

An Evaluation of the Stock Price Announcement Effect of Seasoned Equity Offerings

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Abstract

The finance literature documents substantial negative stock price reaction to Seasoned Equity Offerings (SEO). Most studies on SEOs focus on the average negative reaction; however, about thirty to forty per cent of the firms actually experience positive abnormal returns at announcement. This paper tries to find firm specific factors that may explain the apparent heterogeneity in the stock price reaction to SEOs. We find that the firms with observed positive market reaction tend to have higher price run-up before the announcement, suggesting that investors may have higher expectations for the growth potential of the companies and hence the SEO may be viewed as an effort to raise the funds for the growth needs. We also find that these firms have high debt ratios, suggesting that the purpose of the SEO may be to reduce debt and optimize the capital structure, rather than taking advantage of the information asymmetry by issuing additional shares when the management believes the shares are overvalued.

I. Introduction

When a public company issues additional shares to raise capital, it is said to be engaged in a Seasoned Equity Offering (SEO). Previous studies (Myers; Myers & Majluf, 1984) (Asquith & Mullins; Masulis & Korwar, 1986) report that the market reacts negatively to SEOs. These studies attribute the negative market reaction to information asymmetry. It is believed that the managers will only issue additional shares when they believe the share price is over-valued. However, these studies also report that despite the average negative reaction, about 30% of the firms that announced SEOs actually had positive announcement returns. The purpose of this paper is to determine the reason for the differential market reaction to SEOs and try to explain why the market reacts differently to a subset of the firms that announced SEOs. More specifically, we try to determine whether some firm specific factors determine the market reaction to the SEO announcements. We find that the firms with higher price run-up before the SEO announcement and the firms with higher debt levels tend to have positive market reactions. We believe that the higher price run-up before the announcement reflects investors' expectation of greater growth potential of the firms and the SEO may suggest to the investors that the firms are raising equity capital to meet the investment needs. The higher debt level may suggest that the purpose of the SEO may be to reduce debt and to optimize the capital structure, rather than taking advantage of the information asymmetry by issuing additional shares when the management believes the shares are overvalued.

It is widely accepted that managers are asymmetrically informed about the value of their shares compared to outside investors; i.e., there is asymmetric information. For example, insider trading laws that prohibit insiders from trading on non-public information would be irrelevant if insiders were not asymmetrically informed. Therefore, at any given point in time the firm's shares might be fairly valued, undervalued, or overvalued as perceived by the insiders with information that the market does not have. When investors receive new information about firm value from insiders, they revise their expectations by adjusting the stock price to reflect the new information. Managers are more like to offer SEO when they believe the firm is overvalued to

minimize dilution effects to existing shareholders (Myers & Majluf, 1984). Aware of this, investors react negatively to announcements of seasoned equity offers.

The empirical evidence suggests that announcements of SEOs are associated with negative stock price reactions, which range from 2 to 3 percent of the firm's share price (Asquith & Mullins; Masulis & Korwar, 1986). This decline is substantial in economic terms. Consider a typical firm that raises seasoned equity and has \$1 billion in market capitalization. A stock price reduction of 2 to 3 percent equates to a loss in market capitalization of \$20 to 30 million. However, despite the overall negative reaction, on average, about 30 percent of SEOs are associated with favorable market reactions. In other words, instead of losing millions in market capitalization, some firms gain value. The problem to be examined in this study is why a significant percentage of SEOs generate a positive market reaction despite what the finance theories predict and the empirical evidence of overall average negative market reactions. More specifically, we try to determine whether the differential market reactions are caused by firm specific factors. While there has been many studies on the market reactions to SEOs, most are focused on explaining the overall negative market reaction to such announcements. The study has a different focus and we believe our findings will enrich our understanding of the market reaction to SEOs and contribute to the literature.

The paper proceeds as follows: Section 2 presents a literature review. Section 3 presents data and methodology. Sections 4 and 5 are results and conclusions respectively.

II. Literature Review

Many studies on SEOs have been conducted. Asquith and Mullins (1986) find that there is a negative stock price reaction at SEO announcements. Masulis and Korwar (1986) also document a significant stock price decline at the announcement of SEOs. On average, firms announcing SEOs experience average negative returns in the range of 2 to 3 percent. The average negative market reaction has generally been attributed to asymmetric information, market timing, growth opportunities and business cycles. Korajczyk, Lucas, and McDonald (1991) and Dierkens (1991) find that the reaction to announcements of SEOs is less negative when there was a smaller amount of asymmetric information between managers and outside investors. Lucas and McDonald (1990) argue that the market believes that the firms only issue additional equity when they believe that their shares are overvalued. Therefore, the market reacts negatively to SEO announcements. Carlson, Fisher, and Giammarino (2006) find large share price run-ups prior to SEO announcements because of potential increases in growth opportunities. Choe, Masulis, and Nanda (1993) believe SEOs during expansionary business cycles are more likely to have less negative stock price reactions because expansionary periods are often associated with more growth opportunities in general and less information asymmetry. Asquith and Mullins (1986) report that the larger the relative offer size (as a percent of total shares outstanding), the greater the negative announcement day stock price decline. Despite the large number of studies on SEOs, few studies have examined the reasons as for why about 30 percent of the firms announcing SEOs actually experience positive market reaction.

Scholes (1972) provides a theoretical justification for the negative market reaction by arguing that stocks have a downward sloping demand curve. This essentially means that an increase in the supply of shares directly corresponds to a decrease in the price at which investors

are willing to purchase the shares. Since the announcement of a seasoned equity offer indicates that the number of shares will increase, investors react negatively to the announcement in anticipation of the actual issue. Myers and Majluf (1984) and Myers (1984) both study the preferred way to raise capital. According to the pecking order that they suggest, firms needing external financing prefer debt and only issue equity as a last resort. The rationale is as follows: Managers have better information about the prospects of their company than do ordinary investors. This difference in the quality of information between managers and outside investors is commonly referred to as information asymmetry. Managers naturally want to avoid diluting the value of the stock especially when the stock price is going up. So, information asymmetry is viewed as an important reason for SEOs to be associated with negative market reaction at the announcement.

Korajczyk, Lucas, and McDonald, (1991) conduct an empirical study using quarterly data between 1978 and 1983 from NYSE, OTC, and AMEX stocks to test whether the timing of equity issue affects returns. They find that firms that make SEO announcements shortly after earnings releases experience less negative announcement reactions than those whose announcements are not right after the earning reports. Choe, Masulis, and Nanda (1993) find that firms are more likely to announce SEOs during economic expansion when the market generally generates higher returns.

D'Mello, Tawatnuntachai, and Yaman (2003) find that firms doing several SEOs are associated with less information asymmetry because these firms receive more market scrutiny and are more likely to be followed by analysts. Therefore, there may be less information asymmetry. In addition, firms that make several SEOs are generally larger and more mature. Similarly, Dierkens (1991) finds that firms with larger amounts of information asymmetry experience larger stock price declines at SEO announcements. Lucas and McDonald (1990) argued that firms try to issue equity when their shares are overvalued and therefore encounter a negative stock price reaction. In their model, the degree of overvaluation is measured by the stock price runup prior to the offer announcement. Their model predicts that greater stock runup results in more negative reactions.

Bayless and Chaplinsky (1996) examine SEOs in "hot" (high volume) and "cold" (low volume) equity issue markets. They find that, in periods of high volume, SEOs have much less negative price reactions than periods of low volume. Carlson, Fisher, and Giammarino (2006) argue that firms believed to have good growth opportunities may experience positive market reaction upon SEO announcement as the capital raised from the SEO may be used to fund the investment opportunities and therefore, increase the value of the firm.

Several recent studies have emerged that specifically study the announcement reaction to SEOs. Datta, Iskandar-Datta, and Raman (2005) study managers' compensation structure and find that SEO announcement reactions are more negative when managerial incentives are aligned with existing shareholders, because these managers are more likely to try to issue overvalued stock. Rauterkus and Song (2005) find that SEOs conducted by firms who were audited by Arthur Andersen in the early 2000s are associated with more negative announcement effects. Lee and Masulis (2009) find that poor accounting information quality leads to larger negative SEO announcement effects. Two contemporaneous working papers also study why investors react

negatively to SEOs. Kim and Purnanandam (2011) find that weak governance is the primary reason why firms react negatively to SEO announcements. Ferreira and Laux (2011) find evidence of more negative announcement reactions when the firm's board of directors is dominated by executives and other insiders as opposed to independent outside directors. Our study adds to this recent literature on SEO announcement effects. Our central question differs from these studies. Instead of examining why investors react negatively to SEOs, we investigate a number of possible reasons why investors react favorably to some SEOs.

III. Data and Methodology

The purpose of this study is to determine whether the differential market reactions to SEO announcements are due to firm specific factors. The null and alternative hypotheses are as follows:

Null: The differential market reaction to SEO announcements is not related to firm specific factors

Alternative: The differential market reaction to SEO announcements is related to firm specific factors.

The sample of SEOs was manually collected from Investment Dealer's Digest and consists of publicly listed firms that filed an S-3 form with the Securities and Exchange Commission (SEC) to issue SEOs during 2004, 2005, and 2006. Investment Dealer's Digest is a weekly publication for investment banks and capital market participants and is available in libraries at academic institutions. The company name, number of shares filed, and filing date were all collected. The filing date listed in Investment Dealer's Digest is the date used as the announcement date of the SEO, consistent with previous studies. The original sample consisted of 942 SEO filings. Financial firms (SIC code in the 6000s) were excluded as many firms did SEO due to regulatory requirements. Also excluded were SEOs that were entirely secondary, meaning all the proceeds went to individual shareholders and not the issuing firms. Moreover, firms were excluded if they were not listed on the NYSE, AMEX or NASDAQ. These exclusions are consistent with sample criteria used in the previous studies

Stock prices and beta were collected from the website Yahoo Finance. The abnormal announcement returns were based on a three-day window centered on the filing date, which was also consistent with previous studies. The adjusted closing prices were used to account for any stock splits or dividends. If stock prices or betas were not available, Google Finance was utilized. Firms were excluded from the sample if either the stock price data or beta was not available during the event dates in Yahoo Finance or Google Finance. These screens result in a final sample of 184 firms that made an SEO announcement during 2004-2006. The number of filings per year in the final sample consists of 74 in 2004, 53 in 2005, and 57 in 2006. The majority of the exclusions were due to the issuer being a financial firm and / or the SEOs were purely of secondary nature.

The Abnormal Return (AR) was calculated by using the market model. The Cumulative Abnormal Return (CAR) was calculated by summing the three days of abnormal returns, the day before, of, and after the announcement. The calculations of AR and CAR are consistent with

previous studies. The stock price run-up (RUNUP) is defined as the abnormal return of a sample firm from one year before to two days before the filing date, adjusted for the returns of the market. Other firm specific variables were collected from the sample firms' annual financial statements, the year before the SEO filing. Quantitative data collected included the total book value of assets, number of shares outstanding, long-term debt, research and development expense, and net income. Utilizing the data collected, other variables were calculated, such as market value, market-to-book ratio, relative filing size, and profitability.

A firm's long term debt ratio is calculated by dividing long-term debt by the total assets. The total number of shares filed is represented in millions and indicative of the relative size of the offering as compared to the total number of shares outstanding. A firm's market to book ratio was calculated by taking the ratio of the market value (i.e., stock price times the number of shares outstanding) to the book value of assets. R&D is the firm's indicated research and development expense. The firm's profit is represented in millions and the profit ratio is the profit divided by book assets. The information is collected from the quarterly or annual financial statements issued by the firms in question.

The total sample consists of 184 firms. The average abnormal return for the sample is negative 1.89% and the median is negative 1.61%. The negative abnormal return is statistically significantly different from zero. Among the 184 firms, 120 (65%) had negative abnormal returns at announcement and 64 (35%) had positive abnormal returns (See Table I). The average abnormal return for the negative group is negative 4.71% and the median is negative 3.79%. The average abnormal return for the positive group is 3.42% and the median is 2.78%. Two-sample *t*-tests are conducted to determine whether the variables in the two groups are significantly different and to see the differential market reactions are related to the differences in firm specific variables.

Regression analysis is conducted in Microsoft Excel using the standard application, ordinary least squares (OLS), to test for associations between variables, while controlling for the impact of other variables. These tests are important because it is possible that, in univariate tests, there will appear to be a difference across groups along a certain dimension, but that this difference is driven by some other factor that is not being controlled for. The specific application is as follows. The dependent variable, or left hand side variable, in the OLS regression will be the abnormal stock price reaction over the three-days centered on the filing date. The independent variables, or explanatory / right hand side variables, will be the various measures that are hypothesized to influence the stock price reaction. The estimation will indicate whether there is a statistically significant association whereby the explanatory variables have an important impact on the stock price reaction. The explanatory variables will include the market model stock price runup, firm size, which is approximated by book assets or market value, the long-term debt ratio, the market-to-book ratio, the relative offer size, and the change in R&D expense. The regression coefficient for a particular explanatory variable will indicate whether that variable has a significant influence on the market model reaction, after controlling for the influence of the other variables.

The univariate tests conducted include one-sample *t*-tests, which examine whether the mean of a particular variable is significantly different from zero, two-sample *t*-tests, which test

whether the mean of a variable differs significantly across two groups, sign tests, which assess whether the median observation is different from zero, and correlation analyses. The multivariate tests are conducted using OLS estimations that test each of the hypothesized relations while controlling for the influence of each of the other hypothesized relations.

VI. Results

Our results indicate that the market reaction to SEO announcements was significantly negative, with the average abnormal return of negative 1.89% during the three days centered on the SEO filing date. Despite this, 64 out of the 184 SEOs experienced positive market reaction with an average abnormal return of 3.42%. These results are consistent with the findings in the previous studies. This table (table I) displays market reactions for the sample of 184 seasoned equity offers during the period 2004-2006. *** indicates statistical significance at the 1% level

Variable	#obs.	Mean	T-Stat	Median	# pos.	Sign Test z-stat.
Market model reaction(abnormal return)	184	- 1.89%	- 4.85***	-1.61%	64	- 4.13***
Market model reaction(neg.only)	120	- 4.71%	-	-3.79%	-	-
Market model reaction(pos.only)	64	3.42%	-	2.78%	-	-

The average market value of equity for the whole sample is \$2,426.7 million but the positive group is \$2,949.6, which is much higher than the negative group, \$2,138.3. It is generally believed that there is more information available about the large firms than smaller firms. This may suggest that there is less information asymmetry for the positive group and hence the positive abnormal return. But the difference in the average market value of equity between the two groups is not statistically significant.

Another important finding of our study is that the positive group has significantly higher debt to asset ratio than the negative group and the whole sample. The Long term debt to asset ratio is 0.23 for the positive group as opposed to 0.18 and 0.19 for the negative group and the whole sample respectively. This suggests that the firms in the positive group may issue additional shares to reduce their debt level to improve their capital structure, instead of taking advantage of the information asymmetry. This should theoretically reduce the financial risk of the firm and if the reduced debt level improves the capital structure, it should also reduce the weighted average cost of capital and thus the totally value of the firm. The relative offer size for the negative group is 24% and it is 22% for the positive group. This is consistent with the findings of the previous studies that find the greater the offer size, the more negative the market returns.

Table II presents the data for the whole sample, the positive group, and the negative group. We find that the firms in our sample have significant stock price run up, adjusted for the market, prior to the SEOs. The average stock run up is 81.8% for the whole sample but the positive group's run up is much higher than the negative group. The difference is statistically significant, suggesting that one possible reason for the group to have positive abnormal return is that the firms were believed to have good investment opportunities and that the SEO is viewed as a way to finance the investment opportunities.

This possible explanation is supported by the differences in Market to Book ratio and the average Research and Development expenditures both before and after the filings between the positive and the negative groups. The average Market to Book ratio for the positive group is 5.14, which is higher than the negative group's 4.22. A higher market to book ratio may indicate greater growth potential. The positive group also has higher Research and Development expense both before and after the SEOs. This is also consistent with the notion that the market reacts positively to the firms with good growth potentials and views the SEOs as a way to raise capital to finance these growth opportunities. The differences in Market to Book ratio and the Research and Development expenses between the two groups are not statistically significant, though.

Table II

This table displays data results for all SEO's in the sample during the period 2004-2006, data for the negative reaction group, data for the positive reaction group, and p-values for statistical differences between the two groups during the same period.

*** indicates statistical significance at the 1% level ** indicates statistical significance at the 5% level

<u>Variable</u>	<u>All SEO's in sample w/data</u>			<u>Neg. announcement reaction group</u>			<u>Pos. announcement reaction group</u>			<u>p-value</u>
	<u># of obs.</u>	<u>mean</u>	<u>media n</u>	<u># of obs.</u>	<u>mean</u>	<u>media n</u>	<u># of obs.</u>	<u>mean</u>	<u>media n</u>	
Market model stock runup (%)	171	81.8 2426.	58	113	68.4	48.1	58	107.8 2949.	65	0.02*** *
MV of equity (\$)	166	7	479.8	107	2138.3	568.9	59	6	416.5	0.66
Book assets (\$ millions)	175	915.7	160.3	114	1002.2	191	61	754.1	147.4	0.59
Market to Book	166	4.54	3.01	107	4.22	3.09	59	5.14	2.81	0.24
R&D expense prior to filing (\$ m)	108	32.1	11.3	69	28.9	15.8	39	37.6	6.4	0.56
R&D expense after filing (\$ m)	107	52.1	13.4	68	48.5	17.2	39	58.4	10.1	0.77
Change in R&D expense (%)	106	65%	25%	67	58%	25%	39	76%	29%	0.57
Long term debt (\$ m)	172	269.3	12.2	111	315.4	13.5	61	185.4	8.6	0.37
Long term debt / assets	172	0.19	0.13	111	0.16	0.11	61	0.23	0.18	0.06***
# shares filed (m)	184	9.9	5.4	120	9.9	5.7	64	9.9	5	0.99
Shares outstanding (m)	167	55.2	34.9	107	57.8	35.9	60	50.7	32.4	0.49
Relative offer size (m)	167	0.24	0.14	107	0.26	0.14	60	0.22	0.14	0.79

Table III Regression analysis of announcement effect

This table displays ordinary least squares regression estimates. The dependent variable is the market model reaction and the explanatory variables are listed. The coefficient estimates are presented, with standard errors in parentheses. ** indicates statistical significance at the 5% level, and * indicates statistical significance at the 10% level.

	1	2	3	4
Intercept	-0.0404** (0.0179)	-0.0437** (0.0179)	-0.0487* (0.0248)	-0.0544* (0.0291)
Market model stock runup (%)	0.0077* (0.0040)	0.0076* (0.0040)	0.0079 (0.0053)	0.0080 (0.0054)
Log Book assets	0.0010 (0.0030)	-	0.0022 (0.0048)	-
Log Market value of equity	-	0.0015 (0.0030)	-	0.0029 (0.0050)
Long-term debt / assets	0.0372* (0.0210)	0.0372* (0.0210)	0.0523* (0.0266)	0.0519** (0.0261)
Market-to-book	0.0015* (0.0009)	0.0014* (0.0009)	0.0018 (0.0011)	0.0015 (0.0013)
Relative offer size	-0.0020 (0.0051)	-0.0019 (0.0051)	-0.0020 (0.0056)	-0.0019 (0.0056)
Change in R&D expense	-	-	-0.0013 (0.0039)	-0.0010 (0.0040)
R-squared	0.06	0.06	0.10	0.10
Number of Obs.	151	151	92	92

Table III presents coefficient estimates and standard errors from ordinary least square (OLS) regression estimates conducted using Microsoft Excel. In OLS estimations, the T-statistic equals the coefficient estimate divided by its standard error. Four estimations are presented. The first two estimations excluded the change in R&D expense because including this variable reduced the sample size considerably. The first estimation used book assets to proxy for firm size, whereas the second used market capitalization to proxy for size. The third and fourth regressions are similar, but also included changes in R&D expense. From the descriptive statistics, market value and book assets contained large outliers. This becomes clear when examining the large difference between mean and median values. This is problematic because

OLS is designed to work under a normal distribution. This problem is fixed by using the natural logarithm of market value and book assets in the regression models. This approach is a standard way to address outliers in the data or skewed data.

In the first two regressions the number of observations was only 151 because 33 observations had missing values for at least one of the explanatory variables. The regressions provided similar results. Greater stock run-up, higher market-to-book ratios, and higher debt ratios were all associated with more favorable SEO reactions at the 10% level of significance. The fit of the model is reflected by the R-squared of 0.06. Although this value is low, it was consistent with the findings of numerous prior studies that regressions explaining the market reaction to SEOs had low values of R-squared (e.g., Asquith & Mullins, 1986).

In the third and fourth regressions the number of observations fell to 92 because of the large number of missing observations for R&D data. The regressions provided similar results. Higher debt ratios were associated with more favorable SEO reactions at the 5% or 10% level of significance. The lack of significance for the other variables could be due to the large number of excluded observations, reducing the amount of cross-sectional variation. Nevertheless, it is not uncommon for academic finance studies to conduct OLS regressions using samples of 100 or fewer observations.

Based on the above results, the null hypothesis is rejected. We have reason to believe that the different market reactions to SEO announcements are related to firm specific factors.

VII. Conclusions

The finance literature has documented the average overall negative market reaction to SEO announcements. The negative market reaction is primarily attributed to information asymmetry. The rationale is that firms will only issue additional stocks when they are overvalued. However, this cannot explain the fact that has also been well documented in the literature and that is about 30% of firms announcing SEOs actually have positive market reaction. This is the focus of our study.

We use a sample of 184 firms that announced SEOs from 2004 to 2006. We use market model to determine the announcement abnormal returns. We find that the overall market reaction to the announcements for the total sample is negative 1.89% and it is statistically significantly different from zero. We also find that about two thirds of the firms experience negative abnormal returns with an average of negative 4.71% and one third of the firms experience positive abnormal returns with an average of 3.42%. These results are consistent with the results of the previous studies. We then dividend the sample into two groups based on the market reaction; positive and negative groups. We find that the positive group has a significantly higher price run up prior to the SEO announcements than the negative group, suggesting that these firms may be viewed by the market as having greater growth potential and the managements' purpose to issue additional shares is to raise the needed capital, instead of taking advantage of the information asymmetry. Another important finding of our study is that the firms in the positive group have significantly higher debt to asset ratios than the negative group. This may suggest that the firms in the positive group may issue additional shares to reduce the debt level and to improve the capital structure. This should theoretically reduce the financial risk of the firm and if the reduced

debt level improves the capital structure, it should also reduce the weighted average cost of capital and thus the total value of the firm. If the purpose is to improve the capital structure and not to take advantage of the information asymmetry, that alone can also explain the positive market reaction.

The firms in the positive group have higher market to book ratios than the negative group. This is consistent with the notion that the positive group may have greater growth potential. In addition, the positive group has greater research and development expenses than the negative group. This is also broadly consistent with the belief that the positive group may have greater growth potential and therefore, the reason for the SEO is to raise additional capital to fund the investment needs.

However, our results are based on a sample that was collected in the years that the stock market was booming. Whether the results will hold in bear markets is yet to be determined. That can be an issue for future research.

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