THE MARKET REACTION TO STOCK SPLIT ON ACTUAL STOCK SPLIT DAY

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Abstract

It is well documented in the literature that there are positive abnormal returns on the announcement days of stock splits. However, few studies investigated the stock return on the actual split day. We examine market reaction on the actual split day and find that it is positive. We also find a negative relationship between the market reaction and firm size as well as the previous trading volume. The result is in support of the inattention theory.

Key words: Stock Splits; Actual split day; Inattention Theory;

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Table of Content

List of Tables

1 Introduction

Do stock splits affect stock prices and returns? This question was extensively discussed and researched among scholars over the past decades. Countless studies have been carried out and many empirical tests have proved that the announcement of stock splits do affect the stock price and bring abnormal return on and after the stock split announcement day. For instance, Li, Stork, and Zou (2013) analyzed the market reaction to stock splits announcements using a unique US sample over the period 2000 to 2009 and found a significantly positive Cumulative Average Abnormal Return (CAAR) around the announcement date; Desai and Jain (2014) analyze CAAR around stock split announcements during the pre-financial crisis (2004-2007) and financial crisis period (2008-2011) and investigate the effect of stock split announcements on abnormal returns in the wake of bearish market sentiment. They found that market reaction is positive to a stock split announcement even during the financial crisis period. Lamoureux and Poon (1987) found positive abnormal returns after the announcement day as well. Many hypotheses have been raised to explain the positive abnormal return for stock splits on announcement day, such as the positive signal hypothesis, optimal trading range hypothesis, and liquidity hypothesis.

Most researchers pay attention on the announcement day, but strangely, to our best knowledge, no empirical papers focus specifically on the actual split day, another important time point. However, the stock price drops to a lower trading range only on the actual split day. This should be the time when theories such as the optimal trading range can apply. The closest paper we found is written by Boehme and Danielsen (2007) who study the existence of abnormal return from the announcement day to the post-split period. They found out that the significant positive returns after the announcement date do not persist after the actual date of the stock split. They concluded that the stock split post-announcement “drift” is only of short duration, and it is attributable to trading frictions rather than behavioral biases. This conclusion raised our curiosity about whether there is abnormal return on the actual split day.

Given the widely accepted view that the market is efficient, abnormal return should exist only on the announcement date when the new information hit the market. Thus, our primary hypothesis is that there is no abnormal return on the actual stock split day since the market is efficient.

However, using stocks split data from Jan 1^{st}, 1990 to Dec 31^{st}, 2013, we did find the existence of abnormal positive returns on the actual split day. This seems conflict with the market efficiency theory. The market reaction on the actual split date may be explained by the rational inattention theory. Rational inattention theory recognizes that people have finite information-processing capacity. Individuals have a limited amount of attention and therefore have to decide how to allocate their attention. This theory may provide an explanation for some of the frictions and delays that are important in dynamic macroeconomics and finance. For the case of stock split, due to the limited attention, investors may be unaware of the split announcement containing a positive signal about firm value and leading to reduction in information asymmetry (a similar inattention to previously released macroeconomic information is reported in Gilbert et al., 2012). When the stock actually splits, investors receive the "new" information and react to it, which in term cause the abnormal return on actual split day.

Desai and Jain (1997) reported an inverse relationship between firm size and abnormal return for stock splits on announcement day. Atiase (1985) also got similar results and argued that this is caused by limited information available for smaller firms. When the investors exhibit inattention to stock announcements, smaller firms have higher possibility to receive inattention given the limited information. This is connected to the neglected firm theory (introduced in the literature review). As the result we make a secondary hypothesis that when the inattention theory applies, smaller firms should have larger abnormal returns at the actual split date.

Similarly, investors may pay more attention to stocks that have higher trading volume before the split. Stocks with volume before split have higher possibility to receive inattention. We thus make another hypothesis that when the inattention theory applies, splits with lower trading volume before the split should have larger abnormal returns at the actual split date.

Manager uses split ratios to signal firm value (McNichols and Dravid, 1990), thus the split ratio should not be neglected. Also, following the optimal trading range theory, stocks with a higher price before split should have higher abnormal return on actual split day since the price falls in a better trading range on this day. We assume the price is positively correlated with abnormal returns.

The univariate analyses of firm size, price before split, split size, and volume show that the firm size and price before split are negatively correlated with abnormal returns on actual split day, the split ratio exhibits a U-shape relation with returns, and the volume before the split shows a negative correlation with returns. The regression results confirm our hypothesis between firm size and abnormal returns, but did not find evidence to support the theory about price. After creating dummies, the volume before the split shows a negative correlation with volume before split. Above results support the inattention theory. Our paper thus provides another piece of evidence for the theories explaining the market reaction to stock splits.

The paper is organized as follows. Section 2 briefly reviews the various theories explaining the abnormal return for stock split, Section 3 describes the statistical tests and regressions, and Section 4 concludes.

2 Literature review

In a traditional view of corporate finance, stock splits are indicative of a company's positive future performance. Many studies observed abnormal returns around stock split announcements. Meanwhile, empirical research has documented several negative consequences of stock splits, such as increased volatility, larger spreads and increased transaction costs following stock splits. However, given that a stock split is simply a superficial change to a security's price and shares outstanding, the reason why we observe abnormal returns is a puzzle that remains unsolved. Many financial analyses try to explain the connection between stock splits and abnormal return by several theories. The widespread view is that, rather than economic reasons, it is attributable to psychological reasons to a certain degree. Among those theories, the most prominent two are the Positive Signaling Hypothesis [Brennan and Copeland(1988)] and the Optimal Trading Range Hypothesis [Fama et al (1969)]. We would introduce the two main hypotheses along with several others.

2.1 Positive Signal Hypothesis

The Positive Signaling Hypothesis states that investors tend to view a stock split as a positive signal for a firm's future prospects and tend to buy them, thus creating an increasing stock price. Brennen and Copeland (1988) and McNichols and Dravid (1981) interpreted the positive stock market reaction to split announcements as an indication of company executives' possession of positive insider information. In an empirical study by Elfakhani and Lung (2003), the authors examines the market behavior surrounding stock split announcements in the Canadian market for the 1977–1993 period, demonstrating that split events signal future performance of the firm. The rationale is that executives will process a stock split when they are confident about the future performance of company. Otherwise, company executives will not incur the administration expense for a stock split.

2.2 Optimal Trading Range Hypothesis

The second theory is the Optimal Trading Range Hypothesis. Positive signal Hypothesis tends to explain the reason for executing stock split for certain degree. However, firms will experience highly growth dividend or earnings still use stock split, as a result it is not clear whether management intends to use stock splits as signals. Raymond W. So and Yiuman Tse (2000) proposed models that ascribe economic rationality to stock splits. They cite that many firms split on a recurring basis to maintain fairly stable target prices. The target price is the price before split divided by the split factor. The firm tends to split the stock when the stock price hit a certain point or deviate from a market range too far.

Stocks trade within the range are presumed to have lower brokerage fees as a percent of value traded and appear to be more liquid. Investors, either consciously or subconsciously, seeks out stocks that trade within a certain range, usually between $30 and $60. Once a stock passes the upper limit of this range, company may choose to declare a stock split to bring down the share price to the optimal range. This optimal trading range is largely psychological, sounds like a "diversification", as investors with limited investing budget would prefer to receive more stock shares than fewer, even though the amount invested would be the same. This hypothesis shows some connection to price quartiles before stock split, thus, we consider price quartiles as a influence factor and try to find some regular pattern.

2.3 The Neglected-Firm Hypothesis

Under the Neglected Firm Hypothesis, Arbel and Swanson (1993) state that if there is little known information about a firm, its shares will trade at a discount. Therefore, management tends to attract potential investors attention by executing stock splits and gain more recognition. This hypothesis is hard to separate from the liquidity and signaling hypothesis because by definition if a firm is neglected than it is probably associated with low liquidity and high information asymmetry. Therefore, management of neglected firms decide to split the shares in order to achieve the institution investors' attention–getting effect due to the fact that as opposed to other corporate events like dividend announcement the stock split comprises no formal declaration of any change except for the increased number of shares outstanding and lower nominal value of shares. [Conroy R.M., Harris R.S.(1990)]

2.4 Liquidity Hypothesis

In certain degree, the liquidity hypothesis is related to the optimal trading range hypothesis. Amihud and Mendelson (1986) predicted that there is a positive relationship between the value of equity and liquidity, which suggests that after a stock split, when liquidity increases, equity value increases. A decade later, Muscarella and Vetsuypens (1996) confirmed these predictions. The liquidity hypothesis states that the splitting of stock increases its market liquidity and will thus attract more small investors. The main idea of the liquidity hypothesis is that following a split more investors are able to buy the stock, which in turn increases the trading volume and liquidity. Following a split, the number of shareholders may increase simply because they can sell and borrow one share of stock in a lower price. If the number of shareholders increases after the split, then trading volume increases.

2.5 The dividend hypothesis

Copeland (1979) interpreted the split declaration as a signal of a future dividend increase. That is to say, the positive abnormal return is not due to the stock split but results of the dividend increases or decreases that followed or preceded this stock split. This hypothesis can be seen as a particular case of the signaling hypothesis. “Higher dividends provide investors with signals of management’s increased confidence in their companies’ future levels of profitability and cash flows. Thus, it is not stock splits per se that cause higher stock returns, but rather management’s emphatic statements of continued confidence in the company’s future performance conveyed to the market in the form of larger than expected dividend increases” (Copeland, 1979).

To summarize, there is the evidence of positive abnormal returns during the split announcement period, thus confirming the idea that investors and practitioners tend to see splits as positive events. Positive CARs also exist in the time leading up to and upon the split, with much less severe (although still slightly negative) abnormal returns post-split. These results tend to confirm the idea that although investors see stock splits as a positive event (possibly due to the Signaling Hypothesis), as do many company managers and other practitioners, in reality they create no value for the firm. In addition, due to transaction costs, possible increased volatility and other unknown factors, there is the likelihood of negative returns in the year following the split.

3 Data Analysis

3.1 Data Description

We collected data from CRSP (the Center for Research in Security Prices) for stocks that had split events (distribution code: 5523) in the period between Jan 1st, 1990 and Dec 31st, 2013. We consider only stocks that are traded on NYSE, AMX and NASDAQ, and have gvkey. Also, According to Desai and Jain (1997), stock splits with a split ratio lower than 1.25 are considered as very small, thus these splits are excluded from our analysis. Reverse split is not included as well. After winsorization, the sample size is 6070.

The abnormal return data was retrieved from Eventus. For each stock, the cumulative buy-and-hold abnormal return (BHAR) measured against the CAMP model for following periods were collected:

(1) on one day before actual split day (**t=-1**);

(2) on the actual split day (**t=0**);

(3) on one day after the actual split day (**t=1**);

(4) in one month since the actual split day (**t=(1,21)**);

(5) in two months since the actual split day (**t=(1,42)**);

(6) in three months since the actual split day (**t=(1,63)**);

(7) in six months since the actual split day (**t=(1,126)**).

Besides the abnormal return, the stock price, number of share outstanding, price and share adjustment factor on actual split day were also collected. Monthly stock trading volume was retrieved from monthly CRSP database.

3.2 Summary statistics and T-test for abnormal return

In this section we first want to test our primary hypothesis: the market is efficient, thus there is no abnormal return on actual split day.

Table 1 Here

In table 1 we listed the summary statistics and t-test results for the BHARs. The mean abnormal return is positive for the day before actual split day (t=-1) and the actual split day (t=0), but it becomes statistically indifferent from 0 for t=1, and turns to negative for t>1. The magnitudes for negative returns are large. The t-statistics shows that other than t=1, the return numbers are statistically significant. We also applied a non-parametric median test to test the robustness of the above results, and it supports our results.

The abnormal return on actual split day supports the inattention theory, but the negative returns after the actual split day remain a puzzle. Given the actual split does not convey any new information, there should be little under- or over-reaction, thus the abnormal return after the actual split day should remain close to zero. This review is supported by Boehme and Danielsen (2007), who found that the abnormal return after the announcement day failed to continue after the actual split day. Further investigation thus is needed for the large negative abnormal returns after t=1.

3.3 Test for the influence from firm size, price before split and volume

From previous literatures we made some hypothesis for factors that may be associated with abnormal return on actual split day. In this section we do some preliminary analysis for each factor and get some intuition for the relationship.

We first divided our data into two groups according to market capitalization on actual split day. If a firm has market capitalization larger than the median, we define it as a large capitalization firm; otherwise it is a small capitalization firm. Same statistics are calculated for the two groups. Table 2 shows the respective results.

Table 2 Here

Compared to large firm, small firm has higher mean abnormal return for t=-1 and t=0, but lower mean negative abnormal return for the time period since t=1. The difference in means and medians for the two groups on actual split day are also significant; the robustness test (difference in medians) supports it as well. This result suggests that firm size is negatively correlated with the abnormal return on actual split day. The results are consistent with our secondary hypothesis.

In terms of price, we rank the stocks according to their pre-split price. The mean price is $55, median is $45.375, 75% quartile is $67.3125 and 25% quartile is $32. We divide the stocks into four groups according to the quartiles, then compare their means and medians. The results are summarized in table 3.

Table 3 Here

We observe some patterns for the mean abnormal return. On actual split day, the price and mean abnormal return exhibits a negative relationship. As the price before split increase from quartile 1 to quartile 3, the returns before t=1 decrease, but the returns after t=1 have smaller negative values, which suggest that the quartile 3 firms have smaller volatility compared to quartile 1 in terms of mean abnormal return. However, firms in quartile 4 have abnormal return similar to quartile 1 after t=1, and we test the difference in means and medians to confirm this result.

Above observations suggest that on actual split day, the mean abnormal return decreases as price increase, which contradicts the optimal trading range hypothesis. According to the optimal trading range theory, firms that have higher prices before splits should receive more benefit from the split given their stocks are more affordable to individual investors. Ikenberry et al (1996) also proposed that it would be costly for lower price stock to split because the fixed cost element of brokerage commissions leads to a higher cost-per-share, which reduces the net benefit of splitting. Thus the negative relationship seems counterintuitive, and we need regressions to prove whether it is true.

We also investigate if the stock with different split size has different mean abnormal return. Here the factor to adjust shares (FACSHR) is used to measure split size, and it is defined as the additional shares created after split for each old share.

$$FACSHR = \frac{number\ of\ new\ shares}{number\ of\ old\ shares} - 1$$

For example, if the factor is 1 for the split, then it is a 2-to-1 split. The mean of FACSHR of our sample is 0.89, median, mode and 75% quartile (even the 90%) are both 1; the 25% quartile is 0.5. Thus most splits in the sample are 2-to-1 split.

We divided the data into three groups in terms of the FACSHR: (1) above 1; (2) exactly 1; (3) below 1. Table 4 shows the results.

Table 4 Here

The return on actual split day shows a U-shape in terms of split size: the mean abnormal return has the lowest value for FACSHR equals to 1(which is the mode, more than 50% of our data have FACSHR of 1). For stocks with FACSHR larger than 1, its mean abnormal return has a value similar to that of stock with FACSHR smaller than 1. The test of difference in mean as well as difference in median supports the U-shape relationship on the actual split day. It seems market reacts more to splits with less common split ratio. Further investigations are needed to explain the U-shape relationship between mean abnormal return and split ratio.

Finally, we collect monthly trading volume data before and after the split and study if the stock split increase liquidity. The data are adjusted to reflect the equivalent number of shares before the split. The results are summarized in Table 5.

Table 5 Here

The mean and median monthly trading volume decrease after the split, implying that stock split decrease liquidity in the short term. We divide the stocks in two groups in terms of trading volume one month before the split. If the volume is higher than the median, it is defined as high volume, otherwise it is low. Table 6 is the result.

Table 6 Here

For stocks with lower trading volume before the split, the abnormal return is much higher on actual split day, it is even positive on the day before split day (t=-1). The difference in abnormal return between high and low trading volume is significant on split day, and it passes robust test as well. From above results we infer that the mean abnormal return on actual split day is negatively correlated with the trading volume before split. The result is also consistent with our secondary hypothesis.

3.4 Regression

All above tables give us some clues for the influential factors of the abnormal return on actual split day, thus next we do regressions to confirm whether these relationships exist. We use the abnormal return at actual split day (bharMM0) as dependent variables for all regressions, and vary the independent variables. We correct the heteroscedasticity of errors by clustering by firms. Firm fixed effects are not considered given there are too few splits per firm (3658 firms and 6062 splits) in our sample, while year fixed effects are considered. Also, the split ratio (measured by FACSHR) exhibits a U-shape relationship with abnormal return, we thus include both split ratio and split ratio squared to avoid bias in linear coefficients. Since the variable firm size, volume before split and dollar volume are highly skewed, we take their natural log to make it more symmetric.

For the first two regressions, the independent variables are firm size (market capitalization in trillions) in logarithm, price before split, monthly trading volume before split (in millions of shares) in logarithm, the split ratio (measured by factor to adjust shares), squared split ratio, and dollar volume (monthly trading volume before split in millions of shares times the price before split divided by 1000) in logarithm. The result is in Table 7 regressions (1) and (2).

Table 8 Here

The size coefficient is highly significant and has negative sign, which is consistent with the inattention theory as well as our hypothesis: larger firm that received less attention on announcement day is associated with lower abnormal return on actual split day. The volume coefficient is insignificant, but the log dollar volume coefficient in regression (2) is negative and significant. The price coefficient is insignificant in both the two regression.

In the univariate test of FACSHR (which measures split ratio), we found this variable exhibits a U-shape relationship with the abnormal return on actual split day. In Table 7 regression (3) we create dummy for the less common splits in our sample: for stock with split ratio higher than 2:1(FACSHR>1), the dummy is 1; if split ratio is lower than 2:1 (FACSHR<1), the dummy is 0. The result shows that compared to stocks with split ratio lower than 2:1, stocks with ratio higher than 2:1 will have on average 0.633% higher abnormal return on actual split day.

To further clarify if there are relationships between abnormal return and price as well as log volume on actual split day, we create dummies for these two variables. If their value is smaller than the median, the value of dummy will be 1; otherwise it is 0. The result of this regression is in Table 7 regression (4).

The size still stays highly significant when dummies are applied. The log volume dummy has positive coefficient and is significant, suggesting that firms with small volume before split has abnormal return that is 0.411% higher than firms with larger volume. This is also consistent with the inattention theory. Firms that were ignored by the market would tend to have a low volume before the split (or the opposite way: firms have lower volume before the split have higher possibility to have inattention), and Tables 6 and 7 show that these firms on average experience higher market reaction to the split.

Finally, the price continues to be insignificant even when we create dummy; thus we cannot find evidence to prove the optimal trading size hypothesis.

4 Conclusions

In this paper we examine the existence of abnormal return on the actual split day and investigate factors that may contribute to the abnormal return, as well as theories that are applicable to it. Through statistical analysis we found a negative relationship between abnormal return and firm size as well as volume before split. The result supports the inattention theory. However, we don't find evidence in support of the optimal trading range theory. The split ratio exhibits a U-shape relationship with abnormal returns. We also found a large negative abnormal return after the actual split day which is a puzzle. Further investigations are needed to address above two issues.

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Appendix

Table 1

Summary statistics and t-test results for the BHAR in each period

Day 0 is the actual split day. The mean abnormal return is calculated against the CAPM model. The number in brackets under mean return is the t-statistics calculated against a two sides test for $H_0 = 0$, and the p value (h_1: mean>0) is calculated against an upper one side tests. The symbols *, **, and *** represents statistical significant at 90%, 95% and 99% confidence level. The p-value for median return is obtained from a non-parametric signed-rank test.

Day	**Mean Abnormal Return**	**P-value (h_1: mean>0)**	**P-value for Median Return**
-1	0.0009* (1.84)	0.0329	0.489
0	0.0068*** (11.94)	<.0001	<.0001***
1	-0.0004 (-0.69)	0.7541	0.0013***
(1,21)	-0.0496*** (-24.83)	1	<.0001***
(1,42)	-0.1114*** (-36.73)	1	<.0001***
(1,63)	-0.1824*** (-43.55)	1	<.0001***
(1,126)	-0.4631*** (-47.01)	1	<.0001***

Table 2

Summary statistics and t-test results for the BHAR:

large vs small firms

Large firm means firm with market capitalization larger than the median, otherwise it is a small firm. Day 0 is the actual split day. The numbers outside the bracket under the firm size column are the mean abnormal returns calculated against the CAPM model. For mean abnormal return and difference in means, the number inside the bracket is the t-statistics. For difference in medians, the number reported is the z-score for non-parametric median for test, and the number in the parentheses is the two-sided p value. The symbols *, **, and *** represents statistical significant at 90%, 95% and 99% confidence level.

Day	Firm size		Difference in Means	Difference in Medians Z-score
	Large	small		
-1	-0.0002 (-0.42)	0.0020*** (2.65)	-0.0022*** (-2.35)	-2.11** (0.035)
0	0.0020*** (2.65)	0.0116*** (13.53)	-0.0097*** (-8.56)	9.40*** (<.0001)
1	-0.00037 (-0.56)	-0.00036 (-0.43)	-0.00001 (-0.01)	0.60 (0.550)
(1,21)	-0.0429*** (-16.03)	-0.0562*** (-19.01)	0.0133*** (3.35)	4.66*** (<.0001)
(1,42)	-0.0970*** (-23.53)	-0.1258*** (-28.37)	0.0288*** (4.76)	5.97*** (<.0001)
(1,63)	-0.1561*** (-27.31)	-0.2087*** (-34.28)	0.0526*** (6.30)	7.17*** (<.0001)
(1,126)	-0.4010*** (-30.30)	-0.5252*** (-36.19)	0.1242*** (6.32)	8.62*** (<.0001)

Table 3

Summary statistics and t-test results for the BHAR:

Price quartiles

Price quartiles are divided according to the price before split; quartile 1 has lower price compared to quartile 4. Other variables are defined in the same way as Table 2.

Day	**Price range**				**Difference in Means (Q1 vs Q4)**	**Difference in Medians z-score (Q1 vs Q4)**
	Quartile 1 (< 32)	**Quartile 2 (32 ~ 45.375)**	**Quartile 3 (45.375 ~ 67.3125)**	**Quartile 4 (> 67.3125)**		
-1	0.0011 (0.81)	0.0004 (0.61)	0.0008 (1.06)	0.0012 (1.37)	-0.0001 (-0.09)	1.29 (0.1974)
0	0.0129*** (8.56)	0.0075*** (7.49)	0.0048*** (5.11)	0.0020** (1.99)	0.0109*** (6.04)	-6.80*** (<.0001)
1	0.0004 (0.32)	-0.0026*** (-2.90)	0.0008 (0.91)	-0.0001 (-0.13)	0.0006 (0.33)	-0.64 (0.5206)
(1,21)	-0.0546*** (-13.42)	-0.0493*** (-13.56)	-0.0407*** (-11.51)	-0.0537*** (-11.59)	-0.0009 (-0.14)	0.43 (0.6661)
(1,42)	-0.1220*** (-19.38)	-0.1061*** (-19.59)	-0.0956*** (-17.80)	-0.1219*** (-17.40)	-0.0002 (-0.02)	1.50 (0.1337)
(1,63)	-0.1972*** (-22.93)	-0.1717*** (-23.20)	-0.1534*** (-20.69)	-0.2072*** (-21.16)	0.0101 (0.77)	0.70 (0.4813)
(1,126)	-0.4906*** (-24.37)	-0.4112*** (-24.74)	-0.3889*** (-23.56)	-0.5619*** (-23.18)	0.0713** (2.26)	-0.08 (0.9389)

Table 4

Summary statistics and t-test results for the BHAR:

Split size

Split size is measured using factor to adjust shares (FACSHR), which is the additional shares created for each old share (FACSHR = number of new shares/number of old shares - 1). A 2-to-1 split has a factor of 1. The number inside brackets under the FACSHR shows the number of observations in each category. Other variables are defined in the same way as Table 2.

Day	FACSHR			Difference in Means (<1 vs >1)	Difference in Medians z-score (<1 vs >1)	Difference in Means (<1 vs =1)	Difference in Means (>1 vs =1)
	FACSHR< 1 (2448)	FACSHR =1 (3248)	FACSHR>1 (374)				
-1	0.0005 (0.77)	0.0006 (1.01)	0.0058 (1.46)	0.0054*** (2.48)	1.47 (0.1407)	0.0001 (0.19)	-0.0052** (2.31)
0	0.0090*** (11.01)	0.0044*** (5.57)	0.0126*** (4.40)	0.0036 (1.50)	-0.1908 (0.8487)	-0.0046*** (-3.94)	-0.0081*** (-3.20)
1	-0.0009 (-1.18)	0.0002 (0.27)	-0.0017 (-0.60)	-0.0008 (-0.34)	-0.3387 (0.7348)	0.0011 (1.02)	0.0019 (0.79)
(1,21)	-0.0445*** (-16.07)	-0.0510*** (-17.77)	-0.0705*** (-7.08)	-0.0260*** (-3.22)	-2.86*** (0.0042)	-0.00646 (1.58)	0.0195** (2.15)
(1,42)	-0.0990*** (-23.32)	-0.1174*** (-26.84)	-0.1405*** (-9.88)	-0.0415*** (-3.40)	-1.93* (0.0530)	-0.0184** (-2.94)	0.0231 (1.55)
(1,63)	-0.1624*** (-28.31)	-0.1914*** (-31.57)	-0.2358*** (-11.40)	-0.0735*** (-4.39)	-3.19*** (0.0014)	-0.0290*** (-3.38)	0.0445** (2.32)
(1,126)	-0.3998*** (-31.75)	-0.4938*** (-34.13)	-0.6114*** (-11.44)	-0.2115*** (-5.51)	-2.45** (0.0143)	-0.0940*** (-4.71)	0.1176*** (2.54)

Table 5

Summary statistics and t-test results for the monthly volume: Before and after

The volume is expressed in terms of 100 shares. The number in brackets under the mean is the t-stats, while that under the median is the z-statistic and p-value for median return which obtained from a non-parametric signed-rank test. The symbols *, **, and *** represents statistically significant at 90%, 95% and 99% confidence level.

Volume	Mean	Median
Month before split	95868.8	18733
Month after split	83356.9	17397

Table 6

Summary statistics and t-test results for the BHAR:

High vs low monthly volume before split

High volume means higher monthly trading volume than the median for the month before split, otherwise it is low volume. Other variables are defined in the same way as Table 2.

Day	Monthly Volume before split		Difference in Means	Difference in Medians (Z-score)
	High	Low		
-1	-0.0006 (-0.93)	0.0023*** (3.40)	-0.0030*** (-3.11)	3.53*** (0.0004)
0	0.0014* (1.78)	0.0122*** (15.26)	-0.0107*** (-9.51)	10.91*** (<.0001)
1	-0.0007 (-0.96)	0.000007 (0.01)	-0.0007 (-0.70)	2.03** (0.0424)
(1,21)	-0.0529*** (-16.80)	-0.0463*** (-18.80)	-0.0066* (-1.66)	0.55 (0.581)
(1,42)	-0.1219*** (-25.52)	-0.1012*** (-27.01)	-0.0207*** (-3.40)	1.26 (0.2068)
(1,63)	-0.2032*** (-31.06)	-0.1620*** (-31.03)	-0.0411*** (-4.91)	2.71*** (0.0068)
(1,126)	-0.5349*** (-33.61)	-0.3925*** (-34.10)	-0.1425*** (-7.25)	4.18*** (<.0001)

Table 7

Regression Results

The dependent variable is the abnormal return on the actual split day. Log(size) is the market value of the firm in natural logarithm; price is the stock price before the split, Log(volume before) is the monthly trading volume before split in millions of shares in logarithm, dollar volume is calculated by multiplying the price before split and the monthly volume before split; split ratio is measured by factor to adjust shares. Low price and low log volume (before split) dummy is 1 if their value is lower than the median. High split ratio dummy is 1 if the split is greater than 2:1(facshr > 1) and 0 is the split is less than 2:1(facshr <1).

	BHAR(0,0)			
Regression	(1)	(2)	(3)	(4)
Intercept	0.00677** (2.00)	0.00241 (0.62)	0.00379 (0.83)	0.00439 (1.17)
Log(size)	-0.00208*** (-3.10)	-0.00161** (-2.30)	-0.00369*** (-4.58)	-0.00215*** (-4.28)
price	0.00001 (0.43)	0.00002 (0.78)	0.00002** (2.06)	
Log(Volume Before)	-0.00092 (-1.61)		-0.00037 (-0.60)	
Log(Dollar Volume Before)		-0.00123** (-2.21)		
Split Ratio	0.00198 (1.25)	0.00214 (1.38)		0.00238 (1.56)
Square Split Ratio	-0.00003 (-0.85)	-0.00004 (-1.26)		-0.00002 (-0.72)
High Split Ratio Dummy			0.00633** (2.49)	
Low Price Dummy				-0.00001 (-0.01)
Low Log Volume Dummy				0.00407** (2.43)
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	6058	6058		6060
Adj. R-squared	0.0202	0.0207		0.0207