnormal Return (CAR). They are used to measure the change of the stock prices and related returns which were caused as the stock option plan announcement event or abnormal information disclosure.

Assume stock i is a stock with option plan announced. We calculate the Real Return and the Normal Return through the constant mean model as follows during option plans announcement (-30, +40) as samples, and then find out the stock i’s Normal Return rate.

\[ u_i = \frac{1}{41} \sum_{t=-30}^{+40} (R_i - R_m) \]  

Among them, Rit is the Real Return of the stock i in the trading day(t), Rmt is the market return in that day. Assume that the Normal Return remained unchanged during the event window, we can find out the daily AR of the stock i.

\[ AR_i = R_i - R_m - u_i \]  

The ARR of the sample which contains total N stocks on t day is.

\[ \sum_{i=1}^{N} AR_i \]  

The CAR of the whole sample by that day is.

\[ \sum_{t=1}^{T} CAR_t \]  

In the above formula (4), the event day (t=0) is the day when the stock option plan to management is announced. In the event window set, there exist a trade-off relationship that the longer the period of event window, the bigger the effect on the stock price, but this also contains noise and other events. We studies are the CAR in three window period (-2, +2), (0, +40), (-30, -1), that before and after the announcement of option plan announcing corporation, and through the T test to determine whether the event will have an impact on the stock price.

**Data Selection**

The sample data of the paper is chosen from the RESSET and CCER database. The financial data of 56 listed companies in the Shanghai and Shenzhen markets during 2011.01.01~ 2012.09.21 are selected.

**Research Results**

The cumulative abnormal return trend of full sample and information technology industry in all window phase can be seen through Figure 1 and Figure.
According to the CAR change trend of full sample in window phase (-2, +2), the reaction of market for option plan announcement was positive and as is shown in the Table 1, that is significant by t test. Trend of CAR account for the apparent increase and T test in the window period is significant, after thirteenth days in the option plan announcement. We have T tests to see whether the sample average significant deviation from the 0. If the event has no impact on stock prices, the mean of CAR, in the event window between any two point, must follow the standard normal distribution. Therefore, through tested if the mean of CAR equal to 0, to determine the equity incentive events impact on stock price.

<table>
<thead>
<tr>
<th>Window period</th>
<th>Mean</th>
<th>T test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-2, +2)</td>
<td>-1.8320</td>
<td>-22.647**</td>
</tr>
<tr>
<td>(0, +40)</td>
<td>-1.8512</td>
<td>-12.529**</td>
</tr>
<tr>
<td>(-30, -1)</td>
<td>-1.5093</td>
<td>-10.909**</td>
</tr>
<tr>
<td>Information technology industry sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(-2, +2)</td>
<td>-5.9860</td>
<td>-32.178**</td>
</tr>
<tr>
<td>(0, +40)</td>
<td>-4.9661</td>
<td>-10.202**</td>
</tr>
<tr>
<td>(-30, -1)</td>
<td>-2.9230</td>
<td>-8.587**</td>
</tr>
</tbody>
</table>

Notes: **is mean significant at 5% level.
From the table above, it can be seen: Both the full samples and information technology industry sample were significant by T test in the window period (-2, +2), (0, +40) and (-30, -1), that mean the sample average significant deviation from the 0.

Conclusions

According to empirical analysis on market reaction after the listed companies in china in recent 2 years, the following conclusions are drawn.

Firstly, through the fluctuant trend of CAR around the event day of the announcement of the stock option plans, the market interpreted this event as good news in the short term, and made positive response.

Secondly, the existence of significant abnormal return, before the stock option plan's announcement day that is (-30,-1) window phase, illustrated companies had partly leaked information to make a profit. But even so, the market made positive response and investors considered shareholders would benefit after the announcement.

Thirdly, the fact that CAR have significant increase after the announcement for fifteen days showed that investors would take more time to absorb the news.

In a word, domestic investors tend to view the listed companies with option plans through rose-tinted spectacles. By granting stock options to the management, the earnings expectations listed corporations can be enhanced.

References


