# A STUDY OF THE EFFECT OF CHANGE IN TOTAL EQUITY RISK OF ISSUER AND MARKET PERFORMANCE OF THE SEASONED EQUITY OFFERINGS 

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#### Abstract

Research on new issues has recently shown that issuer's underperformance relative to similar firms is due to the failure for proper control for risk. We document that there is a "new issues Puzzle" for issues of seasoned stock offerings of a slightly different nature. Firms that increased their equity owner's total risk prior to a seasoned stock issue are found to underperform relative to firms that had been decreasing their equity holder's total risk prior to such offerings. This finding is further supported by the result that for risk increasing issuers, the abnormal stock return at the time of issue is a significant predictor of future stock performance, while it is not for risk decreasing issuers.


## INTRODUCTION

Eckbo, Masulis and Norli [4] report that common stock offerings of industrial firms making seasoned stock offerings are seen to underperform relative to matched nonissuers due to a change in lower systematic risk exposure for issuing firms relative to matching firms. They conclude that the "new issue puzzle" reported by Loughran and Ritter [5] and Speiss and Affleck-Graves [7] is explainable by the failure of those researchers to provide a proper control for risk. This conclusion then leads to the following question: If issuers of seasoned equity issues are in fact changing the exposure of their shareholders to various risk factors, is the change in the exposure to risk a change of policy or a continuation of previous policy by management? If the change in exposure due to the equity issue is a change in policy by management, then it follows that shareholders, who previously wished for a higher risk equity position, would abandon the firm's equity and move elsewhere. The market would then be seen to "punish" the firm. On the other hand, if the equity issue were a continuation of current risk exposure policy, then the reaction of the market would be more benign.

The critical problem in testing this simple hypothesis is that measuring the risk that equity holders are exposed to due to a firm's leverage policy is fraught with measurement errors. Too often, the standard financial statement items reported in Compustat and similar databases do not account for or do not adequately report such leverage related items such as leases and uses of off-balance sheet financing. We propose using the following simple methodology to avoid this problem. Stulz and Shin [6] report evidence that an increase (decrease) in a firm's total equity risk is associated over time with a fall (rise) in the firm's Tobin's q ratio. Thus, we can use a change in the firm's Tobin's q ratio prior to the equity issue as a proxy for the firm's "policy" towards risk for equity holders. A firm with a rising Tobin's q ratio prior to issue would be seen as firm that had been lowering total equity risk prior to issue, and the equity issue would be a continuation of the policy. A falling Tobin's q ratio prior to issue, would be
indicative of a firm that had been increasing its shareholders total equity risk prior to issue, with the issue being a reversal of that previous policy.

Using this idea, we find that for the three years after a stock issue, firm's that had been increasing equity risk prior to the issue (risk increasing firms) have an increase in the market value of their shareholders equity that is half of that of firms that had been decreasing their total equity risk (risk decreasing firms) prior to issue. This is despite the fact that in terms of stock dilution, risk decreasing firms typically make an equity offering that is about $3.22 \%$ percent of existing equity, while risk increasing firms make an average equity offering that is slightly more than half of this.

Further, we find that the issue period abnormal returns for risk increasing firms are a significant predictor of future equity returns, while for risk decreasing firms they are not. We interpret this to mean that for risk increasing firms, the change in equity risk policy is a significant negative event to the market, and results in long-term underperformance for such firms. While for risk decreasing firms, the equity issue was an anticipated event of little lasting consequence.

The rest of this paper will be organized as follows. Section 2 discusses the data and methodology used. Section 3 discusses the sample characteristics of risk increasing and risk decreasing firms, and presents empirical estimates using weighed least squares regressions. Section 4 summarizes the evidence and draws conclusions.

## DATA

The seasoned equity offerings from 1983 through the end of 1994 were collected from the bi-annual publication Investment Dealer's Digest [2]. The financial year-end date for each firm was collected from the Wall Street Journal Index (WSJI). The WSJI was also used to verify the sample event dates. Events not found in the WSJI were dropped. The WSJI generally reports different dates related to any offering (not necessarily all dates for all events). These dates are: The date of plan to offer; date of registration with the Securities and Exchange Commission (SEC); the offering date; the offering completion date; and offering withdrawal date. The offering dates were collected from the primary source (publication of Investment Dealers Digest) issued as the base date. These dates were then crosschecked with the WSJI. If the issue is reported in the WSJI and given a different offering date then the event date was changed to the date reported in the WSJI.

The following criteria were set for each event to be a part of the sample for the reasons described. For the financial data, Compustat was used. If the sample firm was not in the data tape then events related to that company was deleted from the sample.

Chung and Pruitt [1] developed a simple formula to approximate L-Rs estimate of Tobin's Q.

$$
\begin{equation*}
\text { Approximate } \mathrm{Q}=(\mathrm{MVA}=\mathrm{PS}+\mathrm{DEBT}) / \mathrm{TA} \tag{1}
\end{equation*}
$$

where MVA is the product of a firm's share price and the amount of common stock outstanding; PS is the liquidating value of the firm's outstanding preferred stock; DEBT is the firm's short-term liabilities net of short-term assets plus the book value of the firm's long-term debt; and TA is the book value of the total assets of the firm. For the purpose of this paper this, Chung and Pruitt's approximation was used. For market data, the daily return data tape of the Center for Research in Security Price (CRSP) for period ending December 31, 1996 was used. Abnormal return calculation methodology requires that
each sample event must have return data for 250 days from event date up to 15 days after the event date. Sample events failing to meet these criteria were also dropped from the sample. Additionally for the financial data, firms not having at least three years of financial data either before or after the offering date were dropped. Events with seasoned or combined issues within the past 12 months or within the subsequent 12 months of the event date were dropped in order to control for contamination from frequent issues of equity. In case of firms making multiple issues within the event period ( 1983 through 1994) the earliest event was first included provided there was no seasoned or combined offering in the past 12 months of the offering. For a second event to be considered the sample from the same company, the event must be at least 12 months apart from the first offering, providing no similar offering took place within the subsequent 12 month period. To avoid possible information contamination around the sample event date from senior securities (such as offering of debt, convertibles, etc.), sample events were eliminated where such events were present within 30 days surround the sample event date Also eliminated were seasoned offerings that were accompanied by secondary equity offerings. Also deleted were those events associated with firms, which were not listed on the American Stock exchange (AMEX) or the New York Stock Exchange (NYSE). For exchange classification, the Compustat data item "Exchange Listing and S\&P Major Index Code" was used.

## Table 1

Distribution of the Sample of 324 Common Stock Offerings over the period 1983-1994 and Descriptive Statistics of the Announcement Period prediction Errors Panel A: Distribution by Year of Offering and Exchange
(Percentages are expressed as percent of column)

| Year | Announcements <br> (Percentage of Total Sample) |
| :---: | :---: |
| 1983 | $75(23.15 \%)$ |
| 1984 | $10(3.1 \%)$ |
| 1985 | $23(7.1 \%)$ |
| 1986 | $18(5.6 \%)$ |
| 1987 | $32(9.9 \%)$ |
| 1988 | $8(2.5 \%)$ |
| 1989 | $11(3.4 \%)$ |
| 1990 | $14(4.3 \%)$ |
| 1991 | $37(11.4 \%)$ |
| 1992 | $41(12.7 \%)$ |
| 1993 | $40(12.4 \%)$ |
| 1994 | $15(4.6 \%)$ |
| TOTAL | $324(100 \%)$ |

Panel B: Descriptive Statistics of the Prediction Errors
Mean Prediction Error $-2.21 \%$
Median Prediction Error $-2.00 \%$
Minimum Prediction Error $-13.00 \%$
Maximum Prediction Error 12.00\%
Percentage Negative Prediction Errors 66.0\%
Z-value (Ho: Mean PE = 0) -10.01
p-value $<0.0001$

Two-day prediction errors were estimated using the standard market model procedure with parameters estimated over a 250 -trading day period beginning 15 days prior to the sample offering. Significance tests were conducted using standardized prediction errors as in Dodd and Warner (1983).

## EMPIRICAL RESULTS

For the purpose of gauging the change of a firm's total equity risk, we measured the change in the firm's Tobin's Q ratio as calculated above from 5 years prior to the issue of equity until the year of issue. This allowed for the determination of the long term trend in the firm's equity risk. Table 2 reports some summary statistics based on dividing the sample into two sub-samples, where the first sub-sample are those firms whose total equity risk decreased, as determined by an increase in their Tobin's Q ratio. For these risk decreasing firms who issued equity, their Tobin's Q ratio increased an average of 0.552 over the five years prior to the equity issue. These same firms issued equity whose value was equal to 3.22 percent of their existing equity at the time of issue. Over the five years subsequent to the issue, these firms' equity averaged an annual increase of 11.5 percent. By way of contrast, risk increasing firms saw their Tobin's ratio decrease an average of 0.172 . At time of issue, these firms issued a relatively smaller amount of equity, with the issue amounting to 1.9 percent of existing equity. Over the five years subsequent to the equity issue, these firms had an annual average growth in the market value of their equity of 5.14 percent per year, or less than half of what the risk decreasing firms experienced.

Table 2
Descriptive Statistics of Sample of Seasoned Equity Offerings divided into
Sub samples based on the change in the firm's Tobin's Q value for the five fiscal years previous to the equity issue. Standard errors are in parentheses.

| Variable | Change in Tobin's <br> $\mathrm{Q}<0$ (Risk Increasing <br> Firms) | Change in Tobin's <br> $\mathrm{Q}>0$ (Risk Decreasing <br> Firms) |
| :--- | :---: | :---: |
| Chance in Tobin's Q in the 5 years prior to the <br> equity issue | -0.172 |  |
| $(0.0128)$ | 0.552 |  |
| Average annual increase in the market value of | $5.14 \%$ | $10.058)$ |
| Common equity for five years subsequent to the | $(1.15 \%)$ | $(1.48 \%)$ |
| Equity issue |  |  |$\quad$|  |
| :--- |
| Average Abnormal returns for the three day event |
| window around the equity issue |

All data is from Compustat Tobin's Q ratio is measured using the method of Chung and Pruitt (1994). The average annual increase in market value of equity is measured using the closing annual price per share times the number of shares outstanding for each year after the issue, and calculating the annual return. The average abnormal returns are calculated using the Center for Research in Security prices
tapes using standard event study methodology. Taking the share close price of the issuer two days prior to the issue and multiplying by the shares outstanding determine size of existing market value of equity. Debt to equity ratio and market to book are taken directly from Compustat for the fiscal year prior to issue.

Interestingly, at the time of issue, the market's reaction to the equity issue is similar for both types of firms. Risk decreasing firms experience a 3 day abnormal return of -2.38 percent, while risk increasing firms experienced a return of -2.08 percent. However, the long run returns as noted above are very different. In Table 3, we show the results of two sets of regressions of the long run average market return over the five years subsequent to the equity issue, and the predictor variables of log of issue size (as a percentage of existing equity), the three day abnormal returns at issue, the existing debt to equity ratio for the fiscal year prior to issue, and the firm's market-to-book ratio prior to issue. For risk increasing firms, the three day abnormal return upon issuance is a significant predictor of the future long run returns of the issuing firm, in both weighted and unweighted regressions. It seems clear that the issuance is a significant event to the market in determination of the future long run performance of the firm's equity. On average for a risk increasing firm, an equity issuance means that the average growth of the firm's market value of equity will be decreased by -2.6 percent per year using the weighted least squares estimates. This result is significant at well above the 1 percent level. At the same time, the debt-to-equity ratio is positive and significant, indicating that the long run 'damage' to risk increasing issuers is somewhat mitigated if they have a relatively high debt level. Given that the work of Eckbo, Masulis and Norli [4] indicates that issuers decrease their exposure to unexpected inflation and default risks, this result seems to be explained by the market reacting less strongly to the change in risk exposure policy if the firm still has a significant amount of debt so that the firm's exposure to unexpected inflation and default risk through its use of leverage is smaller, but still relatively high.

Table 3
Regressions of annual average returns over the five year period subsequent to the equity issue on predictor variables. Standard errors are in parentheses.

| Variable | Risk Increasing <br> Firms - OLS | Risk Decreasing <br> Firms - OLS | Risk Increasing <br> Firms - WLS* | Risk Decreasing <br> Firms - WLS* |
| :--- | :---: | :---: | :---: | :---: |
| Constant | 0.2515 |  |  |  |
| $(0.0019)$ | 0.4843 |  |  |  |
| $(<0.0001)$ | 0.0158 | 0.5198 |  |  |
| $(0.8626)$ | $(<0.0001)$ |  |  |  |
| Log of Size of | 0.0305 | 0.0431 | 0.0448 | 0.031 |
| issue relative to | $(0.0008)$ | $(<0.0001)$ | $(0.0014)$ | $(0.0021)$ |
| existing equity |  |  |  |  |
| Three day | 0.5652 | 0.0638 | 1.2488 | 0.2599 |
| Abnormal Return | $(0.0244)$ | $(0.81)$ | $(0.0008)$ | $(0.3057)$ |
| Debt to Equity ratio | -0.0091 | -0.1899 | 0.2731 | -0.2414 |
|  | $(0.8781)$ | $(0.0052)$ | $(0.0055)$ | $(0.0003)$ |
| Market to Book | -0.0009 | -0.1029 | 0.1483 | -0.1482 |
| Ratio | $(0.9772)$ | $(0.1056)$ | $(0.0053)$ | $(0.0224)$ |
| R Squared | 0.0768 | 0.1318 | 0.2687 | 0.33 |

All data is from Compustat Tobin's Q ratio is measured using the method of Chung and Pruitt (1994).

