The Wealth Effect of Equity Incentive Plans: Evidence from the Price Impact of Announcements at Different Stages

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Abstract

By examining the wealth effect of announcements of equity incentive plans by using the event study, the paper shows evidence that equity incentive plans have a significant and heterogeneous impact on the listed firms' stock prices at different stages in the A-share market.

First, around the draft release dates of the equity incentive plans issued by board of directors, the cumulative excess returns of A shares are on average significantly positive. This abnormal return does not reverse over the next 30 trading days.

Second, different types of equity incentive plans have different price effects on the equity price. Specifically, around the release dates of the drafts of equity incentive plans, the positive market reaction of stock options is the strongest, followed by the market reaction of restricted shares, and the market reaction of stock appreciation rights is the weakest. The main reason for this is that there are significant differences in the degree of incentives for different types of equity incentives.

Third, around the announcement dates when the equity incentive plan is terminated, the market-wide investors show disperse opinions, which lead to a significant increase in the return volatility in the cross section as well as a significantly negative cumulative abnormal return.

Fourth, we also explore the potential factors that affect the termination of equity incentive schemes. We find that the governance structure, salary structure and fundamentals all affect the possibility of termination of equity incentive schemes. An increase in the proportion of independent directors can reduce the possibility of termination of equity incentive schemes. Moreover, firm fundamentals play a more important role in determining the possibility of termination of equity incentive schemes. For example, higher return of equity and higher total asset growth rate would lead to a

lower possibility of plan termination.

This further confirms that announcement effects at different stages of equity incentive plans on stock price come more from investors' expectation of the company's fundamentals. The changes in investor expectations then echo to shareholders' wealth effect by incorporating information into stock prices.

Fifth, the higher the proportion of equity incentives to total shares outstanding, the greater the intensity of equity incentives, and the better the ability of equity incentives to coordinate the goals of managers and the company's long-term interests. We then document a more remarkable and positive market reaction when the proportion of equity incentives to total shares outstanding is higher in the cross section.

Finally, we find that the A-share prices are significantly lower around announcement dates of granting equity incentives, but with a rapid rise in the stock prices. We conjecture that there are timing behaviors for the selection of dates of grating incentives, which aims to expand the space of profitability.

Overall, the paper discusses the impact of equity incentive schemes on stock prices at different stages of implementation in detail. Our findings offer a deep insight into investment practice and wealth management, and also provides policy implications for improving information disclosure mechanism and protecting the interests of investors.

Keywords: Announcement Effect, Cumulative Abnormal Return, Equity Incentives, Event Study

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The Wealth Effect of Equity Incentive Plans : Evidence from the Price Impact of Announcements at Different Stages

1. Introduction

The equity incentive plan is a type of incentive method by which the company grants ownership to managers on the condition of certain performance standards, so as to encourage them to serve the company's long-term development. The equity incentive plans originated in the United States. It is an important way for modern companies to motivate operators and solve the "principle-agent" problem between company owners and managers. Equity incentives play a positive role in improving the corporate governance, enhancing the abilities and efficiency of managers' decision-making, and enhancing the company's cohesion and market competitiveness. However, at the same time, equity incentives may also have some negative effects, such as increasing executives' controlling power over the company, exacerbating information asymmetry and supervision costs, and even harming the interests of external shareholders (Aboody and Kasznik, 2000; Lie, 2005, then it is expected that managers are less likely to time the announcement dates because the profit space is less affected by the stock price when the incentive plans start to work.

In 2008, the China Securities Regulatory Commission published three equity incentive memos, which clearly defined some inappropriate practices in equity incentives. Since then, equity incentive legislation has entered a more standardized period.

In addition to the prevalence of equity incentive plans over time, the main types of equity incentive plans in the cross-section are also changing. Restricted stock means that a listed company grants some people in the firm (for example, managers and employees) a certain number of shares of the company in accordance with predetermined conditions. Incentive objects can only sell restricted shares and benefit from them if their working life or performance goals meet the requirements of the

equity incentive plan. After meeting the requirements, the incentive object does not need to invest, or only needs to pay a small amount of investment to get stock rewards and enjoy the company's dividends. Stock options refer to the buyer's right to buy or sell a certain number of related stocks at the agreed price on or before the expiry date specified in the contract after the payment of the premium. Incentive objects generally do not have the right to dividends, and their income comes from the future stock price increase, and the realization of the income depends on the fluctuation of the future stock price. Compared with stock options, mature companies are more likely to use restricted stocks as incentive plans because this type of incentive plans aim to align the interests of managers and firms through ownership acquirements with low costs (of buying stocks) and long-term dividends. Managers receiving the incentives are more likely to hold the stocks for a long horizon and thus, mature firms are less likely to suffer from selling pressure. However, stock options are especially popular for companies in the early growth or expansion period based on their high-risk and high-return market characteristics. For stock appreciation rights, the manager directly receives remuneration for the company's stock appreciation at the end of the period (= the market price of the stock at the end of the period-the agreed price). Since stock appreciation rights do not actually own shares, nor do they have shareholder voting rights, allotment rights, and dividend rights, they cannot be transferred and used for guarantees, debt repayment, etc., and the degree of incentives is limited. It is a relatively unpopular type of equity incentive.

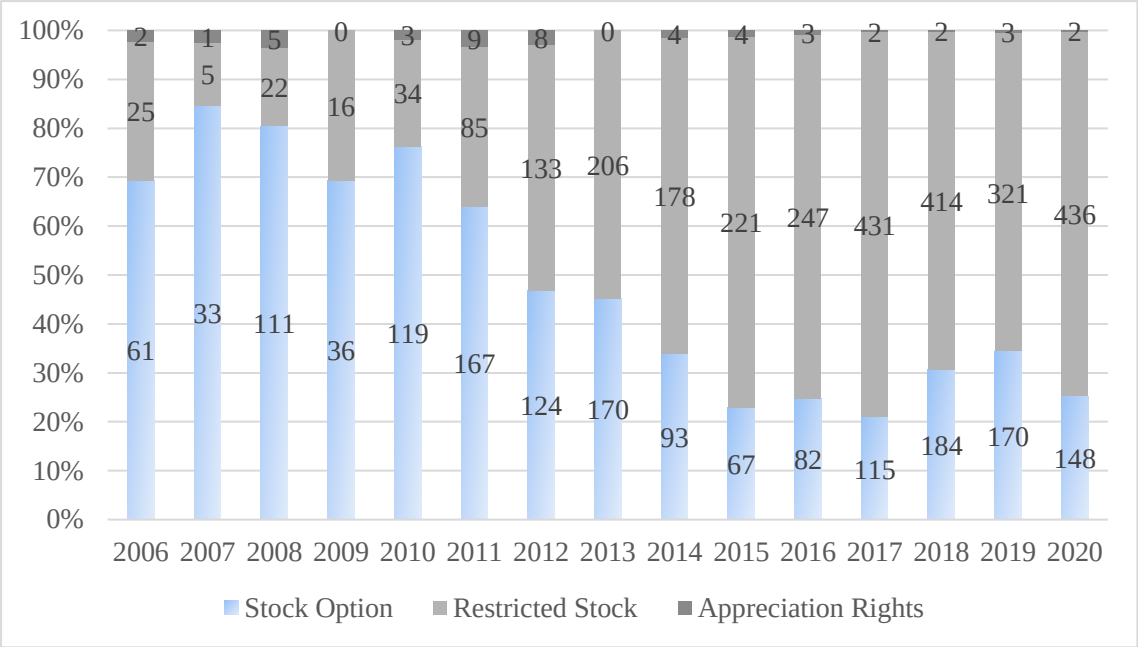


Figure 1 Distribution by Year: Types of Equity Incentive Plans from 2006 to 2020

Figure 1 plots the proportion of three types of incentives including restricted stocks, stock options, and stock appreciation rights for each year from 2006 to 2020. The data are downloaded from the CSMAR database, one of the most commonly used data vendors in China. Before 2012, the number of stock options dominated, and since 2012, restricted stock has become the main type of incentive plans. The change is partly because those firms granting stock options are more likely to suffer higher selling pressure in the future than those granting restricted stocks, as we note earlier in the section of institutional background. Stock appreciation rights have always been relatively unpopular, and only single-digit incentive schemes choose this form each year.

1.2 Literature Review and Hypothesis Development

The branch of research most relevant to this article is the market reaction around the announcement of incentive plans. Jensen and Meckling (1976) pointed out that the implementation of the equity incentive system can promote the consistency of the interests of the principal and the agent, reconcile the conflict of interests between the

two, and solve the principal-agent problem to a certain extent. In a company that implements equity incentives in order to maximize its own interests, managers will have a higher motivation to improve the company's profitability and increase investment efficiency, so as to ensure that the company has a better stock price performance in the capital market. At this time, managers' interest is more likely aligned with shareholders' interest (Hanlon et al., 2003). Therefore, investors should accept the company's announcement of equity incentives, which may trigger a positive market effect.

Brickley et al. (1985) studied the market response of 175 equity incentive plans in the United States and found that the announcement of equity incentive plans can get a positive market response and promote shareholder wealth. Agrawal and Knoeber(1996) and Murphy (1999) both have similar findings that stock options can be one mechanism to control agency problems between managers and shareholders and the effect on stock prices would be positive on average. Kato et al. (2005) used the Japanese listed companies that issued equity incentive plans as a research sample, and found that the sample had a significant positive cumulative abnormal return during the window period of 5 trading days before and after the announcement through the event research method. Lu et al. (2009) mainly analyzed the changes in the stock prices of listed companies after the implementation of equity incentives in the short-term in China, and found that the short-term stock prices of listed companies that implement equity incentives have risen, which is consistent with intuition. However, most of these studies did not analyze the reasons for the stock price changes near the announcement of the equity incentive plan. We speculate that, on the one hand, it may be because average investors interpret the equity incentive plan as insiders' confidence in the company's future performance, so they adjusted their own stock price expectations; on the other hand, it may also be that the equity incentive plan has a profound impact on corporate governance and management efficiency because the incentives of shareholders and managers become more aligned, which may lead to fewer agency problems.

Taking the China's stock market as a background, Wu and Liu (2008) used the state-owned listed companies implementing equity incentives as samples, and used the event research method to examine the stock returns around the first disclosure date. They also find a positive stock market reaction. Some literature has similar findings regarding the positive market response to equity incentive announcements. For example, Liu (2013) selected the equity of 198 A-share listed companies starting from the first equity incentive plan on September 26, 2005, to 2010. As a sample of incentive plans, the study found that although companies have more incentives to launch equity incentive plans in a bear market, and shareholders hope to incentivize management to improve company performance, based on market conditions and future pessimistic expectations, the probability of stopping the implementation of equity incentive plans is higher. Zhou and Zhao (2015) found that equity incentive events have significantly positive short-term market effects, which are regarded as good news by investors.

Based on these findings across country documented by previous studies this article forms the following assumptions:

H1: Around the draft release dates of the equity incentive plans issued by the board of directors, the cumulative abnormal return (CAR) is on average significantly positive in the A-share market.

Zhou and Zhao (2015) found that the positive announcement effect of equity incentives with options as the subject matter is greater than that with stocks as the subject matter. They speculate that the A-share market has not yet met the semi-strong efficient market conditions and there is more serious insider trading. The findings of Zhou and Zhao (2015) also inspired this article to classify equity incentive plans. For restricted stocks, after meeting the requirements, the incentive object does not need to invest, or only needs to pay a small amount of investment to obtain stock awards and enjoy corporate dividends. For stock options, the incentive object generally does not have the right to dividends, and its income comes from the future stock price increase, and the realization

of the income depends on the fluctuation of the future stock price. For stock appreciation rights, it means that the incentive object does not actually own stocks, nor does it own shareholder voting rights, allotment rights, and dividend rights, and the degree of incentives is limited. Therefore, we form the following hypothesis:

H2: Different types of equity incentive plans have different price effects on the equity price. Specifically, around the release dates of the drafts of equity incentive plans, the positive market reaction of stock options is the strongest, followed by the market reaction of restricted shares, and the market reaction of stock appreciation rights is the weakest.

Symmetrically with the positive market reaction, equity incentive plans also faces risks of canceling down the implementation. The risks are mainly reflected in the risk of termination of the incentive plan and the risk of the company's performance not meeting the vesting or exercising standards, both of which will have a negative impact on the stock price. Besides, information leakage is evident in China with weak institutional environment (Yoon, 2021). The heterogeneous opinions among different investors may also matter here because some informed investors know the planned termination *ex ante* and some investors outside do not prepare for the termination. Hong and Sraer (2016) document that disagreement among investors lead to negative returns in the setups with severe short-selling impediments (for example, the mainland China). Therefore, we form the following hypothesis:

H3: Around the announcement dates when the equity incentive plan is terminated, the market-wide investors show disperse opinions, which lead to a significantly negative accumulative abnormal return.

Furthermore, scholars' research perspectives have been further expanded from market reactions to corporate governance such as wealth effects, market efficiency, and

earnings management (Zhouand Sun，2003). For example, Xie and Chen (2010) found that the cumulative abnormal return announced in the draft manager's equity incentive plan is significantly positive, which can increase shareholder wealth. For performance-based managers' equity incentive plans, the higher the requirements for exercising performance conditions, the more conducive to shareholder wealth growth (Chen Shengjun, Lu Siying and Baige, 2016). In addition, considering that the small and medium board has become the main sectors implementing equity incentives in recent years, Wang and Zhang (2016) focused on ChiNext companies and explored equity incentive plans as a corporate governance mechanism to alleviate agency problems. They argued that the market reaction is positively related to the equity incentive plan of China Growth Enterprise Market (GEM) companies, more because investors believe that equity incentive plans have the expected governance effect. For the GEM listed companies that put forward a formal equity incentive plan and the general meeting of shareholders finally approved the plan, equity incentives have a significant inhibitory effect on earnings management. It can be expected that for equity incentive plans, the higher the proportion of its share in equity, the more it can coordinate the interests of managers or senior management with the company's long-term interests, and the more it will help shareholders grow wealth. Therefore, we form the following hypothesis:

H4: A more remarkable and positive market reaction would be expected when the proportion of equity incentives to total shares outstanding is higher in the cross section.

However, some documents hold the opposite view. He (2011) focuses on the listed companies that announced equity incentive plans in Shanghai and Shenzhen stock exchanges in 2006 as research objects, and find that the sample companies implementing equity incentive plans have poor long-term performance. Gu and Zhou (2007) find that after excluding industry influence, the long-term effect of equity incentives for executives of listed companies in China is not remarkable. Chen and Ke

(2010) find that in Hong Kong, China, for the equity incentive plan of red chip companies, the cumulative abnormal return announced in the draft announcement was significantly negative. Based on this, it is expected that the degree of investor protection is weak, leading to the interpretation of the equity incentive plan by investors that the more eroded ownership, the more negative expectations for stock prices.

In addition, stock option incentives may also have some negative effects, such as increasing executive control over the company, exacerbating information asymmetry and contract supervision costs. Moreover, incentives underlying the stock option plans have a positive relation with future risk taking, both in the US and China (Rajgopal and Shevlin, 2002; Chen et al., 2006). Specifically, stockholders can increase the value of their stock options by increasing firm risk by excessive risk-taking activities. Particularly, when the options are deeply out of the money, the willingness of risk taking will peak among managers with incentive plans and it finally even leads to moral hazard.

According to the "bounded rational economic man" hypothesis of principal-agent theory, the profit of stock option incentives for self-interested executives lies in the difference between the acquisition cost of stock options and the future sale of stocks. Executives can take advantage of information and manipulate stock prices to maximize their compensation and harm the interests of external shareholders. The exercise price of stock options is mostly based on the stock market price on the authorization day, which is a represented pattern in the United States.

More specifically, for option incentives on a fixed grant date, executives can manipulate the information disclosure time, such as delaying the disclosure of good news to lower the share price on the authorization day. Obtaining a lower exercise price means that these companies have negative abnormal returns before the option grant date, but have positive abnormal returns after the grant date (Aboody and Kasznik, 2000). For option incentives with non-fixed grant dates, executives can even reduce the exercise price by reversing the grant date of the option to a date when the stock price is particularly low

(Lie, 2005). The logic here is that since the net income of option incentives is the difference between the sale income of the stock after the option is exercised and the option's price. If the firm signatures the granting day *ex post* after the actual granting day and fills the blank of granting data with a selective date when the stock price *was* particularly low. Then the profit opportunities and profit margins underlying incentive plans could be increased significantly.

Based on the discussion above, we have two driving forces to conjecture a relatively low price around the announcement dates of granting equity incentive plans. On the one hand, granting incentives may signal a negative effect on the firm based on the potential risk-taking lying behind the out-of-money option plans, and potential manipulation so as to maximize executives' interest at the cost of external shareholders. On the other hand, no matter whether firms actively choose a low-price day as granting date of incentive plans, or firms fill in the granting date *ex post* with a fake date with really low prices, the stock price around the announcement dates of granting equity incentives is more likely lower. The two driving forces make external investors price their concern in the stock performance around the announcements of granting equity incentive plans.

Last but not least, we would like to emphasize that Hypothesis 5 does not aim to distinguish market reaction across different types of incentive plans here, because all types of incentive plans are options and the like that allow managers and executives enjoy the firm ownership with relatively low price. The H5 is formed from the perspective of external investors' opinion in option granting (vesting). And we interchangeably use the granting (vesting) dates for stock options (restricted stocks).

Therefore, we form the following hypothesis:

H5: The A-share prices are significantly lower at the announcement dates of granting equity incentives, but with a rapid rise in the stock prices over the subsequent days.

2. Methodology

2.1 Data and Sample Construction

The data about the equity incentive plans in the A-share market are downloaded from the CSMAR database. The stock closing price and daily rate of return data are from the WIND database. The background of the previous mechanism has been clarified in the Section 1.1. Since 2006, the revision of the "Company Law" in 2006 kicked off equity incentives in China. The "Measures for Pilot Equity Incentives for Listed Companies" have made detailed provisions on all aspects of equity incentives. Therefore, the sample spans from 2006 to the end of 2020.

For the different states of the equity incentive plans, the three states of "stock repurchase", "completed" and "implemented" are unified as effective execution (i.e., terminate = 0), and the state of "cancel down" is defined as the termination of the plan (i.e., terminate = 1). We exclude from the sample the equity incentive plans of listed companies in the financial industry, and eliminated the incentive plans for which release dates of plan drafts are missing. Here we follow the literature (for example, Fama and French, 1993)). We drop the financial firms because their book-to-market ratio is not that comparable when we use value factors to estimate risk-adjusted returns. Finally, the sample contains 4,502 incentive plans, involving 4,289 programs that are in execution or completed, including 213 programs that have been terminated, including 1,830 unique A-share firms listed on the Shanghai and Shenzhen Stock Exchanges.

Table 1 Origins and Types of Underlying Assets: Equity Incentive Plans from 2006 to 2020

Panel A: summary by type			
Origin of Underlying Assets	Type of Incentive Plans	COUNT	PERCENT
Private placement	Restricted Stock	2531	56.22
Private placement	Stock Option	1655	36.76
Repurchase	Restricted Stock	233	5.18
Repurchase	Stock Option	22	0.49
Profits	Appreciation Rights	48	1.07
Transfer of shareholders	Restricted Stock	10	0.22
Transfer of shareholders	Stock Option	3	0.07
Total		4502	100.00

Panel B: summary by year			
First Year	Stock Option	Restricted Stock	Appreciation Rights
2006	61	25	2
2007	33	5	1
2008	111	22	5
2009	36	16	0
2010	119	34	3
2011	167	85	9
2012	124	133	8
2013	170	206	0
2014	93	178	4
2015	67	221	4
2016	82	247	3
2017	115	431	2
2018	184	414	2
2019	170	321	3
2020	148	436	2

As shown in Panel A in Table 1, the sample contains 2774 incentive plans in the form

of restricted stocks (=2531 + 233 + 10) and 1728 incentive plans in the form of stock options (=1655 + 22 + 48 + 3), and 48 incentive plans in the form of stock appreciation rights. About 92.98% of the incentive shares originate from private placement, 5.67% from repurchases, 1.07% from the profits of listed companies, and only 0.29% from the transfer of shares by shareholders. Evidently, the dominant form is still in the form of private placement. We conjecture that the private placement can be regarded as second equity offering, which is the cheapest way to refinancing the costs underlying the stock incentives. Repurchases may send a strong signal to market investors and have a pronounced impact on the investors' expectation for future performance. Along the same line, transfer of shareholders would result in more negotiation costs, and it is at the cost of other shareholders' interests.

As shown in Panel B, before 2012, the number of stock options dominated, but since 2012, restricted stock has become the main form. Stock appreciation rights are relatively unpopular, and only single-digit incentive schemes choose this form each year. Taking the year of 2020 as an example, there are 436 equity incentive plans selected as restricted stocks, which was about three times the number of plans in the type of stock options (148). It is worth China's emphasizing that in most cases, the underlying assets of restricted stock incentive programs in the Chinese stock market come from private placement, which superimposes substantial discounts and has a relatively high safety cushion. This feature leads the incentive cost and risk level of restricted stock to be completely different from those of mature economies in Europe and America. It is also one of the main reasons why restricted stock incentive schemes have become more and more popular in recent years in China.

2.2 Empirical Design

2.2.1 Empirical Design for Event Studies with Multiple Stages

This paper mainly uses the event study to conduct an empirical study on the listed

companies to calculate the abnormal return before and after the announcement at different stages during the process of equity incentive plans. We try to find out the change trend of market performance, so as to measure the real-time impact of the announcement of equity incentive plans on the stock price.

Considering the market reaction to the announcement event, it is the most important for the stock market to obtain information for the first time, so at first, the paper takes the **first** announcement dates of the equity incentive draft as the event date. We find that more than one company disclosed more than one plan of equity incentive announcement for the first time on the same day in our sample. Although there may be multiple announcement effects in this scenario, based on the large number of samples in this paper, it is not eliminated from our sample because it has little impact on the overall sample. The research design follows the literature (He and Rui, 2016; Liu et al., 2019). For the estimation window and event window, this paper sets the event from 130 trading days before the event day to 40 trading days before the event day as the estimation window, a total of 90 trading days. We do robustness check in the later section and the results remain quantitatively similar.

Given that it is necessary to estimation the factor loading of individual stock returns, we require that the estimation window has at least 60 trading days of return records. We choose the 30 trading days before the event day to 30 trading days after the event day as the event window, with a total of 61 trading days. The paper then calculates the cumulative abnormal returns from t-30 each day. Following the long-standing literature in China, the CAR from FF3 model can capture most of abnormal return around events (He and Rui, 2016; Liu et al., 2019). Thus, for the model specification as the benchmark, this paper selects Fama-French three-factor model to estimate the counterfactual expected returns without event shocks:

$$r_{it} = \alpha + \beta_1 Mktrf_t + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t$$

where r_{it}denoting excess returns of stock I at day t，$Mktrf_t$，SMB_t，HML_tcorrespond

to market factors, size factors and value factors, respectively; $\varepsilon_t$indicates random error term with a zero mean. We then estimate the model during the window [t-130, t-40] and obtain the estimates of factor loadings in the normal state (without event shocks)$\widehat{\beta_1}$, $\widehat{\beta_2}$and $\widehat{\beta_3}$, as well as the constant term$\hat{\alpha}$. Next, we estimate the theoretically expected returns in the event window [-2,+2] as$\widehat{r_{it}}=\hat{\alpha}+\widehat{\beta_1}Mktrf_t+\widehat{\beta_2}SMB_t+\widehat{\beta_3}HML_t$under the underlying assumption that risk exposures of individual stocks do not change so much in the event window.

Based on the estimates， the abnormal return each day (or excess returns based on FF3 factor model) is as follows:

$$AR_t = r_{it} - \widehat{r_{it}}$$

The cumulative abnormal return from t-30each day is calculated as follows:

$$CAR_{[t-30,t+k]} = \sum_{t-30}^{t+k} AR_t, \quad \text{where k=-30, …, 0, …, 30}$$

In the robustness check， if we use the market model as the benchmark, the main results remain unchanged. Similarly, the above estimation method can be applied to estimate market reaction around other announcement dates, including the shareholder meeting, announcement dates of granting.

2.2.2 Empirical Design for Logit model

Based on the previous hypothesis, in order to maximize the shareholders' wealth effect caused by the announcement of equity incentive schemes, investors should avoid the listed companies whose equity incentive scheme may be terminated. It is particularly important to explore the potential factors leading to the termination of equity incentive schemes. In more detail, we divide the equity incentive schemes in the sample into two categories. The dummy variable $D\_Terminate_{it}$ indicating the terminated plans takes the value of one after firm i's incentive plan is annoucened to be terminated at time t, otherwise the value of the dummy is 0.

We consider four types of potential determinants: (1) whether the governance structure is reasonable, including the dummy variable (Mandir) describing whether the chairman and the general manager are two in one, and the proportion of independent directors (indep); (2) whether the compensation structure is reasonable, including the natural logarithm of one plus the chairman's cash compensation (dirpay), the natural logarithm of one plus the manager's cash compensation (manager pay)[1]; (3) fundamental financial indicators, including ROE, asset growth rate (asset growth), market-to-book ratio (MB) and growth of fixed investment (fix inv); (4) specific news about change of manager structure with one quarter prior to the announcements of incentive plan termination: a dummy variable indicating a change of the board of director (bodchg), and a dummy variable indicating a change of the general manager (managerchg).

What we aim to show here is an ex-post investigation into the causes of termination. Because most outside investors do not know the time of termination, they may forecast or form their expectations about the termination based on some fundamental dynamics and specific news and try hard to avoid investing in these firms. The Logit regression model is as follows:

$$Logit(Terminate_{it}) = Ln(\frac{P}{1-P})$$

$$= \alpha_0 + \beta_1{}' Gov\_struc_{it} + \beta_2{}' Pay\_struc_{it} + \beta_3{}' Fundamentals_{it} + \beta_4{}' News_{it} + \varepsilon_{it}$$

where Gov_struc_{it}, Pay_struc_{it}, $Fundamentals_{it}$ and $News_{it}$ denotes the four column vectors of variables pertinent to the governance structure, payment structure, firm fundamentals and news about a change of the board of director or the general manager as above. The key estimates include the four row vectors of coefficients,$\beta_1{}', \beta_2{}' \beta_3{}'$and $\beta_4{}'$.

Theoretically, we expect the poor governance and unreasonable governance structure

[1]This is because due to China's data availability. The cash part is relatively well collected by CSMAR database (one of the biggest data vendors in China). However, the allowance and subsidy is not included in the package of managers and board of directors.

before the termination of incentive plans, namely, positive coefficient estimate in the dummy variable (Mandir), and negative coefficient estimate in the proportion of independent directors (indep). We also expect less reasonable compensation structure immediately before termination, that is to say, positive coefficient estimates (β_2')in the natural logarithm of one plus the chairman's cash compensation (dirpay) and the natural logarithm of one plus the manager's cash compensation (managerpay). Besides, relatively poor fundamentals (i.e., negative β_3') are expected. Lastly, we expect a higher probability of change in manager and board structure immediately before the announcements of incentive plan termination, namely, positive β_4'.

3. Empirical Analysis

3.1 Market Reaction Around The First Announcement of Plans

The event study in this section includes all equity incentive schemes in the selected samples. In order to avoid forward-looking bias, there is no classification of whether the scheme is terminated or not. In Figure 2, the horizontal axis is the number of days relative to the first release date of the draft of equity incentive plans issued by the board of directors. For example, "0" corresponds to the first release date of the plan draft, "-3" corresponds to the third trading day before the release date, and "+30" corresponds to the 30th trading day after the issuance date of the incentive draft. The left vertical axis corresponds to the scale of blue bars, indicating the abnormal return of each trading day in our event window [-30, +30]. The vertical axis on the right corresponds to the scale of the red curve, and plots the accumulated excess return day by day since t-30.

Similarly, in Table 2, in addition to the average daily abnormal return (AR), we also report the cross-sectional distribution of market reaction near the release date, including the standard deviation of abnormal return (STD. DEV), the lower quartile (P25), the median (MED), the upper quartile (p75), and the mean and T-statistics of CAR.

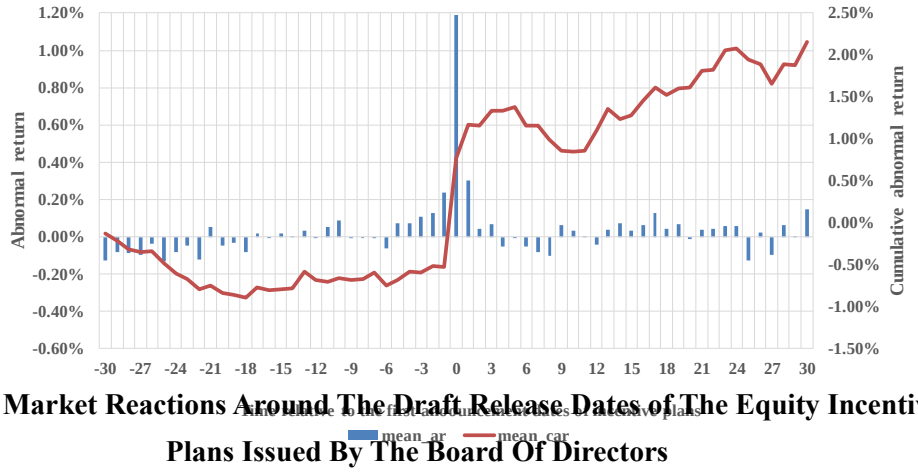


Figure 2 Market Reactions Around The Draft Release Dates of The Equity Incentive Plans Issued By The Board Of Directors

As shown in Figure 2, since the fifth trading day before the first release date of the draft, the daily abnormal return has been continuously positive, but the cumulative abnormal

return since T-30 has been significantly negative. Take the time node "-2" in Table 2 as an example, the AR of that day is 0.13%, at this time, the CAR in the [t-30, t-2] window is -0.51% (t=-2.20), which is significant at the level of 5%. However, on day t, i.e., the announcement day, the excess return reached 1.19%, rapidly turning the accumulated excess return into profit, reaching 0.77% (t=3.40). Then, since the release date of the draft, the cumulative excess return has always been positive and significant at the 1% level. Hence, we confirm the hypothesis H1, that is, around the announcement date of the first draft of the equity incentive plan, the market response is significantly positive, indicating investors' optimistic expectation of the company's share price.

In addition, in Table 2, prior to the first announcement of the equity incentive plan, firms deliver a significantly positive daily abnormal return, indicating that there might be information leakage. We conjecture that due to the regulatory loopholes in China's securities market, some investors can be informed of the company's equity incentive plan in advance, so as to trade before the announcement date. Compared with external investors, these informed traders will obtain higher excess returns.

Furthermore, as for the testable hypothesis H2, we classify sample plans by type, and estimate whether there is a difference in the market response of stock options, restricted shares and stock appreciation rights around the first release date of the draft of equity incentive plans.

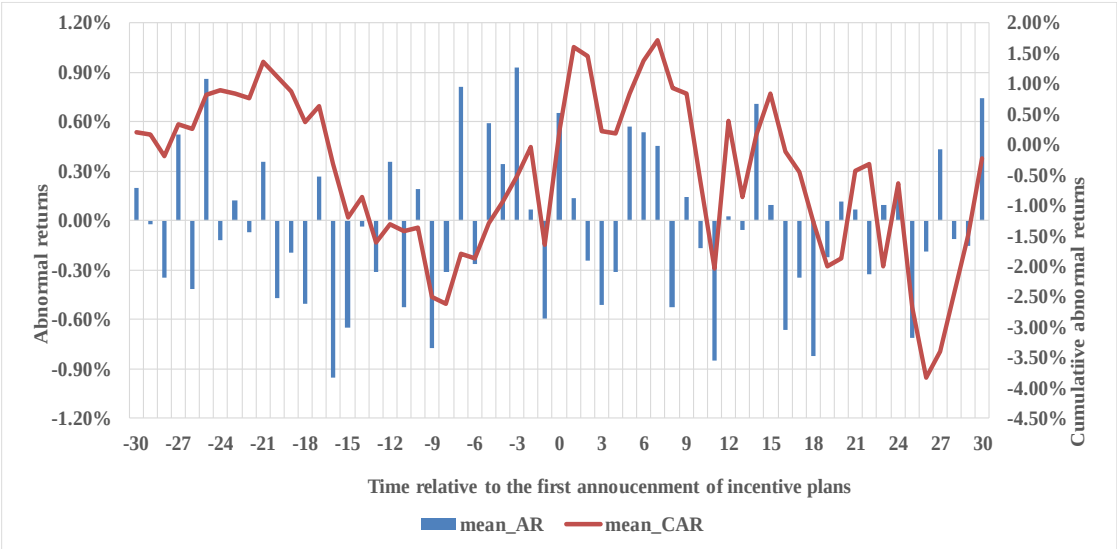
The results are shown in Figure 3 and table 3. Comparing different panels in Figure 3, it can be seen that the time trend of the two types of incentive plans, namely the stock option and the restricted stocks, the positive effects of the stock price around the first announcement date of the draft is rather similar, both of which are the strongest on the announcement date and remain positive on the several trading days before and after the announcement date. However, from the perspective of the scale of positive market response, the positive effect on shareholders' wealth is the strongest for stock options among three types of plans (Sun and Zhou, 2003).

Table 2 Market Reactions Around the Draft Release Dates of The Equity Incentive Plans Issued by The Board of Directors: Cross-Sectional Distribution

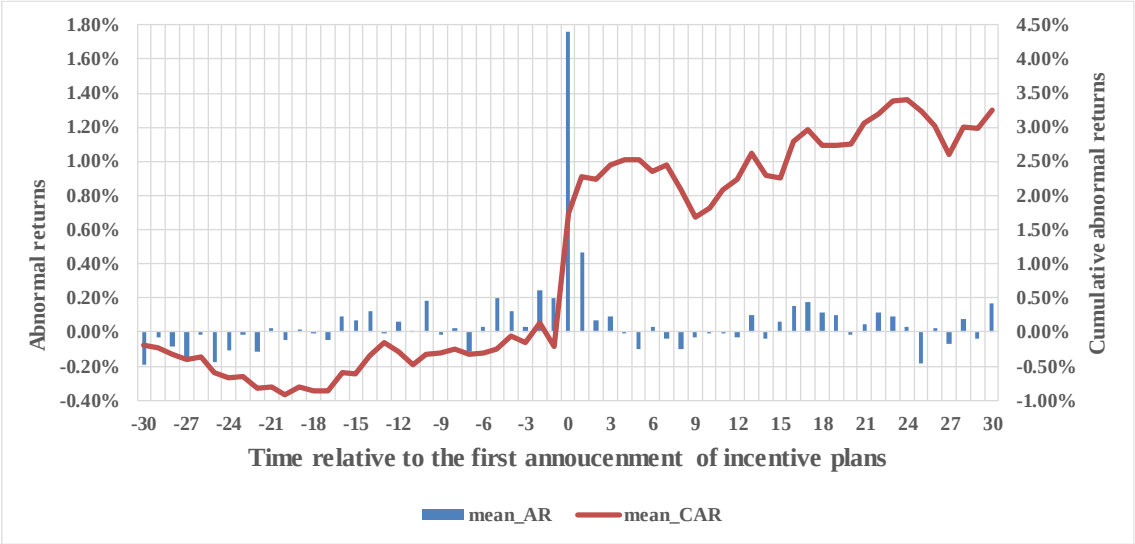
Distance	No.of plans	AR	Std.dev	p25	med	p75	CAR	t-stat of CAR
			……					
-10	3534	0.09%	2.31%	-1.23%	-0.12%	1.12%	-0.66%	-3.39
-9	3546	-0.01%	2.28%	-1.31%	-0.15%	1.06%	-0.69%	-3.49
-8	3545	0.00%	2.26%	-1.30%	-0.11%	1.09%	-0.68%	-3.37
-7	3540	0.00%	2.34%	-1.25%	-0.23%	1.00%	-0.60%	-2.93
-6	3545	-0.06%	2.31%	-1.30%	-0.19%	1.01%	-0.74%	-3.55
-5	**3522**	**0.07%**	**2.37%**	**-1.31%**	**-0.11%**	**1.19%**	**-0.68%**	**-3.21**
-4	**3459**	**0.07%**	**2.29%**	**-1.20%**	**-0.14%**	**1.14%**	**-0.58%**	**-2.67**
-3	**3409**	**0.11%**	**2.38%**	**-1.23%**	**-0.15%**	**1.19%**	**-0.59%**	**-2.66**
-2	**3235**	**0.13%**	**2.31%**	**-1.20%**	**-0.12%**	**1.16%**	**-0.51%**	**-2.20**
-1	**2866**	**0.24%**	**2.49%**	**-1.17%**	**0.00%**	**1.35%**	**-0.52%**	**-2.07**
0	3733	1.19%	3.36%	-0.96%	0.59%	2.98%	0.77%	3.40
1	3706	0.30%	2.91%	-1.43%	-0.10%	1.58%	1.17%	4.93
2	3627	0.04%	2.62%	-1.40%	-0.21%	1.12%	1.15%	4.71
3	3586	0.07%	2.45%	-1.27%	-0.18%	1.15%	1.33%	5.27
4	3485	-0.05%	2.49%	-1.43%	-0.22%	1.02%	1.33%	5.06
5	3481	-0.01%	2.43%	-1.39%	-0.16%	1.16%	1.38%	5.15
6	3498	-0.05%	2.44%	-1.39%	-0.19%	1.09%	1.16%	4.22
7	3517	-0.08%	2.38%	-1.43%	-0.27%	0.99%	1.16%	4.20
8	3549	-0.10%	2.40%	-1.43%	-0.26%	0.99%	0.99%	3.58
9	3562	0.07%	2.34%	-1.26%	-0.08%	1.13%	0.86%	3.11
10	3561	0.03%	2.36%	-1.27%	-0.19%	1.05%	0.85%	3.02

Comparing Panel A in Table 3 with Panel B & C, we can see that investors have more dispersed opinions on the stock appreciation rights. As a result, within 30 trading days before and after the release of the draft of stock appreciation rights, the sign of

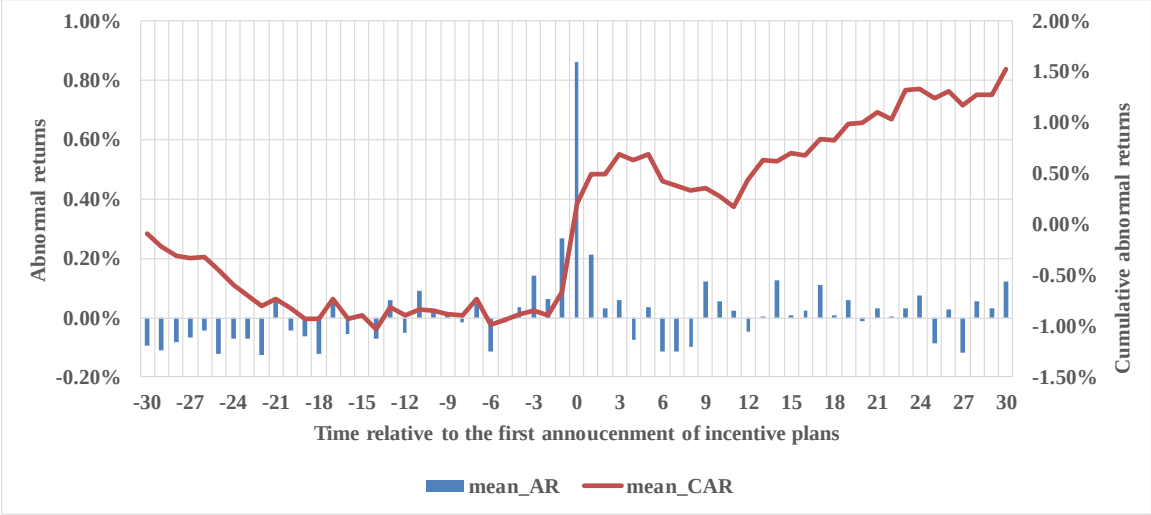
abnormal returns of the stocks are not stable over time. Although the abnormal returns on the announcement day and the next trading day were 0.65% (t=1.18) and 0.13% (t=0.22), respectively, they are not statistically significant. In addition, at the trading day before and the second day after the announcement of incentive plans such as share appreciation rights, the abnormal returns are negative. This feature is quite different from the results of Panel B and Panel C in Table 3. In Panel B and Panel C, we focus on the short window around the first announcement date. It can be seen that in the window of [-2, +2], the daily abnormal returns of stock options and restricted shares are positive, the abnormal returns on the day of the announcement are as high as 1.76% (t=19.51) and 0.86% (t=12.50), respectively. The cumulative abnormal returns are 2.74% and 1.43%, respectively, which is much higher than the CAR of stock appreciation rights (i.e., 0.02%).



Panel A. Appreciation Rights



Panel B. Stock Options



Panel C. Restricted Stocks

Figure 3 Market Reactions Around The Draft Release Dates of The Equity Incentive Plans Issued By The Board Of Directors (Panels A, B and C, Grouped By Type)

Based on the results in Figure 3 and Table 3, we confirm H2 that the positive market response of stock options is the strongest, the positive market response of restricted shares is the second, and the positive market response of stock appreciation rights is the weakest in the event window around the first announcement dates of equity incentive plans. The logic here lies in that, for restricted shares, after meeting the requirements of exercising and vesting, the awarded managers or operators do not need to invest

themselves, or only need to pay a small amount to obtain stock awards and enjoy the dividends. For stock options, the incomes of the incentive plans come from the rise in the future stock price. However, the incentive recipients of the share appreciation rights do not actually own the shares and the incentive power is rather limited.

The main result in this section suggests that there are significant differences in the market effects caused by different equity incentive plans. Therefore, when designing the equity incentive plan, listed companies should decide whether to implement equity incentive and which equity incentive method to choose based on their own actual situation. Moreover, listed firms are supposed not to herding in entering into equity incentives. Firms should enforce the implementation of equity incentive, and ensure that the implemented equity incentive method can effectively motivate the management to promote the long-term and stable development of the company.

Table 3 Market Reactions Around The Draft Release Dates of The Equity Incentive Plans Issued By Board Of Directors (Panels A, B and C, Grouped by type)

Panel A: Appreciation Rights								
distance	No.of plans	AR	t-stat of AR	Std.dev	p25	med	p75	CAR [-2,+2]
-2	34	0.07%	0.25	1.65%	-1.43%	0.24%	0.95%	
-1	27	-0.59%	-1.29	2.39%	-2.03%	-0.35%	0.21%	
0	40	0.65%	1.18	3.50%	-1.28%	0.09%	3.09%	
1	39	0.13%	0.22	3.80%	-1.21%	-0.65%	0.97%	
2	38	-0.25%	-0.41	3.70%	-1.53%	-0.16%	1.12%	0.02%

Panel B. Stock options

distance	No.of plans	AR	t-stat of AR	Std.dev	p25	med	p75	CAR [-2,+2]
-2	1176	0.24%	3.40	2.44%	-1.17%	-0.12%	1.31%	
-1	945	0.20%	2.50	2.48%	-1.27%	-0.09%	1.25%	
0	1364	1.76%	19.51	3.34%	-0.45%	1.18%	3.64%	
1	1374	0.46%	5.97	2.88%	-1.36%	-0.01%	1.84%	
2	1340	0.07%	0.96	2.53%	-1.35%	-0.15%	1.14%	2.74%

Panel C. Restricted Stocks

distance	No.of plans	AR	t-stat of AR	Std.dev	p25	med	p75	CAR [-2,+2]
-2	2025	0.06%	1.23	2.24%	-1.20%	-0.13%	1.07%	
-1	1894	0.27%	4.66	2.50%	-1.15%	0.03%	1.40%	
0	2329	0.86%	12.50	3.33%	-1.15%	0.37%	2.42%	
1	2293	0.21%	3.47	2.91%	-1.48%	-0.13%	1.39%	
2	2249	0.03%	0.55	2.66%	-1.42%	-0.26%	1.09%	1.43%

3.2 Risks And Market Reaction Around The Termination of Incentive Plans

The equity incentive plan also faces risks, which are mainly reflected in the risk of termination of the incentive plan. It can be derived from the company's performance not meeting the standards, which would have a negative impact on the stock price. This section estimates the market performance of the company's shares around the announcement dates when the equity incentive schemes are terminated.

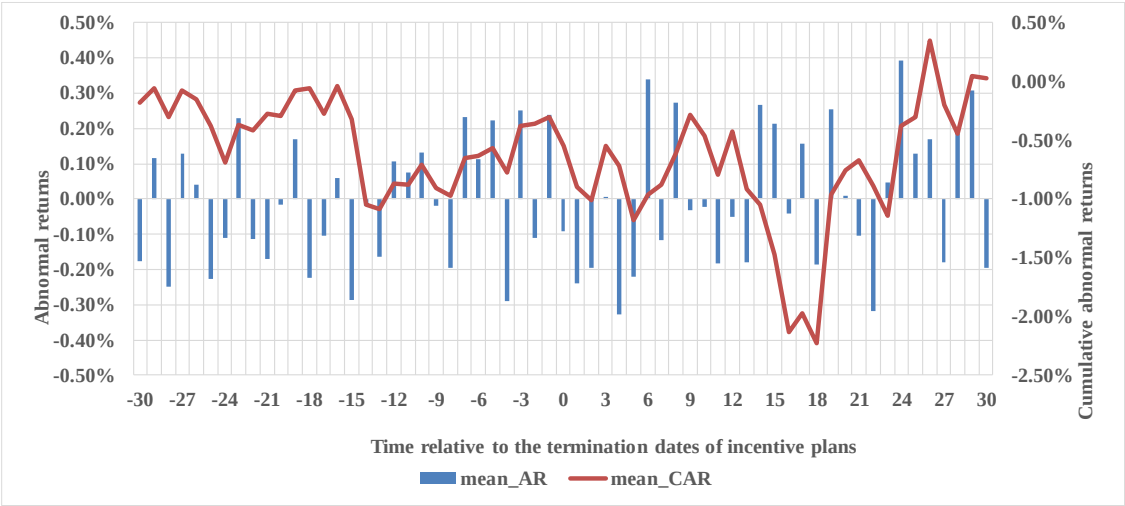


Figure 4 Market Reaction Around the Termination of Incentive Plans

As shown in Figure 4, within 30 trading days before and after the announcement date of the termination of the equity incentive scheme, the daily abnormal return of A shares is unstable, and the sign of returns frequently reverses. On average, the size of the negative market reaction is larger than the positive part, so the cumulative abnormal return is negative. As shown in Table 4, taking t=0 as an example, on the announcement date when the equity incentive scheme is terminated, the daily abnormal return decreases to -0.09%, and the CAR from T-30 is about -0.55% (t=-0.55).

Table 4 Market Reaction Around The Termination of Incentive Plans

Distance	No.of plans	AR	Std.dev	p25	med	p75	CAR	t-stat（CAR）
-30			……					
			……					
-10	179	0.13%	2.20%	-0.92%	0.06%	1.25%	-0.71%	-0.88
-9	178	-0.02%	2.38%	-1.23%	0.09%	0.97%	-0.90%	-1.17
-8	182	-0.20%	2.29%	-1.46%	-0.44%	1.02%	-0.97%	-1.21
-7	181	0.23%	2.49%	-1.17%	-0.09%	1.06%	-0.65%	-0.79
-6	182	0.11%	2.65%	-1.32%	-0.03%	1.05%	-0.63%	-0.76
-5	181	0.22%	2.36%	-1.33%	-0.21%	1.28%	-0.57%	-0.63
-4	184	-0.29%	2.24%	-1.48%	-0.26%	0.81%	-0.78%	-0.83
-3	184	0.25%	2.58%	-1.22%	0.15%	1.22%	-0.37%	-0.39
-2	183	-0.11%	2.43%	-1.31%	-0.24%	1.04%	-0.36%	-0.36
-1	184	0.24%	2.65%	-1.20%	0.02%	1.57%	-0.31%	-0.31
0	187	-0.09%	**3.02%**	-1.59%	-0.55%	1.51%	-0.55%	-0.55
1	174	-0.24%	2.44%	-1.91%	-0.47%	1.00%	-0.90%	-0.85
2	170	-0.20%	2.16%	-1.59%	-0.40%	0.70%	-1.01%	-0.93
3	172	0.00%	2.16%	-0.98%	0.13%	1.07%	-0.55%	-0.50
4	172	-0.33%	2.40%	-1.43%	-0.50%	0.50%	-0.72%	-0.64
5	167	-0.22%	2.15%	-1.21%	-0.18%	0.93%	-1.18%	-1.03
6	169	0.34%	2.52%	-1.06%	-0.04%	1.43%	-0.96%	-0.81
7	170	-0.12%	2.31%	-1.55%	-0.28%	0.94%	-0.87%	-0.73
8	175	0.27%	2.21%	-0.99%	0.07%	1.34%	-0.62%	-0.52
9	174	-0.03%	1.99%	-1.13%	-0.24%	1.00%	-0.29%	-0.23
10	177	-0.02%	1.98%	-1.16%	-0.04%	0.85%	-0.46%	-0.38
			……					
30			……					

In addition, as shown in the column “Std. dev” in Table 4, on the announcement date of the termination of the equity incentive scheme, the standard deviation of AR in the cross-section is as high as 3.02%, which is significantly higher than that before and after the announcement date, indicating that the termination of the equity incentive scheme causes a large divergence of opinions among investors.

Furthermore, we draw the cumulative abnormal return of the two types terminated plans according to whether the time point of the cancellation of the incentive plan is before or after the shareholders’ meeting. The results are reported in Figure 5. We find that for the incentive scheme terminated before the shareholders’ meeting, the cumulative abnormal return is on average higher than that of the incentive scheme terminated after the shareholders’ meeting. This finding is also consistent with economic intuitions. Specifically, considering that the draft was issued to the shareholders’ general meeting for the first time, during this period, the expectation of investors was basically optimistic, so the cancellation of the incentive plan was more likely to exceed the expectation of investors. As a result, the impact of investors on the share price was not reflected in a timely manner around the termination of the plan. However, for the incentive scheme, which is terminated after the shareholders’ meeting, investors have more or less formed expectations, and the cumulative excess return reflects the negative market reaction in advance.

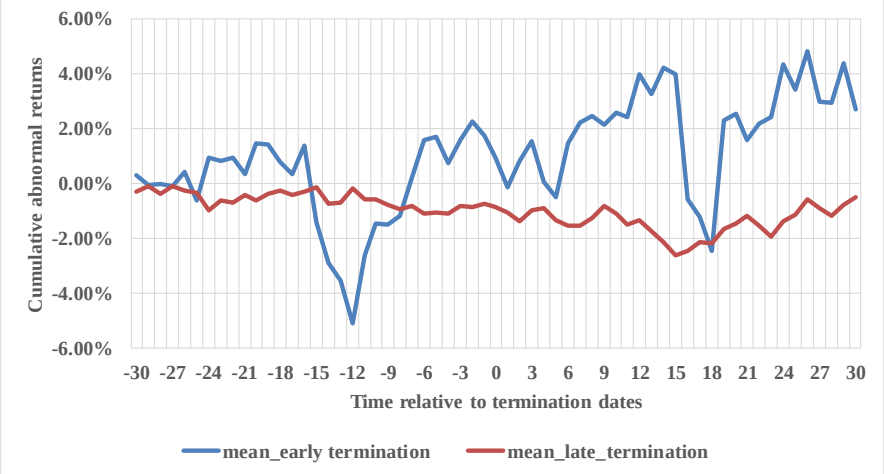


Figure 5 Market Reaction Around The Termination Of Incentive Plans: Terminated Prior (Posterior) To The Shareholder Meetings.

Hence, we confirm the hypothesis H3, that is, if the equity incentive scheme is terminated, it would release a negative signal to the market-wide investors, leading to increased volatility of the stock price around announcement dates, loss of confidence among investors. Finally, the stock price will be depressed for a long time.

Next, we explore the potential factors that lead to the termination of the equity incentive schemes. Specifically, to avoid forward-looking bias, we collect the latest available financial information and governance structure information of listed companies before the termination of equity incentive schemes. We divide the equity incentive schemes in the sample into two categories. If the scheme is terminated, the dummy variable D_ terminated is 1, otherwise the value of the dummy is 0.

We consider three types of potential factors: (1) whether the governance structure is reasonable, including the dummy variable (Mandir) describing whether the chairman and the general manager are two in one, and the proportion of independent directors (indep); (2) whether the compensation structure is reasonable, including the natural logarithm of the chairman's cash compensation (dirpay), the natural logarithm of the manager's cash compensation (managerpay); (3) fundamental financial indicators, including ROE, asset growth rate (assetgrowth), market-to-book ratio (MB) and growth of fixed investment (fixinv). Using the Logit regression model, the results are reported in Table 5.

Table 5 Potential Determinants of The Termination of Incentive Plans

	(1)	(2)	(3)	(4)	(5)
D_ terminate	m1	m2	m3	m4	m5
mandir	-0.141	-0.132		-0.013	-0.015
	(-0.95)	(-0.87)		(-0.08)	(-0.09)
indep	-1.952	-2.293*		-2.320*	-2.166*
	(-1.49)	(-1.69)		(-1.72)	(-1.74)
dirpay		-0.350*		-0.380*	-0.034
		(-1.72)		(-1.84)	(-0.79)
managerpay		-0.099		-0.031	-0.253***
		(-0.46)		(-0.14)	(-2.61)
ROE			-0.378**	-0.375**	-0.365**
			(-2.22)	(-2.19)	(-2.11)
assetgrowth			-1.440***	-1.167**	-1.392**
			(-2.68)	(-2.17)	(-2.55)
MB			1.223***	1.247***	1.141***
			(4.63)	(4.46)	(4.01)
fixinv			0.030***	0.025***	0.029***
			(3.19)	(2.67)	(2.99)
bodchg					0.294**
					(1.98)
managerchg					0.229*
					(1.67)
cons	-2.025***	4.494***	-3.492***	3.201**	1.518
	(-4.11)	(2.98)	(-18.02)	(2.09)	(1.18)
N	3713	3678	3664	3626	3631
pseudo R^2	0.002	0.016	0.025	0.038	0.037

It can be seen from Table 5 that the higher the proportion of independent directors, the lower the possibility of termination of equity incentive schemes. Executive cash compensation has little effect on the termination of the equity incentive schemes. On the contrary, if the chairman in the board of directors receives a higher salary, it would reduce the possibility of the termination of the equity incentive schemes.

Moreover, firm fundamentals play a more important role in determining the possibility of termination of equity incentive schemes. As shown in columns (3) and (4), higher return of equity and higher total asset growth rate would lead to a lower possibility of plan termination. In addition, the higher the book to market ratio, the more likely the equity incentive scheme would be terminated. We conjecture that the reason for this phenomenon is that the higher MB (i.e., the book to market ratio) is, the lower the company's stock price is, and the object of equity incentive is not optimistic about the future stock price, which increases the possibility that the equity incentive scheme would be terminated. Moreover, the greater the growth rate of fixed asset investment, the more likely the equity incentive scheme would be terminated. This finding shows that if listed companies spend a lot of money on fixed-asset investment, it may also release a negative signal, leading to the cancellation of equity incentive schemes.

Besides, we focus on the change of governance structure within a short window prior to the termination of incentive plans. As shown in Column (5) in Table 6, we look at specific news about change of general managers and board of directors: a dummy variable indicating a change of the board of director (bodchg), and a dummy variable indicating a change of the general manager (managerchg). The positive coefficient estimates suggest that when there happens a change in manager or board of directors, there would be a higher probability of incentive plan termination.

Overall, all, the ex-post investigation based on the logit model shows some preliminary evidence that poor fundamentals, and sharp change in governance structure would to some extent lead to the termination of equity incentive plans. We have to admit that the

ex post forecasting cannot rule out the possibility of omitted variables. However, we want to show that even for uninformed investors outside, they can form their reasonable expectation based on some dynamics of firm news and fundamentals to avoid the negative effect on their wealth.

3.3 Channel Tests: Incentive Force and Market Reaction

Generally, the equity incentive plan has certain performance conditions as the threshold for exercising or vesting, so as to ensure that the interests of senior management or employees are consistent with the long-term development of the company as much as possible. It also aims to ensure that the launch of the equity incentive plan improves investors' expectations of the company's future performance, and the announcement of the incentive plan has a more significant positive impact on the stock price.

This section examines the extent to which the incentive scheme coordinates the interest consistency between the managers and firms. With the increase of the proportion of equity incentives in the total shares outstanding, the market response is more significant around the first release date of the plan. Specifically, we divide all the equity incentive plans into four groups based on the proportion of equity incentives in the total shares outstanding. The group of firms with the lowest proportion is labeled as "Low", the medium two groups are Q2 and Q3, and the group of firms with the highest proportion is labeled as "High". Then we estimate the average CAR for each group of incentive plans within 30 trading days before and after the date of the first announcement of the draft.

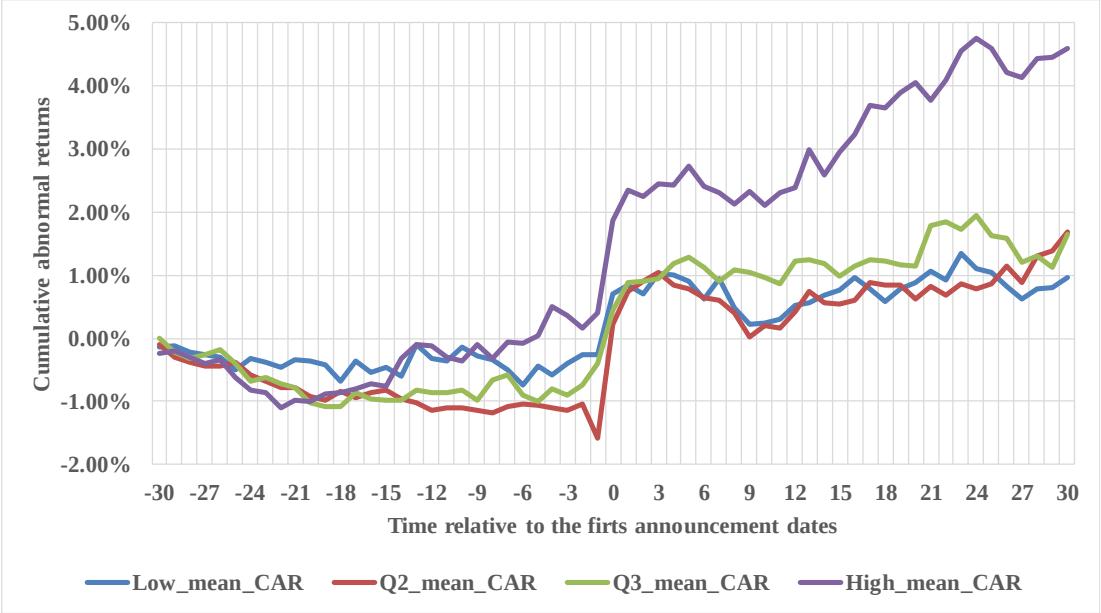


Figure 6 Market Reactions Around The Draft Release Dates of The Equity Incentive Plans Issued By The Board Of Directors: Group By Incentive Strength

Figure 6 plots the AR and CAR from T-30 in the event window. The horizontal axis is the number of days relative to the release date of the draft of equity incentive plans. For example, "0" corresponds to the release date of the draft, and "- 3" corresponds to the third trading day before the release date. The vertical axis corresponds to the scale of the curve. Among them, the blue, red, green and purple curves correspond to the stock portfolio with the weakest incentive intensity, Q2, Q3 and the highest incentive intensity, respectively. As shown in Figure 6, for the group with the highest proportion of equity incentive shares, the stock prices rise the most on the announcement day. Similarly, in the medium and long term, the higher the proportion of equity incentive shares, the higher the cumulative abnormal returns.

Table 6 Market Reaction and Its Distribution Around The Draft Release Dates of The Equity Incentive Plans Issued By The Board of Directors: Group By Incentive Strength

	Distance	_FREQ_	mean_AR	t-stat (AR)	std_dev	mean_CAR	t-stat (CAR)
	-30						
	…						
	-2	832	0.13%	1.50	2.43%	-0.27%	-0.57
	-1	758	0.22%	2.39	2.58%	-0.27%	-0.54
Low	0	922	1.17%	10.85	3.27%	0.70%	1.57
	1	902	0.13%	1.39	2.84%	0.85%	1.80
	2	883	0.12%	1.28	2.69%	0.71%	1.46
	…						
	30						
rank_size	Distance	_FREQ_	mean_AR	t-stat (AR)	std_dev	mean_CAR	t-stat (CAR)
	-30						
	…						
	-2	837	0.13%	1.70	2.20%	-1.03%	-2.25
	-1	750	0.16%	1.73	2.54%	-1.59%	-3.25
Q2	0	936	1.23%	11.68	3.23%	0.23%	0.51
	1	936	0.38%	3.86	2.97%	0.75%	1.58
	2	921	0.03%	0.38	2.48%	0.91%	1.86
	…						
	30						
rank_size	Distance	_FREQ_	mean_AR	t-stat (AR)	std_dev	mean_CAR	t-stat (CAR)
	-30						
	…						
	-2	830	0.09%	1.19	2.21%	-0.73%	-1.63
	-1	736	0.22%	2.61	2.33%	-0.39%	-0.79
Q3	0	965	0.95%	8.79	3.37%	0.44%	0.99
	1	955	0.35%	3.68	2.98%	0.89%	1.88
	2	936	-0.04%	-0.43	2.61%	0.90%	1.86
	…						
	30						

rank_size	Distance	_FREQ_	mean_AR	t-stat (AR)	std_dev	mean_CAR	t-stat (CAR)
	-30						
	…						
	-2	693	0.16%	1.69	2.43%	0.15%	0.30
	-1	579	0.36%	3.40	2.52%	0.40%	0.69
High	0	860	1.35%	11.26	3.51%	1.87%	3.93
	1	862	0.37%	3.77	2.87%	2.35%	4.78
	2	842	0.06%	0.67	2.69%	2.25%	4.42
	…						
	30						

The effect of shareholder wealth in firms with different incentive intensities is reported in Table 6. It can be seen that for the three groups with relatively weak incentive intensity, on the exact day of the draft release, the excess return is positive and statistically significant. However, there is little difference between groups, and the relationship between the intensity of market reaction and the intensity of incentive plans is not monotonously increasing. As can be seen from the first three panels in Table 6, CARs from the 30th trading day before the announcement date is not statistically significant. For the group of companies with the highest incentive intensity, as of the announcement date, CAR has reached 1.87% (t = 3.93), which is significant at the level of 1%.

Based on this result, we offer an insight into investment strategy, that is, to select the companies whose incentive shares account for a higher proportion of the total shares outstanding from the listed companies that implement the equity incentive scheme. These companies, through stronger incentives to ensure that the motivated management or employees have the motivation to improve the company's performance and stock price performance, give external investors the confidence in the long-term rise of stock price.

The results in general confirm the hypothesis H4.Our findings also expand the discussion of existing literature (Xie and Chen, 2010; Chen, LVand Bai, 2016). The

results of this paper further confirm that improving the incentive intensity is an important path to strengthen the shareholder wealth effect of equity incentive plans.

3.4 Market Timing in Granting

In China, when the imperfect governance structure makes it impossible to effectively supervise the managers, the equity incentive may be used by managers to seek benefits, thus leading to agency problems. Though there may be several successive adjustments in the process of equity incentive grants, the main announcement effect is concentrated on the announcement date of the first grant. In this section, we select the announcement date of "the first grant" as event dates, and excludes the incentive schemes that are in the implementation state but the granting date is missing. We only estimate the average CAR around the first grant dates of equity incentive schemes that are not terminated.[2]

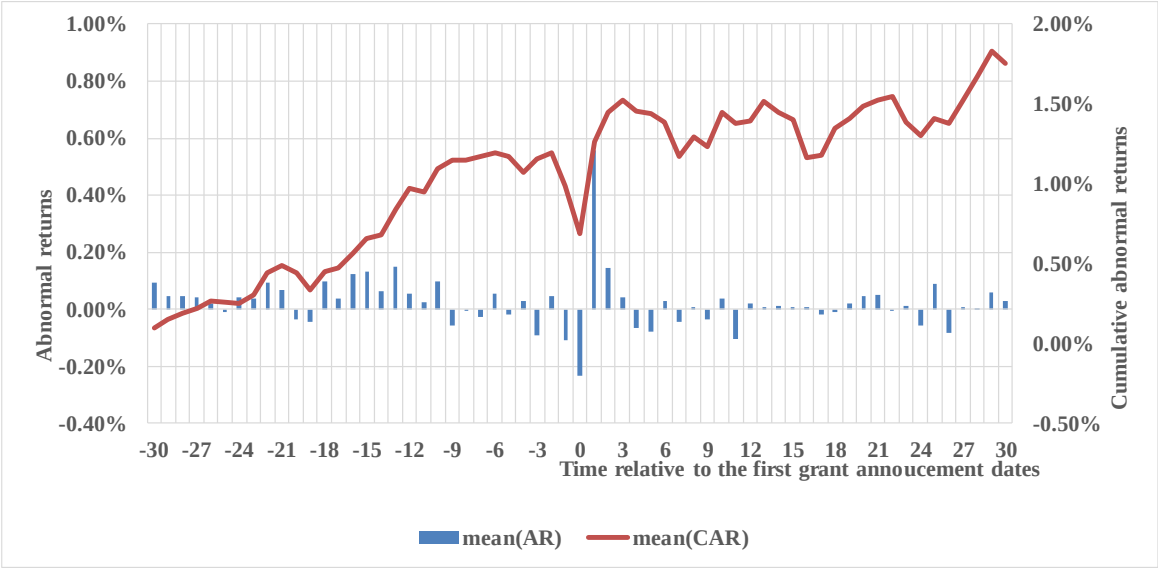


Figure 7 Market Reactions Around the First Announcement Dates of Granting

[2] Based on the normal procedure of incentive plans in China, if the plan is terminated prior to the first granting date, there would be no granting date record. If else, it is most likely record errors in the database.

The results in Figure 7 confirm the hypothesis H5. In the event window around announcement dates of granting equity incentives, the cumulative abnormal return tends to be close to zero or even negative. As shown in Table 7, the sign of abnormal return is not stable over the ten trading days prior to the event day. On the announcement date, the abnormal return even reaches the lowest value (- 0.23%) in the event window. On the next day after the announcement, the equity price rebounds, and the excess return turns to positive, up to about 0.56%. As of the third trading day after the announcement date, CAR reaches a high level in the [- 10, + 10] window, about 1.52% (t = 4.56). Generally speaking, the market response is negative around the first grant dates.

Table 7 Market Reactions Around The First Announcement Dates Of Granting: Cross-Sectional Distribution

Distance	No.of plans	AR	Std.dev	p25	med	p75	CAR	t-stat（CAR）
-30			……					
			……					
-10	2364	0.10%	2.57%	-1.31%	-0.12%	1.26%	1.09%	4.27
-9	2386	-0.06%	2.49%	-1.35%	-0.18%	1.05%	1.15%	4.43
-8	2372	0.00%	2.48%	-1.29%	-0.13%	1.12%	1.15%	4.34
-7	2395	-0.03%	2.42%	-1.28%	-0.16%	0.97%	1.17%	4.37
-6	2392	0.06%	2.51%	-1.24%	-0.14%	1.15%	1.19%	4.35
-5	2407	-0.02%	2.50%	-1.31%	-0.19%	1.02%	1.17%	4.18
-4	2403	0.03%	2.57%	-1.29%	-0.14%	1.05%	1.07%	3.70
-3	2429	-0.09%	2.53%	-1.49%	-0.22%	0.97%	1.15%	3.95
-2	2434	0.05%	2.68%	-1.34%	-0.20%	1.12%	1.19%	4.01
-1	2434	-0.11%	2.54%	-1.36%	-0.21%	1.14%	0.99%	3.27
0	2544	-0.23%	2.47%	-1.56%	-0.36%	0.86%	0.69%	2.29
1	2473	0.56%	2.69%	-0.95%	0.22%	1.70%	1.26%	4.01
2	2447	0.14%	2.65%	-1.29%	-0.12%	1.23%	1.45%	4.48
3	2401	0.04%	2.49%	-1.30%	-0.20%	1.05%	1.52%	4.56
4	2352	-0.07%	2.53%	-1.37%	-0.24%	1.01%	1.45%	4.22

5	2345	-0.08%	2.48%	-1.39%	-0.26%	1.04%	1.44%	4.15
6	2336	0.03%	2.63%	-1.25%	-0.12%	1.13%	1.39%	3.89
7	2310	-0.04%	2.50%	-1.35%	-0.15%	1.10%	1.17%	3.20
8	2319	0.01%	2.58%	-1.37%	-0.19%	1.19%	1.30%	3.54
9	2311	-0.03%	2.56%	-1.37%	-0.16%	0.99%	1.23%	3.28
10	2292	0.04%	2.71%	-1.41%	-0.23%	1.07%	1.45%	3.82
			……					
30			……					

To some extent, this result confirms that in addition to improving investors' expectations and confidence, equity incentive may also have some negative effects, such as increasing executives' control over the company, aggravating information asymmetry and so forth. According to the hypothesis of "bounded rational economic man" in the principal-agent theory, the profits of equity incentives for self-interest executives lies in the difference between the acquisition cost of stock options and the future sale of stocks. We conjecture that it is likely that executives can make use of information advantage to maximize their own compensation by manipulating the stock price and damage the interests of external shareholders. If the exercise price is based on the stock market price on the grant date, executives may be motivated to manipulate the time of information disclosure, such as delaying the disclosure of good news to depress the stock price on the first grant date to obtain a lower exercise price, which leads to a more negative abnormal return on the grant dates along with a price reversal immediately after granting. At the same time, this may also be a result of a dilution factor on existing investors wealth. We leave the work about finding distinguishable mechanisms for further research.

4 Robustness Check and Limitation

4.1 CAR From Market Model

Following the long-standing literature in China, the CAR from FF3 model can capture most of abnormal return around events (He and Rui, 2016; Liu et al., 2019). In the main results, we choose Fama-French (1993) three-factor model as our benchmark. In this subsection, we use market model to do robustness check. For the estimation window and event window, we set the event from 130 trading days before the event day to 40 trading days before the event day as the estimation window, a total of 90 trading days. Similar with the model specification in the main results, we require that the estimation window has at least 60 trading days of return records. We choose the 30 trading days before the event day to 30 trading days after the event day as the event window, with a total of 61 trading days.

Table 8 shows the cross-sectional distribution of market reactions around the release dates of equity incentive plans issued by the board of directors based on market model. Comparing Table 2 and Table 8, the results are quantitatively similar. That is to say, around the announcement date of the first draft of equity incentive plans, the market response is significantly positive, indicating investors' optimistic expectation of the company's share price.

Table 8 Market Reactions Around The Release Dates of Equity Incentive Plans Issued By The Board of Directors Based On Market Model

Distance	No.of plans	AR	Std.dev	p25	med	p75	CAR	t-stat of CAR
			……					
-10	3534	0.03%	2.19%	-1.26%	-0.20%	0.98%	-0.59%	-3.33
-9	3546	-0.06%	2.15%	-1.26%	-0.17%	0.93%	-0.70%	-3.83
-8	3545	0.00%	2.19%	-1.24%	-0.15%	1.05%	-0.66%	-3.54
-7	3540	-0.04%	2.27%	-1.30%	-0.33%	0.90%	-0.67%	-3.54
-6	3545	-0.09%	2.19%	-1.30%	-0.22%	0.92%	-0.79%	-4.10
-5	3522	0.04%	2.29%	-1.31%	-0.16%	1.03%	-0.77%	-3.93
-4	3459	0.02%	2.19%	-1.25%	-0.18%	1.03%	-0.70%	-3.49
-3	3409	0.08%	2.29%	-1.23%	-0.17%	1.02%	-0.68%	-3.28
-2	3235	0.06%	2.23%	-1.16%	-0.14%	1.04%	-0.63%	-2.94
-1	2866	0.22%	2.39%	-1.10%	-0.03%	1.24%	-0.60%	-2.54
0	**3733**	**1.17%**	**3.26%**	**-0.88%**	**0.60%**	**2.97%**	**0.65%**	**3.07**
1	3706	0.29%	2.80%	-1.39%	-0.16%	1.54%	0.94%	4.27
2	3627	0.06%	2.53%	-1.29%	-0.26%	1.03%	0.91%	3.99
3	3586	0.05%	2.35%	-1.29%	-0.18%	1.02%	1.02%	4.33
4	3485	-0.04%	2.35%	-1.41%	-0.27%	1.02%	1.03%	4.19
5	3481	-0.01%	2.32%	-1.39%	-0.19%	1.07%	1.06%	4.26
6	3498	-0.06%	2.34%	-1.36%	-0.25%	1.00%	0.83%	3.27
7	3517	-0.08%	2.29%	-1.33%	-0.29%	0.92%	0.82%	3.20
8	3549	-0.10%	2.27%	-1.41%	-0.25%	0.91%	0.67%	2.60
9	3562	0.04%	2.23%	-1.25%	-0.15%	1.03%	0.54%	2.10
10	3561	-0.01%	2.25%	-1.25%	-0.20%	0.96%	0.48%	1.86
			……					

4.2 Alternative Model Specification

In this subsection, we use a longer estimation window based on FF3 model to rule out the potential concern that individual stock's market exposure drives the main results. Specifically, for the estimation window and event window, we set the event from 290 trading days before the event day to 40 trading days before the event day as the estimation window, a total of 250 trading days (approximately one year as estimation window). We require that the estimation window has at least 180 trading days of return records.

Table 9 Market Reactions Around The Release Dates of Equity Incentive Plans Issued By The Board of Directors Based On Market Model: Alternative Model Specification

Distance	No.of plans	AR	Std.dev	p25	med	p75	CAR	t-stat of CAR
			……					
-10	3038	0.10%	2.24%	-1.18%	-0.10%	1.12%	-0.15%	-0.77
-9	3064	0.00%	2.29%	-1.30%	-0.18%	1.08%	-0.35%	-1.71
-8	3070	-0.01%	2.16%	-1.24%	-0.13%	1.03%	-0.38%	-1.87
-7	3070	0.01%	2.27%	-1.22%	-0.23%	0.99%	-0.35%	-1.69
-6	3071	-0.08%	2.22%	-1.29%	-0.23%	0.92%	-0.56%	-2.65
-5	3043	0.12%	2.33%	-1.23%	-0.09%	1.19%	-0.29%	-1.34
-4	2984	0.07%	2.22%	-1.16%	-0.15%	1.11%	-0.23%	-1.03
-3	2937	0.09%	2.28%	-1.24%	-0.12%	1.16%	-0.23%	-1.01
-2	2782	0.16%	2.26%	-1.15%	-0.11%	1.17%	-0.08%	-0.35
-1	2475	0.21%	2.39%	-1.13%	0.03%	1.27%	-0.05%	-0.18
0	**3227**	**1.21%**	**3.35%**	**-0.94%**	**0.62%**	**3.03%**	**2.25%**	**9.25**
1	3188	0.33%	2.86%	-1.41%	-0.10%	1.59%	1.65%	6.59
2	3121	0.04%	2.54%	-1.35%	-0.24%	1.11%	1.25%	4.95

3	3089	0.06%	2.39%	-1.28%	-0.19%	1.13%	1.40%	5.38
4	2990	-0.05%	2.39%	-1.38%	-0.22%	1.03%	1.32%	4.91
5	2989	0.00%	2.38%	-1.36%	-0.16%	1.18%	1.48%	5.41
6	3004	-0.05%	2.39%	-1.35%	-0.25%	1.08%	1.04%	3.72
7	3028	-0.02%	2.34%	-1.35%	-0.25%	1.03%	1.08%	3.86
8	3057	-0.09%	2.35%	-1.38%	-0.26%	1.01%	0.89%	3.17
9	3062	0.12%	2.32%	-1.23%	-0.06%	1.13%	0.99%	3.52
10	3070	0.04%	2.28%	-1.24%	-0.15%	1.00%	0.86%	3.05
			……					

Table 9 shows the cross-sectional distribution of market reactions. As we can see from the table, the main conclusions about Hypothesis H1 do not change in alternative model specification.

4.3 Limitation

As noted earlier, the stock option grants may also lead to a change in managers' risk taking in the U.S. market (Shue and Townsend, 2017; Kim et al., 2017; Klein et al., 2021). So far, our paper explores the impact of announcements of equity incentive plans from the perspective of outside investors' wealth effect. However, we do not dig deeper into the stand of manager behavior after receiving equity incentives. We leave it for future research.

Besides, we have to admit that the *ex-post* forecasting about the termination of equity incentive plans cannot rule out the possibility of omitted variables. We want to show that even for uninformed investors outside, they can form their reasonable expectation based on some dynamics of firm news and fundamentals to avoid the negative effect on their wealth. We also leave it for further research.

5. Conclusion

By studying the wealth effect of announcements of equity incentive plans by using the event study, the paper shows that equity incentive plans have a significant and heterogeneous impact on the listed firms' stock prices at different stages in the A-share market.

As for market reaction, we document several main findings. First, around the draft release dates of the equity incentive plans issued by the board of directors, the cumulative abnormal returns of A shares areon average significantly positive. This abnormal return does not reverse over the next 30 trading days. Second, different types of equity incentive plans have different price effects on the equity price due to significant differences in the degree of incentives. Third, around the announcement dates when the equity incentive plan is terminated, the market-wide investors show disperse opinions, which lead to a long-lasting negative cumulative abnormal return. Fourth, the higher the proportion of equity incentives to total shares outstanding, the better the ability of equity incentives to coordinate the goals of managers and the company's long-term interests. We document a more remarkable and positive market reaction when the proportion of equity incentives to total shares outstanding is higher in the cross section. Last but not least, we find that the A-share prices are significantly lower around announcement dates of granting equity incentives.

Beside the wealth effect, we also conduct an ex-post examination about potential factors lying behind the termination of incentive plans. In order to maximize the wealth effect of shareholders caused by the announcements of equity incentive schemes, investors should avoid the company whose equity incentive scheme is terminated. More specifically, informed investors who know it ex ante should avoid investing in it ex ante, and even for those outside investors with no information advantage, they should avoid entering into it after the termination news becomes public. We are then motivated to

explore the potential determinants of the termination of the equity incentive schemes. We find that the sharp change in governance structure including change in the general manager and board of directors, as well as poor fundamentals have significant impact on the possibility of the termination of the equity incentive schemes, whereas corporate governance structure and salary structure only have limited impact. The impact of announcement at different stages of equity incentive on stock price is more derived from the potential mechanism of investors' expectation of firm fundamentals. Once investors' expectation on future performance changes, information would be integrated into the stock price through outside investors' trading, thus forming the wealth effect of shareholders.

Overall, the paper discusses the impact of equity incentive schemes on stock prices at different stages of implementation in detail. Our findings offer a deep insight into investment practice and wealth management, and also provides policy implications for improving information disclosure mechanism and protecting the interests of investors.

Based on the main findings, our paper offers an insight into investment practice and policy making. On the one hand, the proportion of termination schemes between the announcement date of the plan and the announcement date of the general meeting of shareholders is the highest, while the proportion of termination schemes after the approval of the general meeting of shareholders is lower. Therefore, choosing the investment horizon after the date of the general meeting of shareholders can to some extent avoid the risk of stock price fluctuation caused by the termination of the equity incentive scheme. On the other hand, before the announcement dates of the equity incentive plans, there is a significant positive cumulative abnormal return. It indicates that there is a certain degree of information disclosure ahead of public disclosure. Due to the regulatory loopholes in China's stock market, some investors can learn about the company's equity incentive plan in advance. China's regulatory authorities should improve the process of information disclosure, strengthen information supervision, put

an end to insider trading, promote the healthy development of the capital market, and create a fair market environment for outside investors.

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