

The Market Reaction of Bonus Shares Issuing and the Lottery-like Stock Preference: Evidence from Chinese Stock Market

Haotian Xu and Wei Wei¹

Abstract

This paper documents the unique “large amount of stock dividends” phenomenon in the Chinese stock market and uses lottery-like stock preference to explain the inverted V shaped pattern of abnormal returns. Chinese listed firms often issue large percent of bonus shares, or transfer lots of capital reserve into common stocks. We find that after such operations, stocks tend to be overpriced in the short term and earn lower subsequent returns in the long run. Using two different measures of the lottery features, we document that the lottery characteristics of stocks significantly increase during the event window, which explains the inverted V shaped pattern on cumulative return spreads. Retail investors who chase these “lotteries” suffer welfare loss in the long run.

JEL classification numbers: G32; G41

Key words: Speculation; Lottery; Stock dividends; Bonus shares

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1 Introduction

In recent years, issuing “bonus shares” (stock dividends) is becoming more and more popular among Chinese A-share listed firms². Though no firm fundamentals change in the process of issuing stock dividends (Ikenberry et al., 1996; Rankine et al., 1997), the stock price of a company often goes straight upward by 40 to 50 percent in less than a week after the announcement of the bonus shares issuing plan, making it a puzzle in Chinese stock market. Typically, stock dividends often account for merely 5% to 10% of the existing shares in developed markets. While in China, stock dividends can easily take up 100% or even 150% of current shares outstanding, suggesting that the bonus shares issuing is substantially a stock split.

The motives and effects of stock splits and stock dividends are well discussed in American stock market. Early in 1984, Grinblatt and Masulis discussed the valuation effects of stock splits and stock dividends. They find evidence similar to what we observe today in China: stock prices, on average, react positively to stock dividend and stock split announcements that are uncontaminated by other contemporaneous firm-specific announcements. Besides, they documented that both announcement and ex-date returns were found to be larger for stock dividends than for stock splits. In the following years, two theories became the mainstream of explaining the impact of stock splits and stock dividends on firm value, which are signaling theory (Lakonishok and Lev, 1987; McNichols and Dravid, 1990; Angel, 1997) and liquidity-improving theory (Copeland, 1979; Han, 1995; Muscarella and Vetsuypens, 1996; Dennis and Stricklan, 2003).

However, few studies keep updated with the recent data, and the mechanism behind the extreme market reaction to bonus shares issuing is still vague and controversial. Clearly, Chinese investors exhibit certain preference for bonus shares. Do issuing bonus shares really generate positive abnormal returns in the short term and long term? Can the traditional signaling theory or liquidity theory explain the extremely high abnormal

² China A-shares are the stock shares of mainland China-based companies that trade on the two Chinese stock exchanges, the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE).

return in Chinese stock market? Through empirical studies, we discover that stock prices of firms issuing bonus shares have short-term positive abnormal return but perform badly in the long run. And the preference for lottery-like stocks is likely to be the cause of such inverted V shape stock price pattern.

We first conduct event studies to examine the market reactions to the announcement of bonus shares issuing in the short term and long term. We calculate cumulative abnormal returns (*CARs*) for the 4095 event firms that issue bonus shares, and compare *CARs* between firms issuing high ratio bonus shares (HBS firms) and firms issuing low ratio bonus shares (LBS firms). The average (median) increase of event firms stock prices is 2.76% (1.62%) from 3 days before the announcement date to 3 days after that day, which is statistically significant at the 1% level. The highest abnormal returns occur on the announcement day. Moreover, we find that HBS firms have larger *CARs* than those LBS firms. In the long term, we calculate event firms' buy-and-hold abnormal returns (*BHARs*). We find that the averages *BHARs* are -0.82% with a t statistic of -1.60 in 6 months and -3.35% with a t statistic of -6.11 in 9 months, indicating that in the long run, stock prices of event firms decrease significantly relative to the market return. Moreover, the long-term buy-and-hold returns (*BHRs*) of event firms after the events are much lower than the *BHRs* before the events, and the price changes of event firms are larger than the change of market return. In conclusion, we find an inverted V shaped pattern on cumulative return spreads after the bonus shares issuing.

Next, we test the change of stock's lottery characteristics around the bonus shares issuing. Using the maximum daily return (*Maxret*) and stock turnover (*Turnover*) as proxies for the stocks' lottery characteristics, we find lottery characteristics of event firms increase dramatically around the announcement day.

Finally, we examine the impact of lottery characteristics on the short-term and long-term stock returns. To alleviate the endogeneity concern, we first match each event firm that issues bonus shares with control firms that has never issued bonus shares in the sample period. Then we run OLS regressions using the matched pairs. The results of

OLS regressions indicate that the increase of stock's lottery-like characteristics can explain the inverse V shape return pattern both in the short term and in the long run, and the impact still holds after controlling for a dummy variable indicating whether a firm has issued bonus shares or not. The results are unlikely to be entirely driven by endogenous factors, although we cannot completely rule it out.

According to our knowledge, we are the first to establish a likely causal link from lottery characteristics and the inverse V shape return pattern around the announcement of bonus shares issuing. Despite bonus shares issuing is very common in both developing and developed markets, the existing literature is inconclusive on its impact of on firm value and the underlying mechanisms. We conduct standard event studies and a propensity score matching, find out an inverted V shape return pattern on cumulative return spreads along the dividends process, and propose one potential mechanism, investors' preference for stocks with greater lottery characteristics. These findings complement the literature on both stock splits and stock dividends, as well as on lottery-like stocks. Last but not least, our findings reveal some dark side of Chinese listed companies and are also suggestive to investors and regulators.

The rest of the paper is organized as follows. Section 2 discusses the institutional background and related literature. Section 3 develops our hypothesis. Section 4 describes sample construction and reports summary statistics. Section 5 presents the results on the long-term and short-term change of firm value due to bonus shares issuing. Section 6 reports the relationship between lottery characteristics and the inverse V-shape return pattern. Section 7 concludes the paper.

2 Institutional background and literature review

2.1 Stock dividends in China

The capital operation of issuing stock dividends and transferring from capital reserve into common stocks is a phenomenon commonly seen in the Chinese stock market. In developed markets, stock dividends often account for merely 5% to 10% of the existing shares, while the stock dividends can easily take up 100% to even 150% in Chinese A-

share listed firms. For example, WUTONG Holdings (300292.SZ) announced a bonus share plan that issues 30 bonus shares for every 10 shares of its common stocks (i.e., the stock dividend ratio is 300%) in 29th June, 2016. More than 69% A-share listed firms issued stock dividends that are more than 60% of the existing shares in 2015. Therefore, stock dividends in China are substantially stock splits compared to that in the developed markets. However, Chinese listed firms often refer to stock dividends as “bonus shares”, which may induce positive investor sentiment.

The issuance of bonus shares does not affect the firm’s ownership structure and will not change the firm fundamentals (Ikenberry et al., 1996; Rankine et al., 1997). However, announcing the stock split or bonus shares often significantly lifts the stock price of the underlined company significantly. Grinbltt and Masulis (1984) find that stock prices, on average, react positively to stock dividend and stock split announcements that are uncontaminated by other contemporaneous firm-specific announcements. It is often seen in China stock market that the stock price of a company goes straight upward by 40 to 50 percent in less than a week after the issuing plan of the bonus shares is revealed. Given the price limits mechanism in China, such an abnormal movement of stock price is worth looking into.³

2.2 Literature review

The stock split problem is well discussed in American stock market. Grinbltt and Masulis (1984) find that stock prices, on average, react positively to stock dividend and stock split announcements that are uncontaminated by other contemporaneous firm-specific announcements. Besides, they documented that both announcement and ex-date returns were found to be larger for stock dividends than for stock splits.

Grinblatt and Masulis's pioneering work stimulates relevant work in the next following years. Lakonishok and Lev (1987) continued to study why firms split stocks and Angel (1997) study the problem in a market maker perspective. Generally, these literatures reached the same conclusion: signaling can be a comparatively perfect explanation for

³ China’s equity market imposes daily price limits of 10% on regular stocks and 5% on special treatment (ST) stocks.

this issue. In an imperfect market, asymmetric information exists between the shareholders and the investors. In order to encourage investors to bid for the stocks in a high price, the management should take measures to convey their private information and positive expectation of the company to the market. As is well studied, dividend policy is the most direct and important policy that a company can adopt to pass information to the outsiders. The dividends contain both the (unannounced) operating conditions and the expectations of the management towards the company's future development, which are crucial to price the stock. Later, the faults of the signaling hypothesis were mended by the reputation theory and the retained earning theory. This agreement, to some extent, closed this field of research.

However, new hypotheses were suggested by Grinblatt(1984), McNichols and Dravid(1990) and other scholars. In general, their opinions converged into two mainstreams: the liquidity-improving aspect (such as the optimal price interval hypothesis) and tax-avoiding aspect. Optimal price theory argues that extreme prices of stocks can significantly affect the stock liquidity. When the price is too high, individual investors will have difficulty raising enough money to trade the stock. When the price is too low, transaction costs will take up a larger share of the total capital gains, driving rich investors away. Therefore, an optimal price exists, and stocks with high prices tend to issue stock dividends or perform stock splits to get their price down to optimal level. Huang, Liano and Pan (2009) found that stock splits are negatively related to future profitability. They believe the positive announcement effect can be explained by lower share prices and improved market liquidity following stock splits, but not by future profitability and split signals. This finding is important since it reveals that as the market environment changes over time, the classical explanations may fail in the same market, let alone remaining effective in another market.

Meanwhile, Chinese scholars also put lots of efforts into the stock dividend and stock split problems. Most of the studies support the signaling theory (Chen, Chen and Ni, 1998; Yu and Cheng, 2001).

Another stream of literature is about lottery like stocks. In recent years, many scholars find that investors exhibit a preference for speculative assets, and thus these assets tend to be overpriced, leading to bad performance in the long run (Barberis and Huang, 2008; Bali, Cakici, and Whitelaw, 2011; Doran, Jiang and Peterson, 2011; Conrad, Nishad and Xing, 2014). Barberis and Huang established a theoretical framework where skewness would be priced, laying the very foundation of following studies. In the following empirical studies, several proxies for the lottery characteristics of a stock are proposed, such as low prices (Kumar 2009), high probability of extremely large payoffs (Conrad, Nishad and Xing, 2014), max daily return (Bali, Cakici, and Whitelaw, 2011). However, most of them predict only the long term underperformance of lottery like stocks. A typical lottery-like stock would perform badly in the long run for it is overpriced in the beginning, but overpricing is not a born characteristic of a stock. Our paper study the lottery-like stock preference in a time-vary perspective and propose a unified framework to explain both the overpricing and the underperforming stage.

3 Hypotheses

The logical framework of this paper is as follows. First, issuing bonus shares will cause an increase in the lottery characteristics of stocks. Second, the increased lottery characteristics will attract investors to buy the stocks, which will induce a significant positive abnormal return during the event window. Finally, the stock price will be overvalued in the short run, resulting in a lower stock return in the long run.

We empirically test this idea by the following procedure. We first test whether there is a significantly positive abnormal return in the event window, which is an evidence of whether issuing bonus shares could attract investors in the short run.

***Hypothesis 1:** Conditional on the firm that issued bonus shares, its stock price (relative to the normal return) significantly increases during the window of bonus shares issuing.*

Second, we need to test the stock performance in the long run. On the one hand, we refer to market return as the estimated normal return. On the other hand, we compare return changes of the same firm before and after issuing bonus shares.

Hypothesis 2: *The BHAR of the firm that issued bonus shares should be significantly negative after the event of bonus shares issuing. Specifically, the firm's stock return should be lower than the market returns and its own return before the bonus shares issuing.*

Furthermore, we test whether issuing bonus shares increases the lottery-like characteristics of stocks. Following Kumar (2009) and Bali, Cakici, and Whitelaw (2011), we choose stock price level, turnover and change of the maximum daily return as proxies for lottery features. Finally, we test whether the increase of lottery-like characteristics explains the change of stock's long-term return.

Hypothesis 3: *Issuing bonus shares increases the lottery-like characteristics of stocks.*

Hypothesis 4: *The increase of stock's lottery-like characteristics can explain the decrease of stock's long-term return. The impact remains after controlling the event of bonus shares issuing.*

4 Data and descriptive statistics

4.1 Data and sample

The Chinese stock market was quite crude and nonstandard in early times, with few listed companies, low-participated investors and many loopholes in the legal system. Things kept getting better, especially after the Split-share Structure Reform and the enforcement of the new Security Law around 2006. To avoid the influences of features in the immature stage, only bonus shares issued after 2007 should be taken into consideration. Since this paper compares the change of financial indicators before/after a company's announcement of issuing stock dividends or transferring reserve to common shares, both the *ex ante* and *ex post* data should be collected. Therefore, this essay studies the "bonus share" events of all the A Stock in Shanghai and Shenzhen Stock Exchange between 1st Jan 2008 and 31st Dec 2015. All the data are downloaded from the CSMAR Database and Wind Financial Database. Details of data processing are introduced separately in the essay, and further information is attached in the Appendix.

The procedure of a bonus shares issuing includes the following steps:

(1) *Pre-arranged plan revealing*. The board works out a draft of the dividend plan before the general shareholders' meeting and announces the plan to the public.

(2) *Resolution of the general shareholders' meeting*. The draft is discussed at the general shareholders' meeting. If it is approved, the company starts to prepare for the dividend plan legally and administratively.

(3) *Dividend plan announcement*. Within two months after the general shareholders' meeting, the board announces the exact date to carry out the whole dividend plan in steps.

(4) *Record date*. Investors can get the stock dividends only if they hold the underlined stock after the closing on this date.

(5) *Ex-dividend date*. The Trans-Bonus plan is carried out, and the stock price is adjusted to the correct price mathematically. Meanwhile, investors' accounts change correspondingly.

On the date of pre-arranged plan revealing, the information is passed to investors. In Chinese stock market where the board meeting possesses little authority, the draft seldom gets changed. Therefore, this essay chooses the announcement date of the pre-arranged plan as the event date.

4.2 Descriptive statistics

Table 1 shows the annual distribution of bonus shares issuing. It is obvious that the number of bonus shares issuing events keeps increasing each year, while the ratio of event firms divided by total firms is fluctuating. When the market return in previous year is high, this year's number of bonus shares issuing tends to greatly increase (as observed in 2010 and 2015), while a bear market causes a significant decline in the event ratio (as observed in 2009 and 2012). Given the fact that more companies get listed in bull market, such an increase in the event/total ratio is quite notable.

Table 1. Annual distribution of bonus shares issuing

Year	Event firms	Total Firms	Event/Total	Market Return (Previous Year)		Market Return (Event Year)	
				SSE	SZSE	SSE	SZSE
2008	231	1441	16.03%	96.66%	162.80%	-65.39%	-61.76%
2009	239	1516	15.77%	-65.39%	-61.76%	79.98%	117.12%
2010	386	1610	23.98%	79.98%	117.12%	-14.31%	7.45%
2011	618	1955	31.61%	-14.31%	7.45%	-21.68%	-32.86%
2012	576	2234	25.78%	-21.68%	-32.86%	3.17%	1.68%
2013	461	2387	19.31%	3.17%	1.68%	-6.75%	20.03%
2014	515	2383	21.61%	-6.75%	20.03%	52.87%	33.80%
2015	751	2509	29.93%	52.87%	33.80%	9.41%	63.15%
2016	554	2726	20.32%	9.41%	63.15%	-12.31%	-14.72%

All the bonus shares issuing events can be divided into two groups: high ratio of bonus shares (HBS henceforth), where the total shares expand more than 50% and low ratio of bonus shares (LBS henceforth) where the total shares expand less than 50%. Table 2 presents the distribution of HBSs and LBSs during the sample period. 4,331 separate events are selected, and HBSs take up 73%.

Table 2. Different ratios of bonus shares

Year	[0,0.25)	[0.25,0.5)	[0.5,0.75)	[0.75,1)	≥ 1	Total
2008	37	47	70	15	62	231
2009	60	57	68	12	42	239
2010	66	81	137	24	78	386
2011	66	112	176	35	229	618
2012	66	92	175	46	197	576
2013	51	76	127	33	174	461
2014	51	73	127	35	229	515
2015	39	82	127	33	470	751
2016	31	47	102	31	343	554

Total	467	667	1109	264	1824	4331
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There is a clear trend that number of HBSs keeps going upward. In 2010, the average ratio of HBS to all events is around 20%. While after 2015, this figure goes up to over 60%. Besides, the number of extreme HBSs where the ratio is larger than 1.0 increases from 62 in 2008 to 343 in 2016, indicating that companies choose this kind of bonus share much more frequently than before. On the contrary, LBSs are declining both in ratio and in numbers. In 2009, LTBs still make up for approximately 50% of total Trans-Bonus. But as time advances, this ratio drops to 14.1% in 2016. We believe that such a decline is not accidental, but the result of deliberate choice of listed companies.

Table 3. Summary Statistics

	Mean	Median	STD	Max	Min	Obs
Divs	0.058	0	0.151	1	0	3950
Divc	0.665	0.6	0.436	2.5	0	3950
Maxret	0.051	0.047	0.021	0.100	0.015	3950
Turnover	0.059	0.040	0.058	0.328	0.000	3950
Prior Price	27.56	22.21	19.63	141.8	4.38	3950
Tobin's Q	2.840	2.225	2.197	13.960	0.231	3950
Total Equity	7.298	4.137	9.956	95.606	0.791	3950
Leverage	0.376	0.358	0.200	0.871	0.030	3950
Total Asset	60.99	24.15	121.9	1422	3.797	3950
EPS	0.407	0.328	0.369	2.456	-0.659	3950
ROE	0.094	0.087	0.074	0.407	-0.379	3950

Table 3 provides descriptive statistics for our sample of firms that have issued bonus shares (event firms henceforth) from January 1, 2008 to December 31, 2016.

5 Market Reaction

In this section, we examine event firms' stock returns around the announcement day of bonus shares issuing to identify the market reaction to the issuing event, and thus to understand the impact of bonus shares issuing on firms. We first calculate the short-term reactions, then we calculate the reactions in the long run.

5.1 Price dynamics around the announcement of the bonus shares issuing

Following the standard event study approach, we first calculate the *CAR* in the window $[d1, d2]$ around the announcement of the bonus shares issuing for each event firm in our sample. This is done by aggregating daily abnormal returns from day $d1$ to day $d2$:

$$CAR = \sum_{t=d1}^{d2} AR_t \quad (1)$$

in which day 0 is the announcement date of the pre-arranged plan. Daily abnormal returns are estimated with the market model and a 151-day estimation window (day -200 to day -50).

Then a series of operations are done to prepare the data for regression.

- (1) Remove the samples that encounters M&A in the period (M&A data directly goes from the last Corporate Finance Assignment);
- (2) Remove the samples that are suspended for half the estimation window length;
- (3) Remove extreme values at the 1% level;

After the above refinement, 4331 observations are reduced to 4095 ones.

Figure 1 depicts the time series of the mean of *CARs* and *ARs* around the announcement day. Stock prices of event firms increases by more than 4% around the announcement. A simple visual check suggests that there is a significant jump in firm value if the firm issues bonus shares. Moreover, the stock price goes up significantly even before the announcement day. It could happen because of the information leak before the policy is formally disclosed to the public, which is not rare in the Chinese stock market (Griffin, Hirschey and Kelly, 2011).

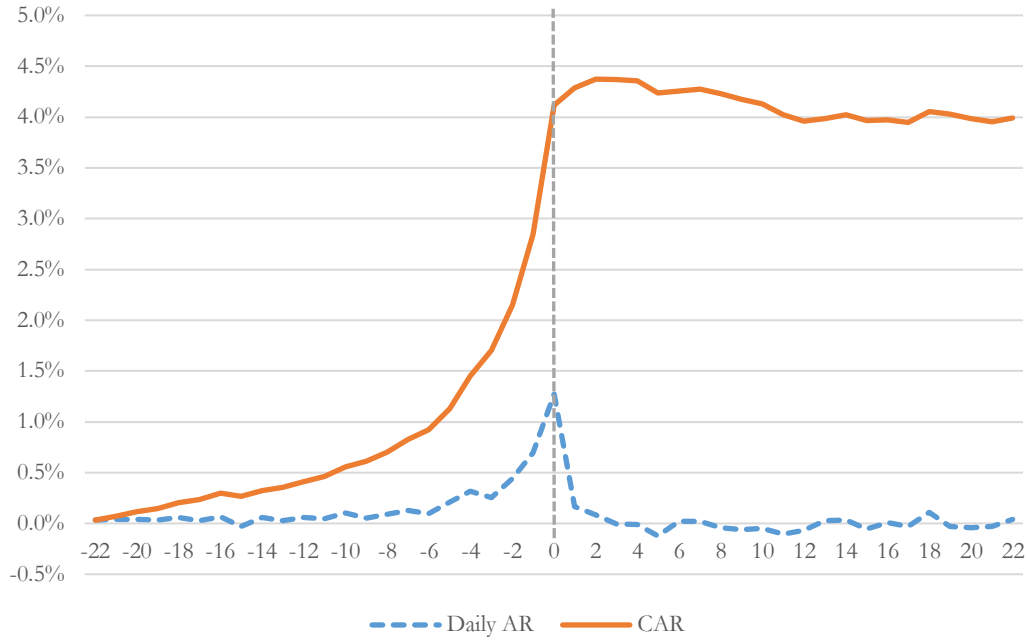


Figure 1. Price dynamics around the announcement of the bonus shares issuing

CARs of the full sample reported in Panel A of Table 4 confirm our observation in Figure 1. The first column shows that on average (median), event firm's stock price increases by 2.76% (1.62%) from 3 days before the announcement day to 3 days after that day, which is statistically significant at the 1% level. The second column shows that the mean (median) increase in firm value is 1.27% (0.71%) on the announcement day, also significant at the 1% level. The economic magnitude is quite sizable. Panel B and Panel C of Table 4 show the price reactions of HBS firms and LBS firms. We find that HBS firms have larger *CARs* than LBS firms.

Table 4. Stock returns around the announcement of bonus shares issuing

Panel A: Full Sample					
Window	Mean CAR	Median CAR	Z Statistic	Market Return	N
[-3 , 3]	2.756	1.621	16.747***	0.056	4095
0	1.273	0.706	20.458***	-0.037	4095
[0 , 3]	1.415	0.155	11.376***	0.166	4095
[-10 , -1]	2.336	1.744	11.874***	0.478	4095
[1 , 10]	-0.412	-1.037	-2.093**	0.516	4095
[1 , 30]	-1.868	-2.335	-5.484***	0.889	4095

Panel B: HBS					
Window	Mean CAR	Median CAR	Z Statistic	Market Return	N
[-3 , 3]	3.556	2.311	19.009***	0.002	3011
0	1.753	1.259	24.798***	-0.045	3011
[0 , 3]	1.976	0.491	13.972***	0.132	3011
[-10 , -1]	2.825	2.448	12.634***	0.337	3011
[1 , 10]	-0.456	-1.233	-2.042**	0.421	3011
[1 , 30]	-2.022	-2.426	-5.222***	0.784	3011

Panel C: LBS					
Window	Mean CAR	Median CAR	Z Statistic	Market Return	N
[-3 , 3]	0.737	0.385	2.909***	0.2	1084
0	-0.015	-0.264	-0.157	-0.016	1084
[0 , 3]	-0.023	-0.35	-0.122	0.256	1084
[-10 , -1]	1.137	0.448	3.751***	0.85	1084
[1 , 10]	-0.214	-0.688	-0.706	0.768	1084
[1 , 30]	-1.456	-2.173	-2.773***	1.165	1084

Notes: ***, **, * represent significance level of 1%, 5% and 10% respectively

5.2 The long-term value change attributed to the bonus shares issuing

For an event window $[d1, d2]$, individual firms' $BHARs$:

$$BHAR_i = \prod_{t=d1}^{d2} (1 + R_{it}) - \prod_{t=d1}^{d2} (1 + R_{mt}) \quad (2)$$

where R_{it} is the return of stock i on day t , and R_{mt} is the market return on day t as the benchmark.

Table 5 shows the results of the long-term stock performance of event firms. We find that, the averages of $BHARs$ are 0.42% with a t statistic of 1.07 in 3 months, -0.82% with a t statistic of -1.60 in 6 months, and -3.35% with a t statistic of -6.11 in 9 months. The results indicate that in the long run, the stock prices of event firms decrease significantly relative to the market return.

Table 5. The long-term value change after the bonus shares issuing

	3 Months BHR	6 Months BHR	9 Months BHR
Event Firms	5.73%	7.14%	8.10%
Market Return	4.51%	6.99%	9.94%
BHAR	0.42%	-0.82%*	-3.35%***
	(1.07)	(-1.60)	(-6.11)

Notes: ***, **, * represent significance level of 1%, 5% and 10% respectively; t statistics are reported in parentheses

Moreover, we calculate the long-term *BHRs*' change before and after bonus shares issuing. Figure 2 depicts the time series of the mean *BHRs* around bonus shares issuing. We find that the long-term *BHRs* of event firms after the events are much lower than the *BHRs* before the events. Besides, the price change of event firms is larger than the change of market return.

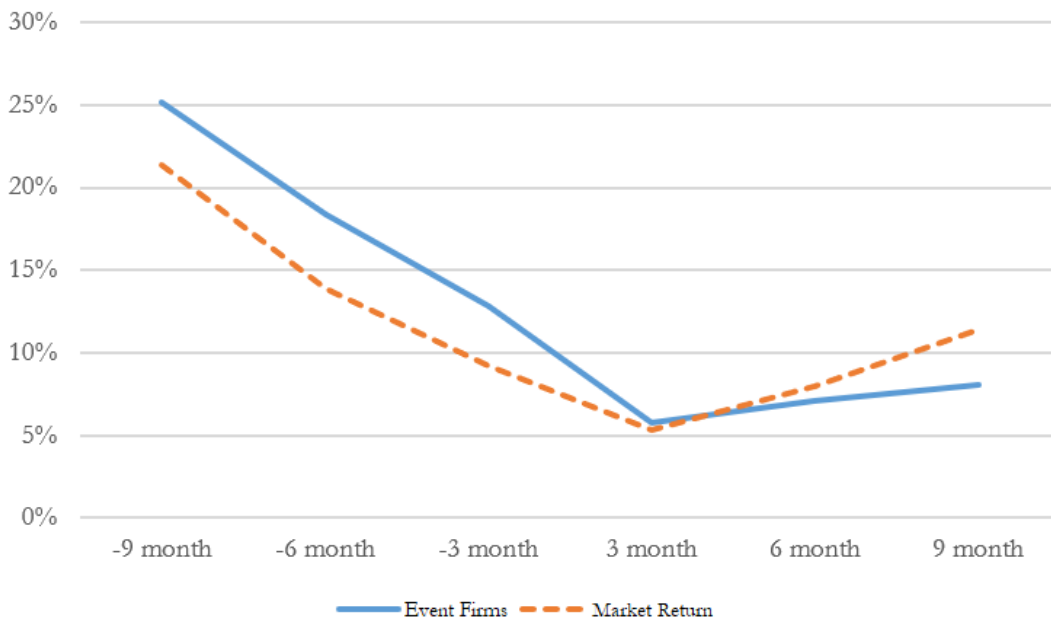


Figure 2. BHRs around the bonus shares issuing

Results in Table 6 confirm our observation in Figure 2. The first column show that the firm's stock return change is lower than its own return change before the bonus shares issuing. The third column show that the event firm's stock return change around the bonus shares issuing is lower than the market return change.

Table 6. The comparison of stock return change between event firms and market return

	3 Months	6 Months	9 Months
Event Firms	-7.13%	-11.20%	-17.09%
Market Return	-3.93%	-5.97%	-9.94%
Dif-in-Dif	-3.19%	-5.23%	-7.15%

6 Lottery Characteristics and Bonus Shares Issuing

In this section, we test the change of stock's lottery characteristics around the bonus shares issuing. Moreover, we examine the impact of lottery characteristics on the unique inverted V shape pattern of stock prices.

6.1 Lottery measures

We use two variables to proxy for the lottery feature of stocks following prior studies, including the maximum daily return (*Maxret*) and stock turnover (*Turnover*).

Maxret: Bali, Cakici, and Whitelaw (2011) document a significant and negative relation between the maximum daily return over the previous month and the returns in the future. Besides, they find that firms with larger maximum daily returns have higher return skewness. It is conjectured that the negative relation between the maximum daily return and future returns is due to investors' preference for lottery-like stocks. Following their study, we use each stock's maximum daily return (*Maxret*) as our first measure of lottery feature.

Turnover: Zheng and Sun (2013) find that stock turnover is a good indicator for the idiosyncratic volatility of the stock in Chinese stock market, which is an important component of lottery characteristics (Kumar, 2009). Therefore, we use each stock's daily turnover (*Turnover*) as our second measure of lottery feature.

6.2 The change of lottery characteristics around the bonus shares issuing

Figure 3 depicts the dynamic composition of event firms. The dotted (dashed) line depicts the ratio of event firms that have negative (positive) *Maxret*. The solid line depicts the difference between the ratio of event firms that have positive *Maxret* and the ratio of event firms that have negative *Maxret*. We find that during the $[-2, 0]$ window, the number of event firms that have positive *Maxret* is much larger than the number of event firms that have negative *Maxret*, while on other dates, the contrary is the case.

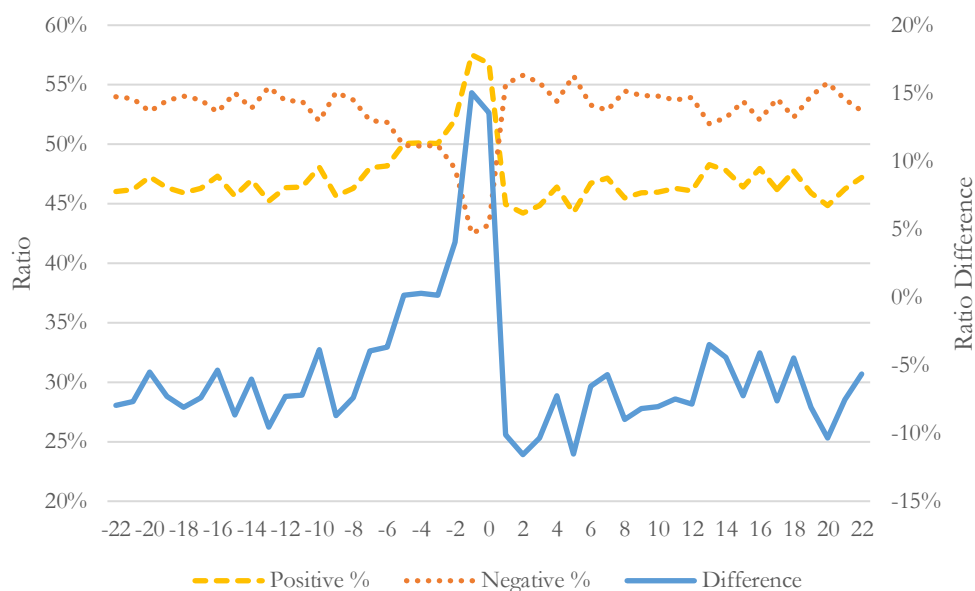


Figure 3. The dynamic composition of event firms around the bonus shares issuing

Figure 4 depicts the dynamic *Maxret* and *Turnover* of event firms around the bonus shares issuing. We find that both *Maxret* and *Turnover* jump significantly around the announcement of bonus shares issuing. *Maxret* increases by 1% right after the announcement and gets back to the former level after 24 days. *Turnover* changes dramatically near the announcement. The max *Turnover* is 1.7 times as the former level, which occurs exactly on the announcement day. Besides, although *Turnover* decreases to a stable level after 14 days, this level is still slightly larger than the former level, suggesting that the increase of lottery characteristics persists after the bonus shares issuing.

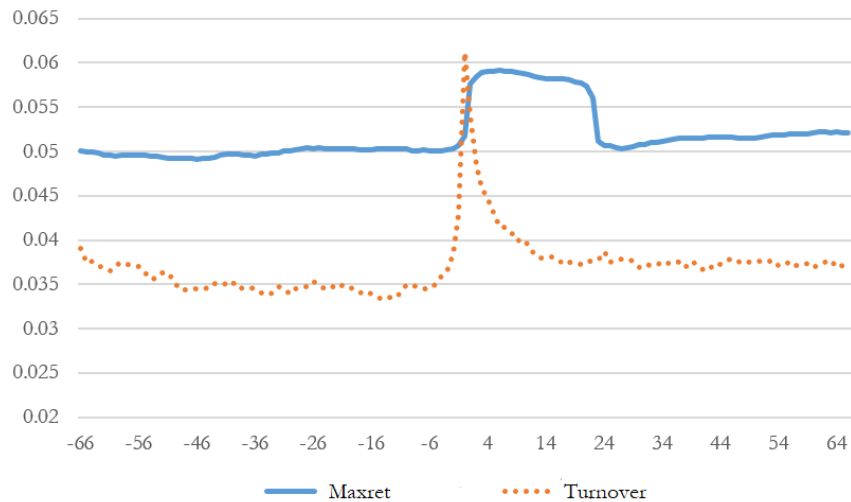


Figure 4. The dynamic *Maxret* and *Turnover* around the bonus shares issuing

6.3 Lottery characteristics and the inverted V-shape return pattern

In this section, we examine whether the change of lottery characteristics cause the inverted V-shape return patterns around the bonus shares issuing. First, to alleviate the endogeneity concern, we first match each event firm that issues bonus shares with control firms that has never issued bonus shares in the sample period, using one-to-one nearest neighbor propensity score matching without replacement. Other covariates we consider in the matching process include Total Equity, ROE, EPS, ROE, and Year Fixed Effect. Then we run OLS regressions using the matched pairs.

Table 7 reports the results of OLS regressions. Column (1) shows that the bonus shares issuing increases the lottery characteristics of firms, which is consistent with the results in Section 6.2. Column (2) to (5) indicate the relationship between the lottery characteristics and the inverted V-shape return patterns. Coefficient estimates on the bonus-share issuing variable are positive and significant at the 1% level in Column (2) and (3), which confirms our prior that the increase of stock's lottery-like characteristics can explain the increase of stock's short-term return. Similarly, results in Column (4) and (5) indicate that the increase of stock's lottery-like characteristics can explain the decrease of stock's long-term return. The relationship between stock's lottery-like characteristics and the inverted V-shape return patterns holds after controlling the event of bonus shares issuing.

Table 7. Lottery characteristics and the inverted V-shape return patterns

	(1)	(2)	(3)	(4)	(5)
	Turnover	CAR	CAR	BHAR	BHAR
<i>Bonus-share Issuing</i>	0.0152*** (18.562)		-1.176*** (4.447)		0.005 (0.836)
<i>Turnover</i>		66.99*** (16.88)	71.176*** (17.48)	-0.254** (-2.709)	-0.271** (-2.826)
<i>Market Return</i>		0.166*** (6.043)	0.163*** (5.923)	0.304*** (21.22)	0.305*** (21.22)
<i>Total Asset</i>		-0.352 (-0.518)	-0.427 (-0.630)	-0.016 (-0.977)	-0.016 (-0.985)
<i>Capacity</i>		-0.127 (-0.972)	-0.113 (-0.867)	-0.003 (-0.923)	-0.003 (-0.924)
<i>Prior Price</i>		-0.086*** (-3.991)	-0.081 (-3.724)	0.000 (0.676)	0.000 (0.620)
<i>Leverage</i>		1.938 (1.337)	2.007 (1.395)	0.021 (0.615)	0.022 (0.654)
<i>Total Equity</i>		0.043 (-0.060)	0.021 (0.030)	-0.009 (-0.513)	-0.008 (-0.507)
<i>EPS</i>		1.564* (2.446)	1.504 (2.360)	-0.007 (-0.445)	-0.006 (-0.411)
<i>ROE</i>		-5.883* (-1.890)	-5.985 (-1.943)	0.053 (0.720)	0.047 (0.656)
<i>Tobin's Q</i>		-0.094 (-0.675)	-0.097 (-0.706)	-0.005 (-1.543)	-0.005 (-1.485)
<i>3-Month Return</i>				0.010 (0.681)	0.010 (0.683)
<i>6-Month Return</i>				0.646*** (52.43)	0.646*** (5.242)
<i>Prior 3-Month Return</i>				0.024 (1.402)	0.024 (1.398)
<i>Prior 6-Month Return</i>				-0.008 (-0.673)	-0.009 (-0.742)
<i>Constant</i>	-0.0069** (-2.59)	14.418*** (3.67)	15.21*** (3.825)	0.413*** (4.378)	0.412*** (4.366)
<i>Year Fixed Effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry Fixed Effect</i>	Yes	Yes	Yes	Yes	Yes
<i>Adjusted R²</i>	0.0528	0.0813	0.0825	0.6112	0.6112
<i>N</i>	6007	6007	6007	6005	6005

7 Conclusion

Issuing bonus shares (stock dividends) has been a heated topic in Chinese stock market for several years. An intriguing phenomenon is the jump of stock prices around the announcement day. In this paper, we identify the inverted V shape stock prices, i.e., short term positive abnormal returns and long term negative abnormal returns of event firms, and further explain this phenomenon with a lottery-like stock preference theory. We find that issuing bonus shares significantly increases the lottery characteristics of firms, the results of which are, on one hand, a run-up by investors and thus overpriced stocks in the short term, and on the other hand, a long term downturn of stock prices due to the early overpricing. Our findings are valuable for explaining both the short term and the long term stock performance within a unified framework.

Other than these main conclusions, we also discover that the stock prices of event firms start to rise about one week before the announcement, suggesting certain degree of information leakage and insider trading. In this case, the bonus shares are only a bonus to these informed traders, but a curse to all other investors. Besides, we prove that stocks of firms issuing bonus shares perform badly in the long run, and even perform badly shortly after the announcement day. Therefore, it is irrational for retail investors to chase these “lotteries”, and the regulators should adopt policies to restrict such speculation behavior of listed firms and investigate into the possible insider trading issue behind those “bonus” shares.

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Appendix. Variable Definitions

Variable	Definition
<i>3-Month Return</i>	The net stock return rate between 3 months after the announcement day and the announcement day.
<i>6-Month Return</i>	The net stock return rate between 6 months after the announcement day and the announcement day.
<i>BHAR</i>	The difference of net buy-and-hold returns between the event firm and the market return.
<i>Bonus-share Issuing</i>	A dummy variable that equals 1 if the firm is in the event group, and equals 0 if the firm is in the control group.
<i>CAR</i>	Cumulative abnormal return, calculated as the net stock return of a event firm deducted by the market return.
<i>Divs</i>	The ratio of capital reserves transferred into common stocks compared to original common stocks outstanding.
<i>Divc</i>	The ratio of bonus shares issued compared to original common stocks outstanding.
<i>EPS</i>	Earnings per share, calculated as net profit divided by total shares outstanding at the year prior to the bonus shares issuing.
<i>Leverage</i>	Debt to asset ratio at the year prior to the bonus shares issuing.
<i>Market Return</i>	CSMAR composite-weighted returns.
<i>Capacity</i>	Calculated as the sum of capital reserves, surplus reserves and unappropriated profits divided by total shares outstanding at the year prior to the bonus shares issuing. This variable measures a firm's capacity of the magnitude of bonus shares issuing.
<i>Prior 3-Month Return</i>	The net stock return rate between the announcement day and 3 months prior to the announcement day.
<i>Prior 6-Month Return</i>	The net stock return rate between the announcement day and 6 months prior to the announcement day.
<i>Prior Price</i>	The stock price at the yearend prior to the bonus shares issuing.
<i>ROE</i>	Return of equity at the yearend prior to the bonus shares issuing.
<i>Tobin's Q</i>	Calculated as the total market value of firm divided by total asset value of firm at the year prior to the bonus shares issuing.
<i>Turnover</i>	The daily turnover ratio of stocks, calculated as the daily trading shares divided by total shares outstanding.
