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Stock split, unseasoned equity offering, and firm value: evidence from the Korean stock market

Abstract

This study examines the extent to which announcements of stock splits and unseasoned equity offerings (capital increase without consideration) affect firm values in the Korean stock market. The authors find that, based on analyses of the cumulative abnormal return (CAR) around the announcement dates, CARs are significantly positive for both corporate events. This result suggests that both events are positive in relation to the firm's value. The authors also examine whether the performance of firms that execute stock splits and/or unseasoned equity offerings differs from that of firms that do not, before and after their announcement dates; we do so by using the difference-in-difference test. The results indicate that a stock split is unrelated to improved firm performance following the announcement, and that an unseasoned equity offering can even have a negative impact on performance. Hence, the presence of stock splits and unseasoned equity offerings does not seem to support the signaling hypothesis, which predicts firms' positive performance following an announcement.

Keywords: stock splits, unseasoned equity offerings (capital increase without consideration), cumulative abnormal return, firm value, difference-in-difference test.
JEL Classification: G14, G15, G30.

Introduction

Do stock splits and unseasoned equity offerings (capital increase without consideration) have different market implications? Both corporate decisions increase a firm's number of outstanding shares, but neither affects a firm's amount of capital. Hence, their effects on firm value should not substantially differ, in theory.

Domestic firms in the Korean market have, since the 1997 Asian financial crisis, attempted to make investor-friendly financial decisions. In particular, stock splits and unseasoned equity offerings have been often used as vehicles to better accommodate investors' interests in the market. However, in the Korean stock market, the face value following an unseasoned equity offering does not change, and cash dividends are paid on the face value. In contrast, the face value decreases after a stock split, and this may reduce the face value's payable dividends. Therefore, the difference in face values following a stock split and unseasoned equity offering can make their effects on the firm vary. Additionally, it is possible to empirically observe their different effects on a firm's value.

We examine the extent to which stock splits and unseasoned equity offerings affect firm value, based on sample firms listed in the Korea Composite Stock Price Index (KOSPI) and the Korea Securities Dealers Automated Quotation (KOSDAQ) during the 2003-2012 period. Specifically, we focus on analyzing the

degrees of market reaction, as measured by the cumulative abnormal return (CAR) around stock splits' and unseasoned equity offerings' announcement dates. More importantly, we employ the difference-in-difference test to mitigate the endogeneity issues and to better identify whether the performance of firms that execute stock splits and unseasoned equity offerings differs from firms that do not execute them, before and after their announcement dates.

Our empirical results suggest that the CARs for stock splits and unseasoned equity offerings are significantly positive around the announcement dates, suggesting that the market considers both to be positive corporate events that relate to firm value. This implies that a firm may use either event to intentionally deliver undiscovered positive information regarding its profitability and future value. Fama, Fisher, Jensens and Roll (1969) show how a stock split provides information to the market, and that the stock price seems to be adjusted as it incorporates the information. Brennan and Copeland (1988) and Conroy, Harris and Benet (1990) also find that a stock split signals information to the market. Moreover, McNichols and Dravid (1990) note that in the U.S. market, stock dividends – which are highly comparable to the Korean market's unseasoned equity offering – play a signaling role similar to that seen with stock splits.

However, we find that positive market reactions to stock splits and unseasoned equity offerings do not seem to relate to the signaling motives of firms that are undervalued or expecting improved future performance. Our results, based on the endogeneity-free difference-in-difference test, indicate that a stock split is not related to improved firm performance after the announcement, and that the performance of such firms is no better than that of firms with no stock splits or unseasoned equity offerings. The finding may add

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to the recent studies arguing that a manager may use a stock split as a manipulation tool to exploit other corporate events through the positive effects of the stock split around the announcement dates. For example, Guo, Liu and Song (2008) demonstrate that a manager of acquiring firms use stock splits as a way to increase the value of shares before announcing stock-exchange mergers and acquisitions. Similarly, Kim, Park, Chung, and Lee (2012) show that firms involved in other corporate events tend to utilize the stock split prior to the events in the Korean stock market. Our finding also reveals that firms that conduct unseasoned equity offerings tend to experience poorer performance afterwards. This implies that an unseasoned equity offering may reflect the market's expectation of an increase in future dividend payments, given the unchanged face value. Overall, our results suggest that the market does not respond differentially to seemingly similar stock splits and unseasoned equity offerings, although firms may have different objectives in mind when undertaking them.

Data and methodology

Our study is based on 242 and 270 firms in the Korean stock market that announced stock splits and unseasoned equity offerings, respectively, during 2003–2012 period. We collect announcement information from the Korea Financial Supervisory Service's Data Analysis Retrieval and Transfer (DART) database; we also obtained financial and stock return data from FnGuide. Table 1 provides the summary statistics of the firms in our data sample. We find that the firms that announced stock splits tend to be large firms with high financial leverage, especially in comparison to firms that announced unseasoned equity offerings. We also find that the firms that announced unseasoned equity offerings report higher profitability in terms of return on equity (ROE).

Table 1. Descriptive statistics

Variable	Stock split	Unseasoned equity offering
Size	18.5291	18.2071
	[18.4923]	[18.0511]
LEV	0.4625	0.4516
	[0.4499]	[0.3347]
Q	1.1428	1.5041
	[1.8870]	[1.0505]
ROE	5.1252	11.1077
	[7.65]	[13.92]

Note: This Table presents the mean and median values of the sample firms' financial characteristics. *Size* is the natural log of a firm's total asset value. *LEV* is the ratio of the debt value to the asset value. *Q* is Tobin's *Q*, and it is the market value of equity plus the debt value, divided by the book value of assets. *ROE* is the operational profit divided by the market value of

equity. The median value is noted in brackets.

To measure the market's reaction to announcements of stock splits and unseasoned equity offerings, we calculate the sample firms' average abnormal stock returns (AR) around the related announcement dates, as follows:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n}\left(R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i \times R_{m,t}\right), \tag{1}$$

where $R_{i,t}$ is the return on stock i at time t, and $R_{m,t}$ is the equally weighted market return at time t, based on the firms listed on KOSPI and those listed on KOSDAQ. Typically, KOSPI firms are larger firms, whereas KOSDAQ firms tend to be small or medium-sized. Additionally, KOSDAQ's listing requirements are less stringent than those of KOSPI, and so between the two, less-established small and medium-sized firms or venture firms are more likely to be listed on KOSDAQ. We use an equally weighted market index return, rather than value-weighted market index returns, as a few large firms represent the entire Korean stock market, and the latter are significantly affected by large firms' returns. As our analysis is based on an event study, and our firm sample includes small firms, using equally weighted market index returns could address each event equally and, hence, better capture ARs around the time of stock splits and unseasoned equity offerings. Additionally, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are an intercept and a slope in the market model, respectively; they are based on each firm's stock return and equally weighted market return for a 170-day estimation window, from 180 to 11 days before the announcement date, respectively. We, then, calculate sample firms' average CARs by adding daily ARs during the event period. We define *CAR* as follows:

$$CAR\left(t_1, t_2\right) = \sum_{t=t_1}^{t_2} AR_t. \tag{2}$$

In particular, we consider CARs that accumulate ARs up to 10 days before and after the announcement dates. For example, $CAR(-10, 10)$ refers to the cumulative abnormal returns for 21 days around the announcement dates of announcements of stock splits and unseasoned equity offerings.

Additionally, we employ the difference-in-difference test to examine whether performance differs for firms that do and do not execute stock splits and unseasoned equity offerings, before and after their announcement dates. Specifically, we estimate the following model:

$$\Delta ROE_{i,t} = \alpha + \beta_1 \cdot D_{i,t}^{Announce} + \beta_2 \cdot D_{i,t}^{Post} + \\ + \beta_3 \cdot \left(D_{i,t}^{Announce} \times D_{i,t}^{Post}\right) + \beta_4 \cdot Size_{i,t} + \varepsilon_{i,t}. \tag{3}$$

Here, $\varDelta ROE_{i,t}$ and $Size_{i,t}$ denote the change in ROE around the announcement dates and the natural log of firm asset value, respectively. $D_{i,t}^{Announce}$ denotes a dummy variable that takes the value of 1 if the firm announced a stock split and/or unseasoned equity, and 0 otherwise. Further, $D_{i,t}^{Post}$ is a dummy variable that takes the value of 1 if the corresponding $\varDelta ROE_i$ is measured after the announcement dates, and 0 otherwise. Notice that unobserved individual firm fixed effects could affect $\varDelta ROE_{i,t}$ and, thus, be correlated with the effect of $D_{i,t}^{Announce}$. Hence, a typical ordinary least square regression estimation may cause an endogeneity problem. However, our estimation is immune from the endogeneity, since the difference-in-difference test is a version of fixed effects estimation that control for the omitted variable bias.

Empirical results

Table 2 reports that CARs around stock splits' and unseasoned equity offerings' announcement dates are consistently and significantly positive, regardless of the event windows involved. This finding implies that the market views both stock splits and unseasoned equity offerings as positive corporate decisions, and so they tend to be incorporated into (and, hence, reflect in) the firms' stock prices. Additionally, the results indicate that a firm can use both kinds of event to signal its positive information to the market.

Table 2. Cumulative abnormal returns around announcement dates

Event window	Stock split (N = 242)		Unseasoned equity offering (N = 270)	
	Mean *CAR*	*t*-value	Mean *CAR*	*t*-value
(-10, 0)	6.8758	6.3418***	7.4163	7.5398***
(-5, 0)	5.4397	6.9206***	5.3991	7.0450***
(-1, 0)	3.7293	7.1716***	3.0336	5.8965***
(0, 1)	3.9011	5.4796***	2.0396	2.8227***
(0, 5)	3.5773	2.8096***	0.2725	0.3187
(0, 10)	3.1969	2.1293**	1.9466	1.8205*
(-1, 1)	4.5826	6.3068***	3.0578	3.9700***
(-5, 5)	5.9692	4.4013***	3.6563	3.3406***
(-10, 10)	7.0249	3.8209***	7.3476	5.0989***

Notes: This Table presents the cumulative average abnormal returns (*CAR*s) around the announcement dates of stock splits and unseasoned equity offerings. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% two-tailed levels for whether estimates differ from zero, respectively.

Additionally, to investigate whether the performance of firms executing stock splits and/or unseasoned equity offerings differ from that of firms that do not execute them, before and after their announcement dates, we estimate the difference-in-difference model in Equation (3). The coefficients for the interaction term $D_{i,t}^{Announce}$ x $D_{i,t}^{Post}$ in the model particularly capture the extent to which the ROE changes differ between firms announcing and not announcing stock splits and/or unseasoned equity offerings after the announcement dates. Note that the interaction term allows us to test whether the market's significantly positive reaction to the stock split and unseasoned equity offering announcements is related to the signaling hypothesis. Lakonishok and Lev (1987) also consider differences in changes in ROE

and cash dividend for firms with and without material corporate announcements, to examine whether the announcements deliver expected firm information to the market. As shown in Table 3, we find that stock splits' coefficients for the interaction term are positive, and yet they are not statistically significant. This suggests that stock splits may not be associated with a firm's improved future operating performance; thus, firms may not use stock splits to signal their optimistic future prospects. This necessitates further investigation regarding the signaling hypothesis. The result can be explained by the liquidity hypothesis (Maloney and Mulherin, 1992; Schultz, 2000); they argue that significant market responses to stock splits and unseasoned equity offerings reflect an increase in liquidity due to an increase in the number of traded shares.

Table 3. Difference-in-difference test

Variable	Stock split			Unseasoned equity offering		
	$\varDelta ROE$ (-1, +1)	$\varDelta ROE$ (-2, +2)	$\varDelta ROE$ (-3, +3)	$\varDelta ROE$ (-1, +1)	$\varDelta ROE$ (-2, +2)	$\varDelta ROE$ (-3, +3)
$D^{Announce}$	-4.8957**	-6.4569***	-7.1511**	3.6744	8.2718***	11.0134***
	(0.05)	(0.01)	(0.05)	(0.14)	(0.00)	(0.00)
D^{Post}	0.5639	-2.8725	-4.4527*	-5.4908	-1.6470	-2.7690
	(0.71)	(0.13)	(0.10)	(0.00)	(0.34)	(0.11)
$D_{i,t}^{Announce}$ x $D_{i,t}^{Post}$	-1.0344	4.7412	4.3743	-4.4189	-18.5718***	-16.4033***

Table 3 (cont.). Difference-in-difference test

Variable	Stock split			Unseasoned equity offering		
	ΔROE (-1, +1)	ΔROE (-2, +2)	ΔROE (-3, +3)	ΔROE (-1, +1)	ΔROE (-2, +2)	ΔROE (-3, +3)
	(0.73)	(0.18)	(0.38)	(0.20)	(0.00)	(0.00)
Size	1.3717**	2.8012***	2.8678***	1.6680**	0.1081	1.6284***
	(0.01)	(0.00)	(0.00)	(0.02)	(0.87)	(0.00)
Number of observations	1,832	1,751	1,688	1,763	1,871	1,722
Adjusted-R^2	0.0087	0.0124	0.0065	0.0114	0.0256	0.0300

Notes: This Table reports the estimation results for the difference-in-difference test. ΔROE and Size denote the change in ROE around the announcement dates and the firm asset value's natural log, respectively. $D^{Announce}$ is a dummy variable that takes the value of 1 if the firm announced a stock split and/or unseasoned equity, and 0 otherwise. Further, D^{Post} is a dummy variable that takes the value of 1 if the corresponding ΔROE is measured after the announcement dates, and 0 otherwise. P-values are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The coefficients for the interaction term based on unseasoned equity offerings, in contrast, negatively relate to the change in ROE. This suggests that the operating performance of firms announcing unseasoned equity offerings tends to deteriorate, relative to those with no such announcements, after the announcement dates. Unlike stock splits, we can more certainly reject the signaling hypothesis for unseasoned equity offerings, although we do observe a significantly positive market reaction around the time of the announcement dates. Instead, we propose an alternative scenario: the face value of stock after an unseasoned equity offering does not change in the Korean stock market, and cash dividends are paid on the face value, rather than on the market value. Hence, the unseasoned equity offering increases the basis of dividend payment and expected future cash dividends. This would reflect in the stock prices around the announcement date, but is not necessarily associated with a firm's future operating performance afterwards.

Concluding remarks

Both stock splits and unseasoned equity offerings (capital increase without consideration) do not reduce a firm's capital: they only increase the number of outstanding shares. As such, their effects on a firm should theoretically be equivalent. Nevertheless, stock splits and unseasoned equity offerings have been considered particularly investor-friendly financial decisions, and they have been frequently used in the market.

This study empirically investigates the extent to which stock splits and unseasoned equity offerings affect firm values in the Korean stock market, which is a leading representative emerging market. Considering that the degrees of market reaction around the time that corporate events are announced reflect the events' effects on firm value, we find that the CARs around the announcement dates are significantly positive for both stock splits and unseasoned equity offerings. This suggests that both events positively influence firm value. We also use the difference-in-difference test to examine whether performance differs for firms executing stock splits and unseasoned equity offerings than for firms not executing them, before and after their announcement dates. The findings indicate that firms announcing a stock split do not see improved performance after the announcement, and firms announcing an unseasoned equity offering actually exhibit poorer performance, compared to the performance of those firms that announce neither event. This implies that stock splits and unseasoned equity offerings are not necessarily related to the signaling hypothesis, and so alternative explanations are required.

Acknowledgement

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