

The Market Reaction to Stock Option Plan Introduction in Japan

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This study investigates the announcement effect of the introduction of stock option plans using data from the Japanese market. The results of the event study analysis show that the announcement effect is connected with significantly positive abnormal returns, which is consistent with the agency hypothesis.

INTRODUCTION

In recent years academic interest in corporate governance has been growing and there has been a lot of controversy, especially over compensation for top management.

In Japan, the revision of the Commercial Code in May 1997 enabled the introduction of stock option plans, which had been prohibited for many years. This newly-introduced system arouses wide interest as an incentive for management to show greater respect for shareholders' profits. Many companies have decided to introduce some form of stock options, since it is now supported by the taxation and auditing systems.

In the United States, empirical studies about the reaction of the stock market to the announcement of the introduction of incentive compensation have been done by Larcker (1983), Tehranian and Waagelein (1985), Brickley et al.(1985), Bhagat et al.(1985), DeFusco et al.(1990), Yermack (1997) and so on. This research reveals that the stock price rises consistently after the

announcement. The use of incentive compensation plans is grounded in agency theory as firms attempt to align shareholder and management interests by linking management rewards to the firm performance.

There have been, however, few empirical studies about Japanese stock option plans so far. Therefore here we investigate empirically the influence of the announcement of the introduction of stock option plans upon share prices, using the event study methods and taking Japanese companies, which have a different structure and purpose of corporate governance from US companies. Japanese corporate governance, as there are a lot of stable shareholders as a consequence of cross shareholding based on the concept of the main bank or Keiretsu, companies are inclined to attach major importance to the interest of management as well as employees, which is far apart from maximizing the value of their company.

The remainder of this paper is composed as follows: Section 2 describes the data for analysis; Section 3 explains the methods of analysis; Section 4 presents the empirical results; Section 5 concludes this study.

THE DATA

We examined whether or not there had been any announcement of the introduction of stock option plans by Japanese companies during the period from May 1, 1997 to May 31, 1999 using the on-line *Nikkei Telecom 21 News Retrieval Service* provided by *Nihon Keizai Shinbun*. To extract samples the following criteria were applied:

- (1) Being listed on the First Section of the Tokyo Stock Exchange (TSE) at the time of the announcement. (Financial institutions and utilities are excluded);
- (2) Daily rates of return being available to permit estimation of the market model and no missing days in the event window;
- (3) No other significant events related to the company being reported for the period from 7 days before to 7 days after the announcement.

According to these guidelines, we obtained as a sample 41 companies from 14 industries.

It is certain that every company that has decided to introduce a system of stock options makes the announcement at a press conference on the exact date of the board meeting with newspapers reporting it on the following day. Therefore, we define Day 0 (the event day) as the day on which a company has its board meeting and makes the announcement to the press; Day 1 as the day when the *Nihon Keizai Shinbun*, a major economic daily paper, carries it.

The data on stock prices was obtained from the *Toyo Keizai* stock price database; the data on management ownership, from the *Nikkei NEEDS* finan-

cial database; the details of each form of stock options, and from the companies' annual reports.

METHODOLOGY

Prior studies give some empirical evidence that the announcement of the introduction of incentive compensation brings positive and statistically significant abnormal returns. Based on this evidence, there is a widely accepted explanation that abnormal returns are derived from the incentive effects based on the agency theory. In an agency perspective of Jensen and Murphy (1990), the introduction of equity-based compensation such as stock option plans has incentive effects that enable management to ease confrontation with shareholders regarding their interest and to be motivated to enhance the value of their company. Therefore in prior studies in the United States, it is interpreted that the market has reacted positively to those incentive contracts.

With regard to Japanese corporate governance, as there are a lot of stable shareholders as a consequence of cross shareholding based on the concept of the main bank or Keiretsu, companies are inclined to attach major importance to the interest of management as well as employees, which is far apart from maximizing the value of their company.

As Kaplan and Minton (1994) point out, Japanese firms generally tend to give much more priority to long-term performance such as market-share over short-term objectives like stock prices.

In this study we empirically investigate whether the announcement of the introduction of stock option plans has a positive influence on stock prices or not, with the purpose of verifying whether the incentive effect based on the agency theory exists also in Japan where we have a different style of corporate governance.

An event study methodology is used to estimate abnormal returns (ARs) and cumulative abnormal returns (CARs) around the event day (board meeting day). The period of the announcement is set for 3 days before and 3 days after the board-meeting day, which is the day of the press conference. The single-index market model parameters are estimated over the 250 days preceding the 20 days before the event date. The test statistics are calculated using the methodology outlined by Bhagat et al.(1985).

RESULTS

The results of the event study are presented in panels A and B of Table 1. Panel A of Table 1 shows daily abnormal returns (ARs), the associated Z-scores, and the proportion of firms yielding positive ARs for the period from day -3 to day +3 around the event date. Panel B reports corresponding statis-

tics for the cumulative abnormal returns (CARs) for various intervals.

- (A) The results indicate that the abnormal returns are negative and insignificant during the 3-day period prior to day 0 (the day of the press conference following the board meeting).
- (B) Day 0 is 0.467 percent and the Z-score of 0.735. Day +1 (the day of coverage in the newspapers) is 1.160 percent and the Z-score of 1.825 is significant at the five percent level.
- (C) During the two days around the event announcement (day 0 and +1) the cumulative abnormal returns are at 1.627% and the Z-score of 1.810 is significant at the five percent level.

Our findings suggest that the market reacts favorably to the announcement of the introduction of stock option plans in Japan.

The results are consistent with the previous findings, especially those of Bhagat et al. (1985) and DeFusco et al. (1990) in the case of the United States.

The purpose is to verify whether management ownership has influence on the above-mentioned ARs and CARs or not. In order to achieve this verification, we divide all the samples into two groups to make further analysis: one consists of the companies whose management ownership is high; the other is of low management ownership companies.

Our theory is that we expect that the market reacts more favorably to the announcement of the introduction of stock option plans if a company whose management ownership is low makes that announcement, since their agency problems are more severe, so that the effect of the introduction of stock options will be greater.

To investigate this hypothesis, we divide the whole sample into two groups based on the extent of management ownership with the median being used as the cut-off point.

Panel A of Table 1 displays results for the management ownership subsamples. Looking at the abnormal returns of day 1, those of the high management ownership companies are 0.220 percent ($Z=0.232$), which is statistically insignificant. On the other hand, the corresponding figure of the low management ownership companies is 2.054 percent ($Z=2.417$), which is significant. The difference of 1.734 percent is significant at conventional levels using the one-tailed T-test ($t=-1.800$).

Panel B of Table 1 provides information on CARs for the management ownership subsamples. As to the CARs for the interval from day 0 to day 1, while the companies whose management ownership is high show 0.622 percent ($Z=0.463$), the low management ownership companies present 2.584 percent ($Z=2.150$). The difference of 1.962 percent is significant at the 10 percent level using the one-tailed T-test ($t=-1.526$).

TABLE 1. Daily and Cumulative Abnormal Returns at the Announcement of the Introduction of Stock Options in the Japanese Market.

Panel A. Daily Abnormal Returns Around the Announcement Date													
Day	Full Sample (N=41)				High Management Ownership (N=20)				Low Management Ownership (N=21)				Difference
	AR	Z(AR)	pp	T	AR	Z(AR)	pp	T	AR	Z(AR)	pp	T	
-3	-0.552	-0.868	37	-0.872	-0.918	30	-0.247	-0.291	43	-0.941			
-2	-0.465	-0.730	41	-0.434	-0.457	40	-0.495	-0.580	43	0.070			
-1	-0.060	-0.095	56	0.065	0.068	65	-0.179	-0.211	48	0.408			
0	0.467	0.735	63	0.401	0.423	60	0.530	0.623	67	-0.183			
1	1.160	1.825 **	61	0.220	0.232	55	2.054	2.417 **	67	-1.800 **			
2	-0.040	-0.064	41	0.011	0.012	40	-0.090	-0.105	43	0.120			
3	0.093	0.146	44	0.010	0.010	45	0.172	0.202	43	-0.217			

Panel B. Cumulative Abnormal Returns Over Various Intervals Around the Announcement Date													
Interval	Full Sample (N=41)				High Management Ownership (N=20)				Low Management Ownership (N=21)				Difference
	CAR	Z(CAR)	pp	T	CAR	Z(CAR)	pp	T	CAR	Z(CAR)	pp	T	
(-3,0)	-0.610	-0.479	39	-0.839	-0.420	40	-0.391	-0.229	38	-0.344			
(-1,0)	0.407	0.453	56	0.466	0.347	55	0.351	0.292	57	0.124			
(-1,1)	1.567	1.423 *	68	0.687	0.418	55	2.405	1.634 *	81	-1.185			
(0,1)	1.627	1.810 **	68	0.622	0.463	60	2.584	2.150 **	76	-1.526 *			
(0,3)	1.680	1.321 *	61	0.643	0.339	50	2.667	1.569 *	71	-1.228			

The total sample consists of 41 firms listed on the Tokyo Stock Exchange and having announced the adoption of stock options for the period from May 1, 1997 to May 31, 1999. Financial institutions and utilities are excluded. Day 0 is the day on which they have the press conference following the board meeting. Day 1 is the day on which the Nihon Keizai Shinbun, a major financial newspaper, reports the announcement.

Daily abnormal returns (ARs) and cumulative abnormal returns (CARs) are calculated with the single-index market model based on the value-weighted TOPIX index. We calculate the test statistics (Z-statistics) using the Mikkelson and Partch (1988) procedure. PP refers to the percentage of the total sample exhibiting positive ARs (CARs) on any given day or for any given interval. The total sample is divided into a larger group and a smaller group based on the extent of management ownership. Management ownership is defined as the percentage of common stocks outstanding owned by all directors and officers at the announcement date. The median is used as a cut-off point. To examine the difference of the ARs (CARs) between the two groups, we apply one-tailed t-test.

* Significant at the ten percent level. ** Significant at the five percent level. *** Significant at the one percent level.

These results indicate that the market reacts more favorably to the announcement made by low management ownership companies than to that of high management ownership companies. This finding is consistent with the agency theory of Jensen and Meckling (1976). They argue that in companies whose management ownership is high, the agency problems caused by conflict between management interests and the shareholders' interests are reduced. Consequently, there seldom exists the necessity and the effect of the introduction of stock option plans. In contrast, companies whose management ownership is low have severe agency problems because there are some factors in wasting corporate resources, such as undue expenditure on perquisites and excessive investment. In these companies, it is quite effective to introduce stock option plans as an additional incentive. Our analysis results are consistent with that theory.

CONCLUSION

Stock option plans are important contracts that improve the alignment of management interest and shareholders' interest. In Japan, since the authorization of stock options, the number of companies adopting the said system has been increasing in recent years. By contrast, there have been few empirical studies done about that system to date.

This study investigates the announcement effects of the introduction of stock option plans using data from the Japanese market. The empirical results indicate that stock prices show a statistically significant response to the announcement of the introduction of stock options. We also find that stock returns react more positively to low management ownership companies than to high management companies.

Our findings from the Japanese financial markets are consistent with the agency theory hypothesis, which is in agreement with prior studies, especially those of Bhagat et al. (1985) and DeFusco et al. (1990) from the United States.

It has been said that the structure of corporate governance in Japan is fairly different from that in the United States. Some financial studies, however, show characteristics common to both systems, while others report their differences. This paper contributes to the former by illustrating the similarities between Japan and the US in stock market reaction to stock option plans as compensation to management. While differences may exist in the corporate governance system, the data and the analysis show that the market reaction to option-based compensation is similar.

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