How Market Reaction to Stock-Based Compensation for Employee in China Stock Market?

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Abstract: In December 2005, the China Securities Regulatory Commission (CSRC) releases Stock-based incentive management regulation List company (try out) which indicates a new group of strategy incentive methods introduced to corporation government. 37 list companies announce their stock-based incentive plans from December 2005 to December 2006 in China. How market reaction to this news released in China stock market? Our research results test that market investors only in day -1 and 0 have a positively reaction, also an over reaction. There is no existence average cumulative return in the trading interval (-5, 5). However, the results explain that market investors not generally accepted in Chinese capital market.

Keywords: Stock-based option; Event study; Capital market

1 Introduction

In 1999, stock option experimental units in 9 listed firms manifest this strategy management tool introduced to China. However, although 8 listed firms’ implementation the second experimental units, none listed firm enforcement real meaning stock-based option in China’s A-share market until prior to 2005 . Listed firms stock-based incentive criteria opinion (Draft for Comment) was published by China Securities Regulatory Committee (CSRC) in 14 November 2005, which has been formal issued called List company Stock-based incentive management regulation (try out) in 31 December 2005. There are 37 list companies announce their stock-based incentive plans after the draft regulation publication till to December 2006.

Employee stock option plan has become a strategy tool for corporation governance. Employees in enterprise across many countries are increasingly granted stock-based incentive plans including stock option and restricted stock (e.g., Rousseau and Shperling [1], 2003; Kato, Lemmon, Luo and Schallheim, 2005[2]; Ding and Sun, 2001[3]). Employee incentive stock options plans and restricted stock plans are deferred compensation plans that allow employees to acquire stocks after serving their organizations for a certain period of time (e.g., Selvarajan et al., 2006[4]; Holland and Elder, 2006[5]). The stock-based compensation plans can counterbalance the inherently short-term orientation of base salary and annual bonuses (Bauman and Shaw, 2006[6]). Most people argue that stock option provide an alignment of the interests of management as decision makers and shareholders as risk bearers and incentives for employees to assume a responsible level of risk-taking (e.g., Muurling and Lehnert, 2004[7]; Holland and Elder, 2006[8]). Since stock-based compensation may affect almost everything—from a company’s compensation policy to its capital structure, and from accounting earnings to investment decisions (Muurling and Lehnert, 2004[9]), this question be as a strategy issue for company.

The remainder of the paper is organized as follows. Section 2 reviews literature. Section 3 describes research methods, including data sourcing. Section 4 gives the results of data analysis. Section 5 concludes the paper.

2 Literature review

Can stock-based options bring firm value added? Most of people argue that this strategy tool has a positive to firm. The widespread use of stock-based options has been attributed to its advantages, including favorable tax treatment, attraction, retention and motivation good employee, cash conservation, and gauge managerial talent (e.g., Arya and Mittendorf, 2005[10]; Huddart, 1994[11]). However, some scholars argue that expensing stock options will reduce share prices and innovation (Anson and Mark, 2003)[12]. Others think that the effect may be based on different parameter value (Nwogugu, 2006) [13].

What index and method can give reason conclusions? Some literature uses game theory, linear program model, and others mathematical methods (e.g., MacMinn and Page, 2006[14]; Arya and Mittendorf, 2005[15]; Osano, 2004[16]). These literatures make conclusion according to mathematic logic results. However, all kinds of results in one event may be absence in real world. Archive data may be good source to index for testing the real results. For example, finical condition and income data after adopted stock-based option to employee in firms can be used to evaluate its effect. Since stock-based option plans presents very short in Chinese listed firms, others evaluation methods and index should be applied.

Being investors’ judgment affect share prices, we can investigate market investors thinking about stock-based option plans by share price fluctuation. We can make use of this group sample to examine the stock price reaction...
to the announcement of stock-based compensation plans. The existence literature empirical evidence that firms grant options result to market reaction is positive. Kato, Lemmon, Luo, and Schallheim (2005)\cite{3} find that the average market reaction over the five-day period surrounding the announcements is approximately 2%. Ding and Sun (2001)\cite{3} find that the AAR is a positive 0.57% with a Z-value that is significant at the 5% level on the event of the announcement day in Singapore. Brickley, Bhagat and Lease (1985)\cite{4}, Defusco, Johnson and Zorn (1990)\cite{4}, also gave the same results to us. In this study, we examine the introduction of stock-based compensation in China to provide new evidence on this issue.

3 Method

3.1 Sample selection and description

Stock-based incentive plans announcements are ascertained from China Securities Newspaper. Firms announcing a stock-based incentive plans from December, 2005 through December, 2006 are initially included in our sample. There is an initial sample of 37 announcements. However, 2 firms enforce split-share structure reform schemes in the same day, which are deleted from the sample, leaving 35 firms for the clean sample.

3.2 Summary statistic

There are some different characters between adopters and nonadopters of stock-based option plans (ESO)? In order to finding some characteristics of the adopters, we use total liquid assets (TLA), total assets (TA), net income rate on total assets (NIRTA), operating revenue increasing rate (ORIR), and net cash flow from operating activities of per share (NCFOAPS) to describe size, profitability, and development capability of listed companies. These data source is CSMAR database. Being most firms of enforce stock-based option plans being with 2006, the incentive benchmark is the performance of 2005. These data allow us to characterize the firm of adopting stock-based incentive plans and compare these characters to those nonadopters. The results tell us that most all characters of adopters better than nonadopters except ORIR which means firms taking the lead in stock-based incentive plans being pressure from ORIR. However the p-value of t-Test tells us that only NIRTA has significance result in statistic. What these mixed results? Firstly, Wilcoxon Test explains weather two sub samples have identical distribution, but t-Test on the perspective of weather samples’ mean value equivalence. Secondly, Chinese listed firms’ stock-based incentive plans belong to infant stage, only some listed firms with better operate and management level have encourages to adopting stock-based incentive plans.

3.3 Market model

We use event study method to test market reaction to stock-based incentive plans announcements. Abnormal returns of the event for circulating share holders enterprise is the result of enterprise value enhancing from market investors’ perspective. When listed firms announcement information may influence firms’ value, the market investors change share prices. There are three conditions for apply event-study methodology. They are the efficient market hypothesis, the event unanticipated, and conflicting news eliminated (HÄUSSLER, 2006). We use the market model to calculate the abnormal returns (AR).

Accordingly the market model and CAPM, the return of each stock (R_f) is regressed against the return of market portfolio (R_m):

\[
R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}
\]

Where, R_f is the actual return rate at date t of firm i. R_m is the index return rate of the date t of corresponding marketing index. \(\epsilon_{it}\) represents the disturbance term.

The abnormal return at date t in the forecast period for firm i, AR_{it}, is estimated as

\[
AR_{it} = \epsilon_{it} = R_{it} - \alpha_i - \beta_i R_{mt}
\]

The cumulated abnormal returns (CAR_i) for firm i in the event window [-n, +n] is:

\[
CAR_{it} = \sum_{t=-n}^{n} AR_{it}
\]

The relevant market index for each firm follows from the stock index affiliation. For firms belonging to the Shanghai Stock Exchange, the Shanghai synthesis index is used. For firms listed at the Shenzhen Stock Exchange main board market, the Shenzhen composition index is used. For the remaining firms listed at Shenzhen Stock Exchange small and medium-sized enterprises market, the Shenzhen small and medium-sized enterprises index is adopted. Select the stock-based announcement date as the event day. If the announcement is released after the stock exchange closing time, the following first open day is regarded as event day. In the literature, the length of the event period varies enormously from 9 months to 15 minutes (HÄUSSLER, 2006)\cite{16}. To estimate the \(\alpha\) and \(\beta\) for each firm, an estimation period of 220 trading days beginning with 225 days prior to the event and ending 5 days prior to the event is used\cite{1}. Being Shenzhen small and medium-sized enterprises index was published from 1, December 2005, some small and medium-sized enterprises trading days prior to event day can not attain 220.

\[R_{0}=P_{0}/P_{n-1} - 1; P_{n} \text{ and } P_{n-1} \text{ represent the closing price at date } t \text{ and } t-1 \text{ of firm } i \text{ respectively.}
\]

\[R_{iu} \text{ is computed according to every day close marketing index.}
\]

\[\text{The close price of stock source from http://stock.business.sohu.com/}
\]

If a selected listed firm enforces a split-share structure reform in this period, the intraday data is deleted. If a selected listed firm allocated dividends, I also make a divided right process.
An estimation period of 220 trading days beginning with 2, December 2005 prior to the event ($X_1$) and plus $X_2$ days ($X_2=220-X_1$) after event window for firms listed at Shenzhen Stock Exchange small and medium-sized enterprises market.

4 Results

The regression results of each firm stock returns with market returns have been analysis. Most of firms’ equation adjusted R square more than 20%, only 2 less than 20%, the mean of them is 33.27%. Regression equations and each $\beta$ coefficient are significant at 0.000000001 and 0.000000001 respectively. These results show that market model is appropriate. We also give the mean of $\beta$ which is 1.093434298 and significant difference at 0.05 with 1. Though these firms risk level higher than market portfolio risk, the standard deviation only 0.2596. We can give the conclusion that most of the firms giving stock-based compensation for employee of China belong to low individual risk class.

The average abnormal return of 35 announcements at the day of the event is 1.38% (Sig. level=0.1), and at previous day is 1.29% (Sig. level=0.05), and at the fifth day after event is -0.98% (Sig. level=0.05). The average abnormal return of 24 announcements of pure stock option plan at the day of the event is 1.99% (Sig. level=0.05), and at previous day is 1.39% (Sig. level=0.1), and at the fifth day after event is -1.16% (Sig. level=0.05).

Possible explanations for these results are: firstly, previous day of event day has a news leakage, in the event day announcement of stock-based option plan making this news utterly diffusing. According to Fama (1970)[17], a semi-strong market adjusts to obviously publicly available information. On the basis of market reaction to stock-based option plans, the conclusion that Chinese capital market belong to the stage of semi-strong market efficiency being the news is assimilation instantly on the event day. Secondly, market investors estimating pure stock option plan announcements results more valuation enhancing for firms in the event day (1.99%>1.38%). Finally, market investors have an over reaction to stock-based option announcements at the event day and previous day which lead to a call-back at the fifth day after the event. On all accounts, there are abnormal returns from stock-based option announcements. However, it is consistent with the findings of Brickley et al. (1985)[14], and DeFusco et al. (1990)[15], and Ding et al. (2001)[16]. The significantly negative average AR on day 6 is puzzling.

The results manifest that in the window of (-5, +5), there are have no significant average CAR. The results of tell us that even an inside trader only can retain abnormal return for four days which in the interval (-1, 2). This finding, however, contrasts with that of Kato et al (2005) who find that the positive CAR existence in these intervals of (-1, 1), (-2, 2), (-20, -2), and (2, 20) in Japan. The total run-up for the 11-day and 6-day event window is positive but not significant. Overall, our evidence suggests that investors in China do respond to the use of stock-based incentive plan quite favorably only in day -1 and day 0. From the interval of (-5, 5), there are no average CAR in these firms.

5 Summary and discuss

This paper has applied the event study and market model in measuring the abnormal return of stock-based incentive announcements of Chinese listed firms. The paper has used a data set which contains 35 listed firms with stock-based incentive plan. Being formal startup stock-based incentive in China in November 2005, the sample is small only with 35 clean events. My contribution as follows: firstly, I find that market investor give positive reaction to stock-based incentive plan announcement. The AR mean is 1.38% (Sig. level=0.1) at event announcing day, and is 1.29% (Sig. level=0.05) at previous day. In addition, the fifth day after event day AR appears -0.98% (Sig. level=0.05), which tell us that there is an over reaction in Chinese capital markets on stock-based option event. Secondly, I find that Chinese capital market belongs to semi-strong market efficiency according to the data analysis, which can reflect historical information but not latent information. Thirdly, I also find that the CAR resulting from stock-based incentive announcing only retain for four days. On the whole, we can’t think that market investors accepted stock-based option plans in China being there are no CAR significant different with zero in interval (-5, 5).

The first limitation of this paper comes from the small sample. Being the sample has 35 firms in total, ANOVA and others analysis methods can’t be applied to it. In summary statistic, the results weak test that adopters have pressure of operate revenue increasing. Since stock-based incentive plans are concentrated in 2006 which persist at least 3 years. Therefore the financial effect of stock-based incentive plans can’t be afforded that give to I have to use market reaction data. With stock-based incentive plans continuous carried out, these questions will be solved. So more research methods should be used in future research.

Thanks

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References


