

## Chapter 2

# Institutional Characteristics and Effects of a Stock Option

**Abstract** A stock option is defined as a corporation's "own share option given as remuneration to their working staff." In other words, it is a call option that identifies the share of their own corporations as an original asset under the present corporation law. The use of a stock option used to be prohibited in Japan. In May 1997, a stock option system was introduced for the first time, and, in November 2001, the Commercial Law was revised and a call option system was introduced. The number of companies that have introduced a stock option has increased steadily from the beginning of the system in the 1997 fiscal year. It reached a peak of 798 companies in the 2008 fiscal year. After that, affected by the costs-and-expenses treatment of the stock option, the worldwide economic recession, and a fall in stock prices accompanying the Lehman shock, the number of companies that have introduced a stock option declined to 721 companies in the 2010 fiscal year and 707 companies in the 2012 fiscal year. Studies on stock options in Japanese firms multiplied after the introduction of the system in 1997. Many studies focus upon what kinds of corporation introduced the stock option. Some studies examine the consequences or influences of the introduction of the stock option. For example, Nagaoka (J Bus 78 (6):2289–2315, 2005) shows that firms that are younger, that show more volatile stock prices, that belong to the high-intensity R&D sector, and that have higher growth potential tend to have a higher propensity to introduce a stock option. Kato et al. (J Finan Econ 78(2):435–461, 2005) compare between stock option-adopting firms and non-adoption firms over the three years before and after the adoption of the stock option and show that management ownership becomes higher for the adoption firms, that there are no significant differences in dividends or stock price volatility between the adopting and non-adopting firms, and that the profitability of the adopting firms measured by return on assets is higher.

**Keywords** Stock option • Call option • Commercial law • Incentive view • Selection view • Managerial remuneration

## 2.1 What Is a Stock Option?

In modern corporations with a separation between ownership and control, the questions of how the different interests between shareholders and corporate managers can be settled and how corporate performance can be improved are important issues for corporate governance.

One mechanism that gives a pecuniary incentive to a corporate manager is a stock option. According to accounting standards, a stock option is a corporation's "own share option given as remuneration to their working staff." Here, the share option is the call option that identifies the share of their own corporation as an original asset under the present corporation law.

Put another way, a stock option provides the claim for the stock of its company to be acquirable at a price determined beforehand (i.e., the exercise price) to corporate directors and employers. As in the original meaning of "option," those who have a claim can freely select whether they will exercise the claim or not. In a stock market condition in which the stock price is less than the exercise price of the stock option, an exercised right causes losses. Therefore, a stock option is exercised under the conditions that the actual stock price is at least higher than the exercise price.

As shown in Fig. 2.1, in a general equity investment, where the stock is the corporations' own stock or other corporations' stock, stock holders can obtain capital gains when the current stock price is higher than its purchasing price, while they will suffer capital losses when the current stock price falls. The owner of a stock option can enjoy capital gains when the stock price at the time of its exercise is higher than its exercise price, but the owner doesn't have to suffer losses even if the stock price at the time of its exercise is lower than its exercise price because the owner would not exercise the option. Thus, the owner of a stock option does not have to pay the downside risk by not exercising a claim.

In other words, the owner of a stock option can increase the expected return if a high-risk, high-return type of investment project is chosen. Therefore, giving stock options to top managers may promote risky corporate behavior. In the US, the stock option has been widely used as part of a top manager's reward package since the 1960s. According to Yermack (1995), who investigated the CEO compensation of 792 large US corporations, the share of stock option rewards out of total compensation had reached 20 % in 1984 and 35 % in 1990.

## 2.2 The Development of the Stock Option System in Japan

Stock options used to be prohibited in Japan because the acquisition of a company's own stock was restricted due to the belief that it was important for corporations to improve their equity capital under the old Commercial Law. Moreover, a special resolution at a stockholders' meeting was needed for equity issuances at a price less

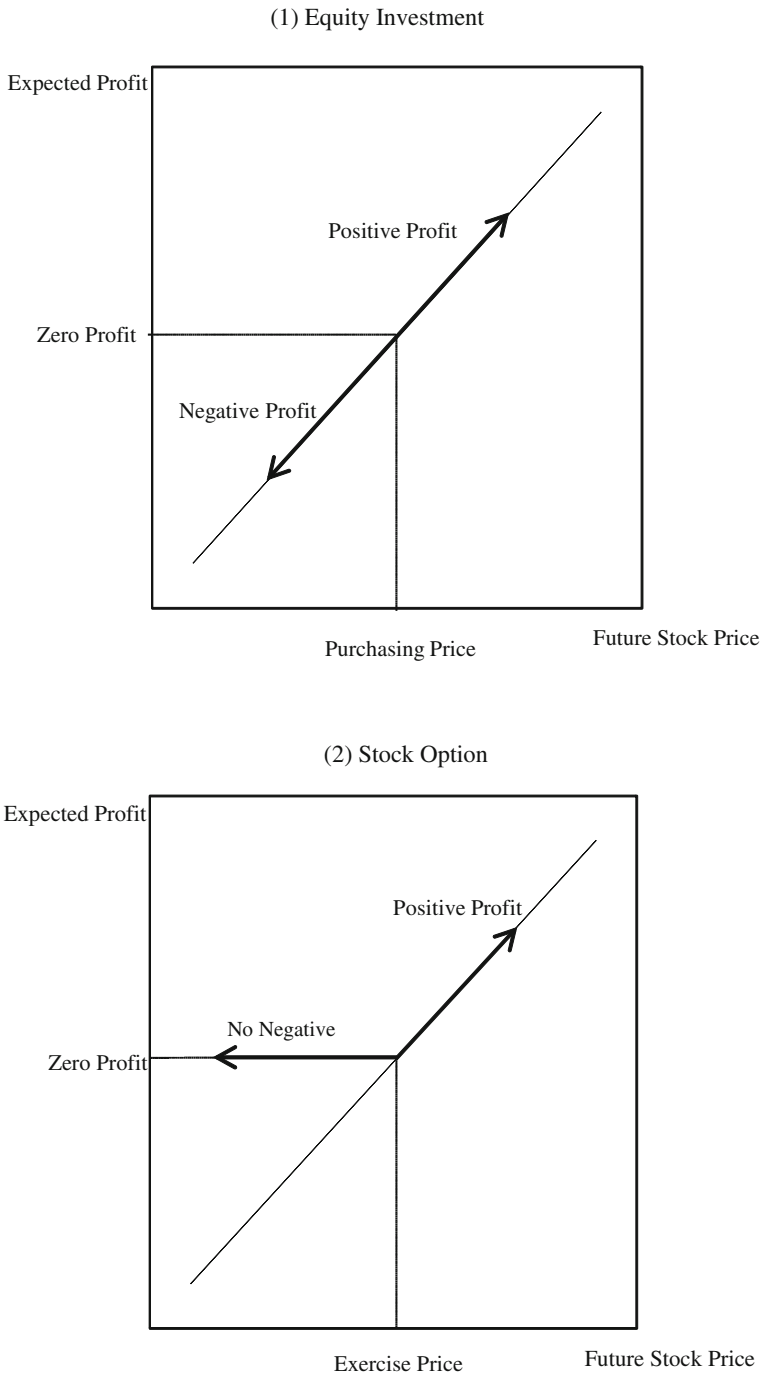


Fig. 2.1 Comparison between equity investment and stock option

than the market price of the stock; the effect of the special resolution covered a 6-month period because stockholders' interests were regarded as the highest priority.

In May 1997, a partial amendment to the Commercial Law was made, and a stock option system was introduced for the first time. Two different modes were adopted. The first was called the "company's own stock" mode. In this mode, an incorporated company provides a claim whereby the company's own stock held by the corporation can be purchased at a predetermined price by the directors and/or employees. The second is the "stock subscription rights" mode, whereby an incorporated company provides the claim to the directors and/or employees that they can purchase new stock at a predetermined price; when the claim is exercised, new stocks are issued.

An ordinary resolution at a regular shareholders' meeting is necessary to provide the stock option claim in the former case, but, in the latter case, after making provisions in the articles of association, a special resolution of the shareholders' meeting is needed. In both cases, the exercise-of-right time periods are more than 2 years and less than 10 years from the date of the shareholders' meeting resolution. Using both modes together in the same corporation is not allowed.

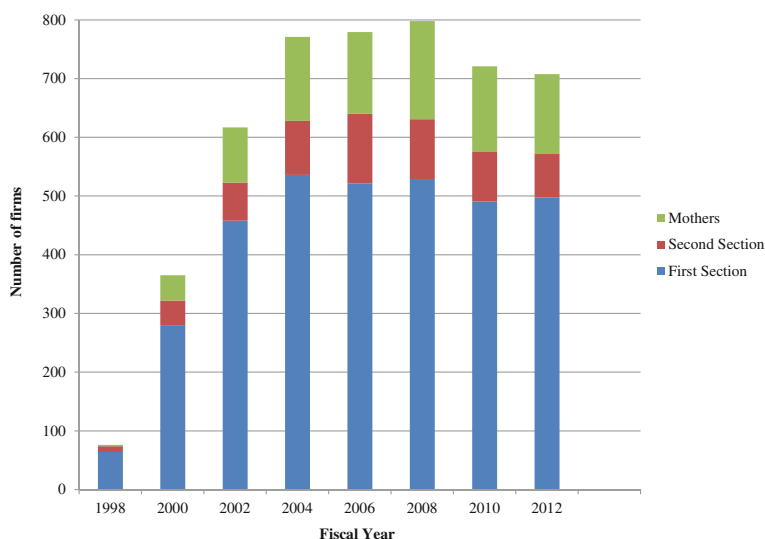
In November 2001, the Commercial Law was revised, and a call option system was introduced. Thereafter, a stock option was regarded as the issuance of a new share warrant, where the price of the new share has to be less than its market price. Before this change, the entities for stock option investiture had been restricted to the directors and employees of the company itself. After the revision, investiture entities were expanded to include the directors and employees of subsidiary companies, corporate lawyers, and others. Moreover, procedures for making provisions in the firms' articles of association became unnecessary, although a special resolution of the stockholders' meeting was still needed. Restrictions on the exercise-of-right time period were also abolished.<sup>1</sup>

Accounting standards concerning stock options were released in December 2005 to prevent abuse. This standard required the investiture of a stock option to be regarded as equity-related compensation costs and expenses for stock options given after the date of the enforcement of the Company Law in May 2006.

The introduction of the stock option to Japanese TSE-listed companies is shown in Fig. 2.2. The number of companies that have introduced the stock option has increased steadily from the beginning of the system in the 1997 fiscal year, reaching 365 companies in the 2000 fiscal year. In response to the abovementioned institutional reform in November 2001, an upsurge in stock option introduction began in the 2002 fiscal year; the number of companies using stock options reached 617 in the 2002 fiscal year, 771 in the 2004 fiscal year, 779 in the 2006 fiscal year, and 798 in the 2008 fiscal year. Afterwards, due to the abovementioned costs-and-expenses

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<sup>1</sup>However, a preferential tax treatment is applied to stock options exercised from 2 to 10 years from the date of the decision of the shareholders' meeting.



**Fig. 2.2** Development of the introduction of the stock option for Japanese TSE-listed companies.  
*Note* From 1998 to 2004, the author's estimation. From 2006 to 2012, TSE's survey data

treatment of stock options, the worldwide economic recession, and the fall in stock prices accompanying the Lehman shock, the number of companies that have introduced stock options declined to 721 in the 2010 fiscal year and 707 in the 2012 fiscal year.

The number of companies listed in the First Section of the Tokyo Stock Exchange was overwhelmingly high during the several years after the beginning of the system in the 1997 fiscal year. In the 2000s, however, the number of companies listed in the Second Section and the Mothers of the Tokyo Stock Exchange increased. Firms in the Mothers have a higher interest in the introduction of the stock option, and about 80 % of them have introduced the stock option in recent years.

Table 2.1 shows the number of companies that introduced the stock option and the number of listed companies by industry and by Market Section in the Tokyo Stock Exchange. In manufacturing industries, more than 30 % of companies (e.g., electrical machinery, pharmaceutical products, paper and pulp, precision machinery, transportation equipment, chemistry, glass and ceramics, and soil-and-stone finished products firms) have introduced the stock option. In non-manufacturing industries, the percentage of companies that have introduced the stock option is much higher; in industries such as the information and telecommunication, services, real estate, and retail industries, most companies have introduced the stock option.

**Table 2.1** The number of firms that introduced stock option by TSE market and by sector

							Unit: The number of firms		
	First section		Second section		Mothers		TSE all markets		
	SO	LC	SO	LC	SO	LC	SO	LC	SO/LC (%)
Manufacturing	256	862	38	250	21	25	315	1,137	27.7
Food	17	73	2	28	2	2	21	103	20.4
Textile	13	46	3	15	0	0	16	61	26.2
Paper and pulp	2	12	3	5	1	1	6	18	33.3
Chemistry	43	121	3	28	0	0	46	149	30.9
Pharmaceutical	10	35	1	1	4	4	15	40	37.5
Petroleum and coal	2	11	0	2	0	0	2	13	15.4
Rubber	5	12	0	5	0	0	5	17	29.4
Glass and ceramics	10	30	2	10	0	0	12	40	30.0
Iron and steel	6	35	0	9	0	0	6	44	13.6
Nonferrous metal	5	25	3	10	0	0	8	35	22.9
Metal products	6	38	0	20	0	0	6	58	10.3
General machinery	26	121	6	40	1	2	33	163	20.2
Electrical machinery	64	166	9	39	8	10	81	215	37.7
Transportation equipment	25	64	1	17	0	1	26	82	31.7
Precision machinery	8	26	2	9	2	2	12	37	32.4
Other manufacturing	14	47	3	12	3	3	20	62	32.3
Non-manufacturing	348	869	72	226	142	164	562	1,259	44.6
Agriculture, forestry and fishery	3	6	1	1	0	0	4	7	57.1
Mining	0	6	0	0	0	0	0	6	0.0
Construction	16	104	6	27	1	2	23	133	17.3
Electricity and gas	0	17	0	6	1	1	1	24	4.2
Land transportation	5	34	2	10	0	0	7	44	15.9
Marine transportation	2	10	1	4	0	0	3	14	21.4
Air transportation	0	4	0	1	1	1	1	6	16.7
Warehouse	3	18	0	9	1	1	4	28	14.3
Information and telecommunication	63	93	10	20	55	63	128	176	72.7
Wholesale	51	144	14	43	8	9	73	196	37.2
Retail	72	142	17	47	15	19	104	208	50.0
Banking	22	86	0	2	0	0	22	88	25.0
Securities	13	21	1	1	0	0	14	22	63.6
Insurance	5	8	0	0	1	1	6	9	66.7
Other financial services	14	34	3	4	2	2	19	40	47.5
Real estate	29	54	6	17	11	12	46	83	55.4

(continued)

**Table 2.1** (continued)

							Unit: The number of firms		
	First section		Second section		Mothers		TSE all markets		
	SO	LC	SO	LC	SO	LC	SO	LC	SO/LC (%)
Services	50	88	11	34	46	53	107	175	61.1
Total	604	1,731	110	476	163	189	877	2,396	36.6
SO/LC (%)	34.9	—	23.1	—	86.2	—	36.6	—	—

*Notes* SO represents the number of firms that introduced stock options. LC represents the number of listed companies. The data are based upon the TSE Corporate Governance Information Service as of May 25, 2007

## 2.3 Stock Option Studies on Japanese Firms

Studies on the stock option in Japanese firms multiplied after the introduction of the system in 1997. Many studies focus on what kinds of corporation have introduced the stock option. Some studies examine the consequences or influences of its introduction.

Nagaoka (2005) empirically analyzes the determinants of the firms that introduced the stock option between 1997 and 2000, examining 3,176 Japanese listed companies. Among these firms, 391 had introduced the stock option. A probit model set at 1 for firms that had introduced the stock option and 0 otherwise was estimated. The result showed that firms that were younger, had more volatile stock prices, that belonged to the high-intensity R&D sector, and that had higher growth potential tended to have a higher propensity to introduce a stock option. In addition, when a stock option was given to not only corporate directors but also to employees, the result for firm age was amplified.

These results can be interpreted as follows. The firms that faced a wide range of investment opportunities used the stock option to mitigate information asymmetries with employees who had useful information and finally chose suitable investment projects. Nagaoka (2005) points out that, in Japan, the stock option system tends to be utilized not to motivate the managerial efforts of a top manager (incentive view) but to mitigate information asymmetries when suitable investment opportunities are being chosen (selection view).

Uchida (2006) also estimates a probit model in which the dependent variable is a dummy variable set at 1 for stock option-introducing firms and 0 otherwise. The sample comprises 782 listed firms in the First Section of the Tokyo Stock Exchange in 2000. Among these, 109 had introduced the stock option. According to the estimation results, among the independent variables, the coefficients of leverage ratios showed significantly negative signs, which tended to become larger for the firms belonging to *keiretsu* or that had main banks. Uchida (2006) argues that this is

because Japanese firms tend to finance through debt, and, in order to reduce the agency costs of debt financing, highly leveraged firms are reluctant to grant stock options. The scale factor of the firms had positive coefficients, which Uchida (2006) interprets to indicate that the larger corporations are better situated to introduce stock options because these firms have varied staff members, including experts in law, accounting, and tax systems.<sup>2</sup>

Aman (2002) examines 117 stock option cases introduced between 1997 and 1999. The dependent variable is the stock option dependency ratios of the sample firms, defined as the ratio of the number of the stock options already given to the total number of already issued shares, or the ratio of the value of the stock option to the market capitalization of the firm.

According to the estimation results of the tobit model, the management ownership ratio and financial institution ownership ratio show statistically significant negative coefficients. Aman (2002) concludes that management ownership has a function similar to that of the stock option and thus that these two methods have an alternate relationship and that higher and more powerful ownership by financial institutions restrains stock options because it increases a kind of uncertainty.

Kato et al. (2005) analyze the determinants of the adoption of the stock option system and the effects of the stock option. Their sample comprises TSE-listed companies and covers 1997–2001. Among them, 344 firms that introduced the stock option are included. First, a stock price event study of the adoption of the stock option showed that approximately 2 % of the cumulative abnormal return (CAR) was observed before and after five days from the date the information became public. The CAR tended to be higher when the ratio of the stock option granted to board members was higher and lower when the ratio of the stock option granted to employees was higher.

Second, a logit model estimation based upon the panel data showed the determinants of the stock option. The results indicated that the firms with abundant growth opportunities and facing liquidity constraints tended to introduce the stock option and that highly leveraged firms tended to be reluctant to adopt it. Kato et al. (2005) compare between stock option-adopting firms and non-adopting firms during the three years before and after the adoption of the stock option in terms of ownership structure, dividend policy, stock price volatility, and profitability. According to the results, management ownership became higher for the adopting firms. There were no significant differences in dividends or stock price volatility between the adopting firms and non-adopting firms, and profitability, measured by the return on assets of the adopting firms, was higher. From these results, Kato et al. (2005) conclude that the stock option system is functioning positively as an incentive mechanism for creating higher shareholder value.

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<sup>2</sup>Moreover, Uchida (2006) shows the positive impact of the firm size upon the introduction of stock option. He points out that there are many specialists and professionals, such as lawyers, accountants, and licensed tax accountants, in the big companies. And he interpreted that the availability of these talented person facilitated the introduction of the stock option which is a new system for the firms.



Kubo and Saito (2008) perform a comprehensive analysis of the managerial remuneration that includes not only the normal pecuniary compensation such as a salary and a bonus but also stock-related compensation such as stock options and management ownership. They analyze the presidents' total remunerations for 115 companies extracted from the Nikkei 225. Their estimations show that the stock option value was an average of 4,860,000 yen per company in 2000, nearly 10 % of the presidents' total compensation (an average of 45,290,000 yen). They also calculate the sensitivities of the presidents' total compensation to the change in stock values and find that only a 0.85 yen increase in compensation is observed after a 1,000 yen increase in stock value in 1977. Moreover, sensitivities declined, with only a 0.20 yen increase realized in 1992. Kubo and Saito (2008) argue that this occurred because the presidents' shareholding ratio followed a downward trend.

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Corporate Governance and Corporate Behavior in Japan  
The Consequences of Stock Options and Corporate  
Diversification

Hanazaki, M.

2016, XI, 88 p. 7 illus., 5 illus. in color., Softcover

ISBN: 978-4-431-56004-3