The effect of stock split announcements on abnormal returns during a financial crisis

Ajeet Jain
Alabama A & M University

Mohammad G. Robbani
Alabama A & M University

ABSTRACT

Previous studies have documented positive abnormal returns around stock split announcement and have offered several explanations on the basis of liquidity related theory and information related theory. In this study, the authors analyze cumulative average abnormal returns (CAAR) and market adjusted CAAR around stock split announcement during pre-financial crisis (2004-2007) and financial crisis periods (2008-2011). Specifically, the authors investigate the effect of stock split announcements on abnormal returns in the wake of bearish market sentiment during the financial crisis. The authors find that market reaction is positive to a stock split announcement even during the financial crisis period (2008-2011) evidenced by positive market adjusted cumulative average abnormal returns. However, positive abnormal returns during the financial crisis diminish within a shorter window (3 days and 5 days) as compared to pre-crisis period when abnormal returns were observed over a longer period.

Keywords: Stock split, Financial crisis, Abnormal returns, Beta

INTRODUCTION

A stock split proportionately increases the number of shares outstanding with a corresponding decrease in the share price and with no change in market capitalization of a firm. There is an extant literature that supports significant positive abnormal returns for firms around stock split announcements. McNichols and Dravid (1990) observed abnormal returns following stock splits for their sample and argue that stock split is a way to signal superior performance in the future. Ikenberry, Rankine and Stice (1996) found abnormal returns of 7.93 percent in the first year following the stock splits and they argued that decision to split the stock is motivated by expected future performance. Desai and Jain (1997) also confirmed the existence of abnormal returns after the stock split announcement and found that announcement month abnormal return is 7.11 percent for their sample of 5596 stock split announcements during 1976-1991. They also reported that the full effect of stock split announcement is not reflected in the stock price within one month of announcement.

There are primarily two theories in the literature that attempt to explain the abnormal returns around stock splits. The information theory proposed by Fama, Fisher, Jensen and Roll (1969) and Grinblatt, Masulis and Titman (1984) posits that managers convey positive information about the firm's performance through stock splits. The managers are assumed to have superior information about the firm's future prospects, and they often decide to use stock splits to convey positive signal to the market, and thus stock split announcement is associated with positive abnormal returns for the firm deciding to split stock. The liquidity theory proposed by Baker and Gallagher (1980), Lakonishok and Lev (1987), and others asserts that stock splits improve liquidity for the firm by moving the stock price to a lower level and make the stock more affordable to a larger pool of investors and thereby resulting in abnormal returns. In this paper, the authors do not intend to test the information theory or liquidity theory to explain abnormal returns around stock split announcement.

The objective is to analyze the cumulative average abnormal returns (CAAR) and market adjusted CAAR following stock split announcement before the financial crisis (2004-2007) and during the financial crisis period (2008-2011). By using the CAAR for both periods, the authors investigate and analyze the effect of a stock split announcement on market sentiment before and after the financial crisis. This analysis will provide a valuable insight into the investors' sentiment as stock prices declined sharply during the financial crisis and it would be interesting to investigate if stock splits lead to abnormal average returns even when the market sentiment is low due to the financial crisis.

Data collected for the period of 2004 through 2011 show that the number of stock splits dropped from 336 during 2004-2007 to just 80 during 2008-2011. From this analysis, the authors find that market reaction is positive to stock split announcements even during the financial crisis (2008-2011) as evidenced by the positive market adjusted and risk-adjusted cumulative average abnormal returns for the period investigated. Of the stocks that announced stock splits during those two periods, the authors also group the sample based on high beta and low beta stocks (e.g., beta$\geq$1 and beta $\leq$ 1).

The remainder of the paper is organized as follows. Section 2 provides the relevant literature review and discusses the research questions. Section 3 presents the detail information about the sample and the data used in the study. In section 4, the authors present the methodology. Section 5 presents and analyzes the results of the study and section 6 provides the conclusion of the study.

LITERATURE REVIEW

When stock split takes place in a firm, it proportionately increases the number of shares outstanding and lowers the price per share without any change in the market capitalization of the firm. Extant literature on the effect of stock splits attempts to explain the rationale behind the stock splits and the market reaction following the stock splits. Baker and Gallagher (1980) argue that stock splits bring down the price to an optimal trading range and make the stock affordable to a larger pool of investors and thereby improving the liquidity for the stock. Lamoureux and Poon (1987) find that the number of shareholders of a firm increases after the stock splits indicating that lower stock price makes it more attractive and affordable to a larger number of investors. Lakonishok and Lev (1987) also argue that the lower price as a result of a stock split makes the stock more attractive to individual investors.

Several researchers including Fama, Fisher, Jensen and Roll (1969), and Grinblatt, Masulis and Titman (1984) have documented the evidence of significant abnormal returns around stock split announcements. The abnormal returns are explained on the basis of information related theory which asserts that managers have superior information, and they convey positive information/signals about the firm's future prospects via stock split. Many previous studies showed that stock splits convey positive signals about the firm's future performance. One of the most recent papers (Chen, Nguyen and Singal, 2011) shows that stock splits are followed by positive abnormal future earnings growth which suggests that stock splits contain information about the firm's future operating performance. The objective in the paper is not to explain the reasons and logic behind the stock splits but to analyze the effect of stock splits on abnormal returns during the financial crisis.

In this paper, the authors compare the abnormal returns following stock split announcement for the period before the financial crisis (2004-2007) and during the financial crisis (2008-2011). The authors find that the number of stock split announcements during the financial crisis was much less compared to the stock split announcements before the crisis. The results show that, on an average, stocks experience positive abnormal returns around stock split announcements, but the positive abnormal returns during the financial crisis diminish within a shorter period as compared to pre-crisis period when abnormal returns were observed over a longer period.

SAMPLE AND DATA

In this paper, the authors analyze the effect of stock splits of NYSE-listed stocks with a declaration date between January 2004 and December 2011. All stock splits that were announced during this period are included in the study. There were 416 stock splits during the entire period of this study. The number of stock splits by year as indicated in Table 1. The number of stock splits per year varies significantly from a high of 105 in 2005 to a low of 5 in 2009. The authors divided the whole sample into two sub-samples: 1) 2004 to 2007 (pre-crisis period) with 336 splits and 2) 2008 to 2011 (financial crisis period) with 80 splits. Of all the splits, 2-for-1 splits account for about 90% during 2004-2007 and 71% during 2008-2011. As it is seen from the sample, the number of splits dropped significantly during the financial crisis period compared to pre-crisis period, i.e., the number of splits during 2008-2011 was less than one-fourth of the number of splits during 2004-2007. The summarized information on the stock splits included in the sample as indicated in Tables 1 and 2.

METHODOLOGY

The event study methodology is a standard analytical tool to analyze the effect of announcement or specific events on security prices. In this paper, the authors use the *Eventus* - the prominent econometric program widely used to study the effect of a stock split announcement on abnormal returns during the financial crisis. *Eventus* performs estimation of the parameters and testing of the effect of the event based on the selected event dates. For this purpose, the authors have used the CRSP stock database. In this study, the authors have used the daily stock prices to examine the effect of stock split on the abnormal return. Brown and Warner (1985) argue in favor of using daily data in event studies. The model parameters are estimated over an estimation window of 255 days. The estimation period ends 46 days before the event date. The authors exclude the event window from the estimation period so that parameters are not biased by the events. The model parameters are then used to compute the expected return for each stock. Day 0 is the stock split announcement date and the authors estimate the abnormal returns using market model and compute market adjusted abnormal returns for the firms around the split announcement date for the following time intervals: (1) *-30 to +30 days*, (2) *-30 to -2 days*, (3) *-30 to 0 days*, (4) *-2 to +2 days*, (5) *-1 to +1 days*, and (6) *0 to +30 days*. The authors exclude the dividends in the computation of returns.

RESULTS AND ANALYSES

In this paper, the authors estimate the abnormal performance of the firms due to stock split announcements for the following time intervals: (1) *-30 to +30 days*, (2) *-30 to -2 days*, (3) *-30 to 0 days*, (4) *-2 to +2 days*, (5) *-1 to +1 days*, and (6) *0 to +30 days*. As indicated in Table 3, the authors present the mean cumulative abnormal returns for the total sample of firms that had stock splits. During 2004-2007, 336 firms announced stock splits compared to 80 firms in 2008-2011. As indicated in Table 3, *panel a* presents the cumulative average abnormal returns (CAAR) estimated based on the market model and *panel b* presents the CAAR estimated based on market adjusted returns. The results show that the market reaction to stock split announcement is, in general, positive both during 2004-2007 and 2008-2011 as mean cumulative abnormal returns are positive for most of the time intervals. However the extent and significance of positive reaction vary for the two periods.

The results show that the mean cumulative abnormal returns based on market model are positive and significant for all time intervals during 2004-2007 whereas during 2008-2011 the mean cumulative abnormal returns are positive and significant only for *-2 to +2 days* and *-1 to +1 days* intervals. The results also show that the mean CAAR based on market adjusted returns are positive and significant for all time intervals during 2004-2007 and 2008-2011, however the reaction to stock split announcements is stronger during 2004-2007 compared to 2008-2011 as evidenced by the magnitude and significance level. The weaker market reaction to stock splits during 2008-2011 may be attributed to the bearish sentiment that existed in the financial markets during the financial crisis.

As indicated in Table 4, the mean cumulative abnormal returns for those firms that had beta>1, i.e., the firms that were riskier than the overall market. In the sample, number of firms with beta>1 was 182 during 2004-2007 and 41 during 2008-2011. The results show that the mean cumulative abnormal returns under the market model are positive and significant for each interval during 2004-2007 except for *0 to +30 days* interval whereas during 2008-2011 the mean

cumulative abnormal returns are significant only for *-30 to +30 days*, *-2 to +2 days* and *-1 to +1 days* intervals. The mean cumulative abnormal returns under the market adjusted returns model for firms with beta>1 are positive and significant for all time intervals during 2004-2007, whereas during 2008-2011, the mean cumulative abnormal returns based on market adjusted returns for firms with beta>1 are positive and significant for all intervals except *0 to +30 days* interval. However, in terms of the magnitude of CAAR, the reaction to stock split announcements is stronger during 2004-2007 as compared to 2008-2011.

As indicated in Table 5, the mean cumulative abnormal returns for the sample of firms with stock splits and beta≤1. During 2004-2007 and 2008-2011, the number of firms that had stock splits with beta ≤1 was 154 and 39 respectively. The results show that the mean cumulative abnormal returns based on market model are positive and significant for all intervals during 2004-2007 except for *-30 to -2 days* interval. However, during 2008-2011 period, the mean cumulative abnormal returns are positive and significant only for *-2 to +2 days* and *-1 to +1 days* intervals. The CAARs for other intervals are either negative or insignificant.

The mean cumulative abnormal returns based on market adjusted returns for firms with beta≤1 are also positive and significant for all intervals during 2004-2007, whereas during 2008-2011, the mean cumulative abnormal returns based on market adjusted returns for firms with beta≤1 are positive and significant for all intervals except for *-30 to -2 days* and *0 to +30 days* intervals. Similar to the sample of stock with beta>1, the reaction to stock split announcements is stronger during 2004-2007 as compared to 2008-2011 for the firms with beta≤1. Overall the authors find that the market reaction to stock split announcements is weaker during 2008-2011 as compared to 2004-2007 for the total sample of firms as well as for the sub-samples based on beta. The weaker reaction to stock split announcements may be attributed to the bearish sentiment during 2008-2011 due to the financial crisis.

The results hold when the authors separate the firms that are riskier than the market. The authors find that the market reaction to stock splits for riskier firms is stronger and more pronounced than the firms which are less risky than the market both during 2004-2007 and 2008-2011. This may be attributed to the fact that investor expects higher abnormal returns after stock splits of riskier firms so that they are adequately compensated for higher informational asymmetry associated with risky firms irrespective of market sentiment.

Overall, the cumulative average abnormal return under market model for different intervals show that the market reacts positively to a stock split announcement during the pre-crisis period, but market reaction was negative during the financial crisis. The reaction to a stock split announcement is significantly positive in the pre-crisis period meaning that the stock prices of firms increased as a result of stock split announcements. The authors also find that the market adjusted CAAR are positive not only in the pre-crisis period but also during the crisis period. However, positive abnormal stock returns around stock split announcement during the financial crisis diminishes within a shorter period as compared to pre-crisis period when abnormal returns were observed over a longer period.

CONCLUSION

In this paper, the authors have analyzed the effect of stock splits on abnormal returns before and during the financial crisis of 2008 and afterwards. The purpose of the paper is to investigate how market reacts to stock split announcement during the financial crisis, when the market sentiment is negative and bearish as compared to normal economic condition. As

expected, the number of stock splits dropped from 336 during 2004-2007 to just 80 during 2008-2011. The authors find that market reaction is positive to stock split announcements even during the financial crisis (2008-2011). This is evident from the positive market adjusted cumulative average abnormal returns for the period investigated. However, positive abnormal returns during the financial crisis diminish within a shorter period as compared to pre-crisis period when abnormal returns were observed over a longer period.

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APPENDIX

Table 1: Distribution of Stock Splits by Year

Year	Number of Stock Splits
2004	91
2005	105
2006	75
2007	65
2008	18
2009	5
2010	21
2011	36
Total	416

Table 2: Distribution of Stock Split Factors during 2004-2007 and 2008-2011

2004-2007			2008-2011		
Split Factor	Number of Splits	Percentage	Split Factor	Number of Splits	Percentage
2 for 1	302	89.88	2 for 1	57	71.25
3 for 2	2	0.6	3 for 2	1	1.25
5 for 3	1	0.3	3 for 1	11	13.75
3 for 1	23	6.85	10 for 3	1	1.25
4 for 1	3	0.89	4 for 1	5	6.25
5 for 1	4	1.19	5 for 1	3	3.75
8 for 1	1	0.3	10 for 1	1	1.25
			50 for 1	1	1.25
Total	336	100%		80	100%

Table 3: Mean Cumulative Abnormal returns on total sample of splitting firms

This table reports mean cumulative abnormal returns following the split announcements in *panel a* for the period 2004-2007 and in *panel b* for the period 2008-2011. The symbols *, **, and *** denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively.

Panel a: Market Model Returns with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	336	2.09%***	80	-3.28%
(-30,-2)	336	1.02%***	80	-0.88%
(-30,0)	336	1.99%***	80	0.16%
(-2,+2)	336	1.91%***	80	1.51%***
(-1,+1)	336	1.86%***	80	1.58%***
(0,+30)	336	0.93%***	80	-2.46%

Panel b: Market Adjusted Return with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	336	9.89%***	80	6.84%***
(-30,-2)	336	4.94%***	80	3.98%**
(-30,0)	336	6.15%***	80	5.29%***
(-2,+2)	336	2.54%***	80	2.26%***
(-1,+1)	336	2.22%***	80	1.94%***
(0,+30)	336	4.69%***	80	2.78%*

Table 4: Mean Cumulative Abnormal returns on sample of splitting firms with Beta>1

This table reports mean cumulative abnormal returns for firms with beta greater than 1 following the split announcements in *panel a* for the period 2004-2007 and in *panel b* for the period 2008-2011. The symbols *, **, and *** denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively.

Panel a: Market Model Returns with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	182	1.58%*	41	-2.61%*
(-30,-2)	182	1.34%**	41	0.24%
(-30,0)	182	2.32%***	41	1.53%
(-2,+2)	182	2.00%***	41	1.27%*
(-1,+1)	182	1.98%***	41	1.82%**
(0,+30)	182	0.09%	41	-2.72%

Panel b: Market Adjusted Return with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	182	10.68%***	41	8.38%*
(-30,-2)	182	6.15%***	41	6.26%**
(-30,0)	182	7.41%***	41	7.79%***
(-2,+2)	182	2.68%***	41	1.87%*
(-1,+1)	182	2.34%***	41	2.07%**
(0,+30)	182	4.23%***	41	2.31%

Table 5: Mean Cumulative Abnormal returns on sample of splitting firms with Beta≤1

This table reports mean cumulative abnormal returns for firms with beta less than 1 following the split announcements in *panel a* for the period 2004-2007 and in *panel b* for the period 2008-2011. The symbols *, **, and *** denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively

Panel a: Market Model Returns with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	154	2.69%***	39	-3.99%
(-30,-2)	154	0.65%	39	-2.06%
(-30,0)	154	1.61%**	39	-1.28%
(-2,+2)	154	1.82%***	39	1.76%**
(-1,+1)	154	1.72%***	39	1.33%**
(0,+30)	154	1.93%***	39	-2.19%

Panel b: Market Adjusted Return with Value Weighted Index Excluding Dividends

Days Relative to Announcement Date	2004-2007		2008-2011	
	N	Mean Cumulative Abnormal Return	N	Mean Cumulative Abnormal Return
(-30,+30)	154	8.95%***	39	5.23%***
(-30,-2)	154	3.50%***	39	1.57%
(-30,0)	154	4.67%***	39	2.67%**
(-2,+2)	154	2.36%***	39	2.66%***
(-1,+1)	154	2.08%***	39	1.80%**
(0,+30)	154	5.24%***	39	3.28%