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Issuance Expenses And Common Stock Offerings for Over-the-counter Firms

Robert M. Hull
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This study explores the role of issuance expenses in explaining the fall in stock value for *OTC* stock offerings that raise cash for debt reduction purposes. It estimates that over half of the sample's -2.79% two-day fall in stock value can be accounted for by issuance expenses when using a lower bound measure of issuance expenses. This estimate contrasts with the one-fifth estimate suggested by *NYSE/AMEX* studies that examine stock offerings that raise cash primarily for non-debt reduction purposes. The influence of issuance expenses is shown to be substantially greater when combination offerings are deleted, an upper bound measure of issuance expenses is employed, or the sample is restricted to those offerings with the greatest issuance expenses per outstanding share.

I. INTRODUCTION

This study is a refinement of previous issuance expenses research. Its research question is: To what extent can issuance expenses explain the two-day cumulative abnormal return for a sample of *OTC* stock offerings that raise cash to reduce debt?

Issuance expenses in previous studies of common stock offerings that raise cash have focused on *NYSE/AMEX* listed firms. Mikkelsen and Partch [10] find that the underwriting spread, and other expenses of the stock offering reported in the prospectus, average six percent of the proceeds and 0.7% of the market value of common stock prior to the announcements ($n=62$). If negative cash flows from issuance expenses account for an average fall in stock value of -0.7%, then an estimated one-fifth of their sample's two-day cumulative abnormal return (CAR) of -3.56% is explained by issuance expenses ($-0.7/-3.56 = 0.197\%$).

Asquith and Mullins [1] discover that existing shareholders give up an average of 31% of the current market value of common stock for each dollar

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of the proceeds that are raised ($n=124$). Assuming issuance expenses average six percent of the proceeds, then an estimated one-fifth of their sample's fall in the market value of common stock can be attributed to issuance expenses ($6/31 = 0.194\%$).

These cash offerings studies conclude that issuance expenses are not a significant factor in explaining the negative two-day *CAR*¹. However, such a conclusion will not necessarily be sustained by future research if the negative impact of issuance expenses on outstanding common stock becomes more negative, or if the two-day *CAR* becomes less negative.

This investigation extends previous research by offering two specific refinements. First, it focuses on *OTC* stock offerings. The negative impact of issuance expenses for *OTC* firms is expected to be greater than found for *NYSE/AMEX* firms. Consequently, there are expectations that issuance expenses may play a larger role in accounting for *OTC* two-day *CARs* than documented in previous *NYSE/AMEX* studies.

Secondly, it restricts the sample to common stock offerings where the cash proceeds are employed to reduce debt that is not convertible into equity. Therefore, it is able to assess the impact of issuance expenses on stock value when the impact is not directly influenced by either changes in the underlying assets, or changes in the quantity of securities that combine both equity and debt features. In focusing exclusively on debt reductions, it may find smaller negative *CARs* than reported by cash offering studies that include non-debt reduction purposes. Smaller negative *CARs* are consistent with the asymmetric information signaling models of Miller and Rock [11] and Brennan and Kraus [2] that predict less negative *CARs* when part of the cash proceeds from an equity offering are employed to retire debt.

The remainder of the paper is organized as follows. The measurement of issuance expenses and a flotation costs adjustment formulation are offered in the next section. The sample and event study methodology follow in the third section. The empirical results and conclusions are given in the last two sections.

II. MEASURING ISSUANCE EXPENSES

Three assumptions must hold for issuance expenses to explain the negative stock valuation impact found in previous stock offering studies. First, current stockholders must bear issuance expenses. Asquith and Mullins [1] note that the costs of issuance come out of the pockets of current common shareholders. The assumption that current stock owners absorb issuance expenses runs consistent with the belief that stockholders bear all costs that impact residual cash outflows.

Secondly, issuance expenses must not be anticipated (and thus impounded in stock prices) prior to issuance announcements. In a sample of stock offering announcements that reduce debt, it can be argued that some announcements are anticipated because they involve debt that is reaching maturity. Accepting this argument, however, does not mean that the expenses from a common stock issue are impounded in stock prices prior to the announcement. This is because outstanding debt is more frequently retired with new debt than with new common stock. The costs associated new debt (such as a new bond issue or a bank loan agreement) are typically much less than the expenses associated with a new stock issue.

Lastly, an ex post measure relying upon actual issuance expenses reported after the initial announcement is assumed to adequately measure the expected costs of the planned offering.²

Issuance Expenses Categories

Issuance expenses can be placed into the following four categories.

1. A “selling concession” category consists of the underwriting spread.
2. An “underwriter-management” category includes fees charged by the lead underwriter and its syndicate to cover expenses associated with such items as administration, registration, and lawyers.
3. An “unreported expenses” category includes underpricing and out-of-pocket costs like postage and employees time.
4. An “extras” category consists of additional fees that can be paid to underwriters such as warrants and reallowance (stock price reduction for shares underwriters may buy).

The first two categories include expenses employed by previous issuance expenses studies when analyzing the impact of flotation costs on stock value. The third category encompasses unreported expenses that are arguably not known with certainty even after the offering, while the fourth category involves expenses that are either undervalued if they occur (warrants) or uncertain of occurrence at the time of the announcement (reallowance).

Two Issuance Expenses Measures

This examination utilizes both a lower bound and an upper bound issuance expenses measure. The lower bound measure considers the first two issuance expenses categories described above, while the upper bound measure attempts to include the costs associated with all four categories. When applying the upper bound measure, the costs are estimated for the

third and fourth categories as being equal to the ex post costs documented for the first and second categories.

The latter estimation stems from *NYSE/AMEX* research that reveals that the third and fourth categories involve substantial issuance expenses. For example, Smith [15] examines seasoned offerings and discovers that the offering price is set 0.82% below the closing price on the offer date—while Ibbotson [6] investigates initial public offerings and finds that the offering price is set 11.4% below its closing market price. Assuming the offering price for *OTC* stock offerings is set at a percentage below its market price that is an average of these two *NYSE/AMEX* numbers, then the costs of underpricing are similar to the average costs of the first and second categories as estimated by Smith [15]. He finds that the costs of the first and second categories are 6.17% of the offering price. He also discovers that one out of three *NYSE/AMEX* stock offerings involve warrants that have costs estimated to approach those of the first and second categories.

Applying the Issuance Expenses Measures

To apply either a lower or upper bound issuance expenses measure, consider equation (11) derived in the appendix. This formulation represents the difference when the traditionally calculated two-day cumulative abnormal return (*CAR*) is subtracted from the flotation costs adjusted two-day *CAR*. This positive difference is referred to as the flotation costs adjustment variable, *ADJ*, and is given as

$$ADJ = -(IES/Pb)*(dN/N) \quad (11)$$

where *IES* is the expected issuance expenses per new or primary share (with *IES* < 0 to represent the fact that it is a residual cash outflow); *Pb* is the price the day before the announcement day; *dN* is the new common shares that are planned; and, *N* is the number of outstanding common shares at the time of the announcement.

Rearranging (11), it can be seen that *ADJ* is equal to $-(IES*dN)/(Pb*N)$. This is the absolute magnitude of the expected issuance expenses for the new planned shares as a percentage of the market value of common stock.

This study assumes that *ADJ* can be estimated by using the actual issuance expenses per new share as a proxy for *IES* (the expected issuance expenses per new share). Inserting a lower bound or upper bound measure for *IES* and multiplying by $-dN/Pb*N$ gives a value for *ADJ*. This value added to the traditional two-day *CAR* produces the flotation costs adjusted two-day *CAR*.

Once *ADJ* is calculated, there exists several ways of assessing the impact of issuance expenses on changes in stock value. Since *ADJ* represents the difference between the traditional and flotation costs adjusted two-day *CARs*, the sample's mean *ADJ* value can estimate how much of the traditional mean two-day *CAR* can be attributed to issuance expenses. Moreover, performing statistical tests on the flotation costs adjusted two-day *CAR*, and comparing these results with the traditional two-day *CAR*, can help assess the impact of issuance expenses.

III. SAMPLE AND METHODOLOGY

Sources for this study's stock offering announcements, summary statistics for the descriptive variables, and data needed to calculate flotation costs adjusted *CARs* are: the *Investment Dealers' Digest*, *The Wall Street Journal*, *CompuStat Annual Industrial File*, *Moody's Industrial Manual*, *CRSP NASDAQ Price File*, and *CRSP NASDAQ Return File* for the years 1973 through 1987.³

Sample

The sample consists of 150 observations that survive the following four screens.⁴

1. Each must be a common stock cash offering where the stated purpose is to retire some form of debt that is not convertible into equity.
2. Each must be listed on the *CRSP NASDAQ Return File* and have sufficient trading data to calculate its two-day *CAR*.
3. Each must have available data to figure its flotation costs adjustment value, namely, data for issuance expenses as reported by the *Investment Dealers' Digest*, data for stock prices as given by the *CRSP NASDAQ Price File*, and data to calculate the planned percentage change in outstanding common stock as found in the sources.
4. Each must have a planned percentage change in outstanding common stock that is greater than a half percent but less than 100%.

The sample is characterized by the fact that 50 of the 150 offerings are combination offerings where the new or primary portion of the total number of shares offered is less than 90% (or, equivalently, the secondary portion of the total is greater than 10%).

Table 1 contains summary statistics for descriptive variables for the total sample and two divisions: a primary offering division and a combination offering division. The table reveals that primary offerings involve larger firms than combination offerings. The primary offerings also have larger

Table 1
 Summary Statistics for 150 OTC Common Stock Offerings
 Where the Purpose is Debt Reduction, 1973 to 1987

<i>Descriptive Variable</i>	<i>Primary (n=100)</i>	<i>Combination (n=50)</i>	<i>Total (n=150)</i>
Market Value of Common Stock ^a	\$111M ^b (\$52M)	\$85M (\$55M)	\$102M (\$53M)
Firm Value ^c	\$152M (\$73M)	\$116M (\$67M)	\$140M (\$70M)
Expected New Proceeds ^d	\$17M (\$11M)	\$12M (\$8M)	\$15M (\$9M)
Planned Percentage Change in Outstanding Common Stock	25.83% (20.31%)	18.09% (16.04%)	23.25% (18.80%)
Actual Issuance Expenses per New Planned Share as a percentage of the Actual Offering Price ^e	-6.26% (-6.05%)	-6.45% (-6.51%)	-6.32% (-6.34%)
Actual Issuance Expenses for the New Planned Shares as a percentage of the Market Value of Common Stock ^f	-1.69% (-1.21%)	-1.18% (-1.00%)	-1.52% (-1.13%)
Observations for 1973-1975	12	4	16
Observations for 1976-1978	16	13	29
Observations for 1979-1981	42	15	57
Observations for 1982-1984	24	11	35
Observations for 1985-1987	6	7	13

Notes: ^a The stock price one day prior to the announcement date times the shares outstanding at that time.

^b Means (medians) are reported for the first six rows.

^c The market value of common stock plus the liquidation value of preferred stock (if applicable) plus the book value of all long-term debt obligations plus current liabilities.

^d The price one day prior to the announcement date times the number of new or primary shares that are being planned.

^e Actual issuance expenses considers the lower bound measure.

^f The absolute magnitude of this variable's value is the same as the flotation costs adjustment value given by equation (11) if actual issuance expenses are expected issuance expenses.

values for three other variables: expected new proceeds, planned percentage change in outstanding common stock, and actual issuance expenses for the new planned shares as a percentage of the market value of common stock. If the secondary portions of the combination offerings were considered (in addition to the new or primary portions), then statistics for the latter three variables for the combination sample would be very similar to those for the primary sample.⁵

For both the primary and combination offerings in Table 1, the actual issuance expenses for the new planned shares as a percentage of market

value of common stock is more negative than the -0.7% reported by Mikkelson and Partch [10] for their cash offerings. This is largely attributed to the fact that the planned percentage change in outstanding common stock for this study's offerings is greater than the 15.1% given by Mikkelson and Partch [10].

Table 1 reveals that most of the primary (42%) and combination offerings (30%) occur for the years 1979 through 1981. The smaller number of observations for the years 1985 through 1987 can be explained by the fact that the sources are less likely during this time period to give either the purpose of the issue (as required by the first screen) or the actual issuance expenses (as required by the third screen).

Event Study Methodology

The procedure detailed by Brown and Warner [3] is followed when testing the hypothesis that a sample's two-day *CAR* is equal to zero. The *CARs* reported by this study utilize the standard ordinary least squares (*OLS*) market model. The *OLS* alpha and beta parameters are calculated using the equally weighted *CRSP NASDAQ* market index in conjunction with a comparison period of days 41 to 240 beyond the announcement day. Although not reported, similar announcement period *CARs* are found when employing other comparison periods, Scholes and Williams [14] alphas and betas, size-adjusted expected returns, and other event period models.

As detailed earlier, each observation's flotation costs adjustment value can be added to its traditional two-day *CAR* to calculate its flotation costs adjusted two-day *CAR*. As noted in the appendix, the flotation costs adjusted two-day *CAR* given in equation (6) assumes that day zero (the reported announcement date) is the day when the news actually impacts the market. For this study's sample, day 0 has a mean abnormal return of -1.95% compared to -0.84% for day +1.

IV. EMPIRICAL RESULTS

It is evident from the previous discussion of the summary statistics that this examination's *OTC* sample is characterized by a large number of combination offerings, by issues that experience large issuance expenses, and by observations that cover a long time period. These characteristics are considered in the choice of samples tested and for which results are given in this section.

For each chosen sample, the impact of issuance expenses is assessed by testing the null hypothesis that its mean two-day *CAR* is equal to zero. This is done for both the traditionally calculated *CAR* and the issuance expenses adjusted *CAR*. If issuance expenses are large enough, it can cause a significant negative traditional *CAR* to become insignificant (and even positive) when adjusted for flotation costs.

Total, Primary, and Combination Results

Table 2 reports two-day *CAR* results for the total *OTC* sample and the primary offering and combination offering divisions.⁶ For the total sample, issuance expenses account for 54% of the total sample's two-day *CAR* of 2.79% when the lower bound measure is employed (e.g., the first two issuance expenses categories are considered). This *OTC* finding is over two and a half times greater than suggested by previous *NYSE/AMEX* issuance expenses studies of cash offerings that use the same measure. The difference is explained by the fact that the *OTC* sample experiences a larger mean issuance expenses as a percentage of outstanding common stock and a smaller traditional mean two-day *CAR*. The traditional two-day *CAR* for the total sample becomes slightly positive and, therefore, can be completely explained by flotation costs when the upper bound measure is used (e.g., all four issuance expenses categories are considered),

Table 2 demonstrates differences in two-day *CARs* for the primary and combination samples. For example, the traditional two-day *CAR* for primary offerings has a less negative value than found for combination offerings (-2.23% versus -3.92%). In applying the lower bound measure, the primary sample's two-day *CAR* is no longer statistically significant when the *t* statistic is calculated (and is only significant at the 10% level when the binomial *z* statistic is figured). For tests that employ the upper bound measure, the primary sample's two-day *CAR* not only becomes positive but has a *t* statistic that is significant at the five percent level; while the combination offering sample's two-day *CAR* remains negative (although only significant at the 10% level for both the *t* and *z* statistics).

Least, Middle, and Greatest Results

A sample composed of stock offerings with greater issuance expenses should *ceteris paribus* cause greater decreases in stock prices. For such a sample, issuance expenses should explain more of the portfolio two-day *CAR*. Table 3 gives results when the total *OTC* sample is partitioned into three divisions based upon flotation costs adjustment values as given by equation

Table 2
 Traditional, Lower Bound Adjusted, and Upper Bound Adjusted Two-Day
 Cumulative Abnormal Returns Results for 150 OTC Common Stock
 Offerings Where the Purpose is Debt Reduction, 1973 to 1987

<i>Sample</i>	<i>Traditional Two-Day CARs</i>	<i>Lower Bound Adjusted Two-Day CARs^a</i>	<i>Upper Bound Adjusted Two-Day CARs^b</i>
Total (<i>n</i> =150)	-2.79%;-6.42* ^c (25%;-6.04*) (not applicable)	-1.27%;-2.88** (39%;-2.61**) (54%)	0.24%;0.52 (48%;-0.49) (109%)
Primary (<i>n</i> =100)	-2.23%;-4.66* (25%;-5.00*) (not applicable)	-0.54%;-1.10 (43%;-1.40****) (76%)	1.15%;2.14*** (52%;0.40) (152%)
Combination (<i>n</i> =50)	-3.92%;-4.48* (26%;-3.39*) (not applicable)	-2.74%;-3.19** (32%;-2.55**) (30%)	-1.56%;-1.81**** (40%;-1.41**) (60%)

Notes: * Significant at a level greater than the 0.001%
 ** Significant at a level between 0.01 and 0.001%
 *** Significant at a level between 0.05 and 0.01%
 **** Significant at a level between 0.10 and 0.05%

^a Lower Bound Adjusted Two-Day CARs are the traditionally calculated two-day CARs except that the residual cash outflow per outstanding share associated with issuance expenses is subtracted from the closing price on the announcement date (day zero) when figuring the adjusted two-day CAR. Issuance expenses include the first category (the underwriting spread) and the second category (such as administration, registration, and legal services).

^b Upper Bound Adjusted CARs are similar to Lower Bound Adjusted CARs except that issuance expenses also consider the third category (such as underpricing, employees time, and postage) and the fourth category (such as warrants and reallowance).

^c The first row reports the mean sample two-day CAR followed by the *t* statistic and significant level when testing if the two-day CAR is equal to zero. The second row gives the percent of a sample's CARs that are positive followed by the binomial *z* statistic and significant level when testing if the proportion of positive CARs is equal to 0.5. The third row (if applicable) divides the mean for the estimated issuance expenses for new planned shares as a percentage of market value of common stock by the traditional mean two-day CAR. If this value is greater than 100% then the average drop in stock value caused by issuance expenses is greater than the traditional mean two-day CAR.

(11). The “least”, “middle”, and “greatest” divisions consist of those one-third observations that have the least, middle, and greatest flotation adjustment values.⁷ When the lower bound issuance expenses measure is applied, the corresponding mean (median) flotation costs adjustment values for the least, middle, and greatest divisions are 0.56% (0.62%), 1.17% (1.13%), and 2.82% (2.34%)

Table 3 demonstrates that the middle division for the total sample tests has a traditionally calculated two-day CAR that is more negative than either the least or greatest division. The significant negative statistics for the traditional two-day CAR for the greatest division becomes slightly pos-

itive when the lower bound adjusted two-day *CAR* is figured. The statistically significant negative traditional two-day *CARs* for the least and middle divisions remain negative and statistically significant when the lower bound adjusted two-day *CARs* are calculated. Whereas flotation costs for the least and middle divisions account for less than one-third of their respective two-day *CARs*, flotation costs for the greatest division can account for all of its two-day *CAR*.

Flotation costs can explain 55% and 66% of the average two-day *CARs* for the least and middle divisions when the upper bound issuance expenses measure is applied. For the greatest division, upper bound issuance expenses can cause an average fall in stock value of -5.64%. This number is twice the magnitude of its traditional two-day *CAR* of -2.76%. Only for this test (upper bound measure and greatest division) are the parametric and non-parametric statistics both significantly positive.

For the primary sample tests, Table 3 reports that the average issuance expenses explain more of the mean two-day *CAR* than found for the total sample and combination sample tests. One noticeable difference when comparing the primary offering sample with the other two samples involves the middle division tests. For example, when the lower bound measure is applied to the primary sample's middle tests, the statistically significant *t* statistics found for the total sample and combination offering sample tests is not present.

Table 3 further reveals that average issuance expenses for the combination sample's tests explain less of the traditional two-day *CAR* than found for either the total or primary sample tests. This is attributed to the fact its issuance expenses per outstanding share is less costly and its traditional two-day *CAR* is more negative. The difference between the combination sample and the other two samples is quite evident for the greatest division comparisons. To illustrate, first consider the lower bound tests. Here the combination sample's two-day *CAR* is -1.72% compared to 0.06% and 1.04% for the total and primary samples. When the upper bound measure is considered, the combination sample's two-day *CAR* is 0.30% compared to 2.88% and 4.19% for the total and primary samples. The latter two-day *CARs* are highly significant at the one percent and 0.1 percent levels, respectively.

Time Period Results

Since the total *OTC* sample is spread out over a 15 year period, tests are conducted by dividing the 150 observations in half based upon earlier dates (on or before July 24, 1980) and later dates (after July 24, 1980). The

Table 3
 Traditional, Lower Bound Adjusted, and Upper Bound Adjusted
 Two-Day Cumulative Abnormal Returns Results for 150 OTC Stock
 Offerings that Reduce Debt During the Time From 1973 to 1987
 When Ranked According to their Flotation Costs Adjustment Values

<i>Division^c</i>	<i>Traditional Two-Day CARs</i>	<i>Lower Bound Adjusted Two-Day CARs^a</i>	<i>Upper Bound Adjusted Two-Day CARs^b</i>
Total Offerings (n=150):			
Least (n=50)	-2.06%;-3.23** ^d (26%;-3.39*) (not applicable)	-1.50%;-2.34*** (32%;-2.55**) (27%)	-0.93%;-1.45 (38%;-1.70***) (55%)
Middle (n=50)	-3.55%;-4.33* (22%;-3.96*) (not applicable)	-2.38%;-2.89** (34%;-2.26***) (33%)	-1.22%;-1.47 (38%;-1.70***) (66%)
Greatest (n=50)	-2.76%;-3.50* (28%;-3.11*) (not applicable)	0.06%;0.07 (52%;0.28) (102%)	2.88%;3.46** (68%;2.55**) (203%)
Primary Offerings (n=100):			
Least (n=33)	-1.78%;-3.43** (18%;-3.66*) (not applicable)	-1.17%;-2.26*** (38%;-2.26***) (34%)	-0.55%;-1.06 (36%;-1.57****) (69%)
Middle (n=34)	-2.77%;-2.95** (29%;-2.40**) (not applicable)	-1.46%;-1.55 (38%;-1.37****) (47%)	-0.16%;-0.17 (41%;-1.02) (94%)
Greatest (n=33)	-2.12%;-2.20*** (27%;-2.26***) (not applicable)	1.04%;1.07 (60%;1.22) (149%)	4.19%;4.13* (79%;3.31*) (298%)
Combination Offerings (n=50):			
Least (n=16)	-2.87%;-1.99**** (31%;-1.50****) (not applicable)	-2.39%;-1.66 (38%;-1.00) (17%)	-1.92%;-1.33 (44%;-0.50) (33%)
Middle (n=17)	-5.07%;-3.26** (18%;-2.67**) (not applicable)	-4.09%;-2.66*** (24%;-2.18***) (19%)	-3.10%;-2.04**** (24%;-2.18***) (39%)
Greatest (n=17)	-3.75%;-2.38*** (29%;-1.70***) (not applicable)	-1.72%;-1.15 (35%;-1.21) (54%)	0.30%;0.20 (53%;0.24) (108%)

Notes: * Significant at a level greater than the 0.001%
 ** Significant at a level between 0.01 and 0.001%
 *** Significant at a level between 0.05 and 0.01%
 **** Significant at a level between 0.10 and 0.05%

^a Lower Bound Adjusted Two-Day CARs are as described in Table 2.

^b Upper Bound Adjusted Two-Day CARs are as described in Table 2.

^c The "least", "middle", and "greatest" divisions consist of those one-third observations that have the least, middle, and greatest flotation costs adjustment values.

^d Statistical results for each row are as described in Table 2.

two time periods also serve to roughly divide both the primary and combination samples in half.

Albeit not reported in table format, the two time period divisions render similar event period two-day *CAR* results. To demonstrate, the earlier division ($n=75$) has an average flotation costs adjustment value of 1.69% and a traditional average two-day *CAR* of -3.16% compared to 1.35% and -2.42%, respectively, for the later division ($n=75$). For either division, its average flotation costs can account for over half of its two-day *CAR*. In addition, the difference between the "earlier" and "later" traditional *CARs* is not statistically significant ($t = -0.84$). The difference is also not significant if flotation costs adjusted *CARs* are tested ($t = -0.45$ for the lower bound adjusted *CAR*, and $t = -0.06$ for the upper bound adjusted *CAR*).

V. CONCLUSIONS

This study examines 150 *OTC* common stock offerings where the expressed purpose is to retire debt that is not convertible into equity. It finds that the total sample's average fall in stock value from issuance expenses is over half of its mean two-day *CAR* of -2.79% when the lower bound measure of issuance expenses is employed. This lower bound measure is similar to the measure employed in previous examinations. The ability of issuance expenses to explain more of the fall in stock value for *OTC* offerings (as opposed to *NYSE/AMEX* offerings with debt and non-debt reduction purposes) reflects the fact that *OTC* offerings that reduce debt experience somewhat less negative traditional two-day *CARs* and greater issuance expenses per outstanding share. The latter is attributed to somewhat greater issuance expenses per new share and greater percentage changes in outstanding common stock.

Issuance expenses per outstanding share become greater and the two-day *CAR* becomes less negative when the 50 combination offerings are deleted and the 100 primary offerings are analyzed. Issuance expenses can account for three-fourths of the -2.23% two-day *CAR* for the 100 primary offerings when employing a lower bound measure, but less than one-third of the -3.92% two-day *CAR* for the 50 combination offerings.

The capacity of issuance expenses to explain the fall in stock value increases substantially when an upper bound measure of issuance expenses is used. This suggests that the exclusion of this investigation's third and fourth issuance expenses categories (as is done in previous studies) can lead to different inferences concerning the role of issuance expenses.

Finally, while it is discovered that the capacity of flotation costs to explain the fall in stock values increases considerably when samples with

greater issuance expenses are analyzed, nothing significant is found when samples are analyzed based upon time period considerations.

APPENDIX

Proof of (11).

The traditional two-day cumulative abnormal return (*CAR*) for a sample observation is

$$\text{Two-Day } CAR = AR_0 + AR_1 \quad (1)$$

where AR_0 and AR_1 are the abnormal returns on the announcement day and the day after the announcement day, with AR_1 included in the two-day *CAR* because the announcement of the offering can occur after trading on the stock has stopped on the announcement day. The abnormal return on the announcement day is

$$AR_0 = RET_0 - ER_0 \quad (2)$$

where RET_0 and ER_0 are the actual and expected returns on the announcement day with ER_0 a function of the chosen event period model. Inserting equation (2) into equation (1) gives

$$\text{Two-Day } CAR = RET_0 - ER_0 + AR_1. \quad (3)$$

The actual return on the announcement day is

$$RET_0 = (P_0/P_b)^{-1} \quad (4)$$

where P_0 and P_b are the closing prices on the announcement day and the day before the announcement day. Inserting equation (4) into equation (3) yields

$$\text{Two-Day } CAR = (P_0/P_b)^{-1} - ER_0 + AR_1 \quad (5)$$

Adjusting P_0 (5) for issuance expenses gives the flotation costs adjusted two-day *CAR* which is

$$\text{Two-Day } CAR_{adj} = (P_{0adj}/P_b)^{-1} - ER_0 + AR_1 \quad (6)$$

where P_{0adj} is the announcement day closing price adjusted for issuance expenses by subtracting the negative cash flows of issuance expenses per outstanding share from the closing price on day zero. This adjusted price is

$$P0_{adj} = P0 - (IE/N) \quad (7)$$

where IE is the expected issuance expenses from the planned offering (with $IE < 0$ to represent the fact that it is a residual cash outflow) and N is the number of outstanding shares at the time of the announcement. Given that expected issuance expenses are

$$IE = IES * dN \quad (8)$$

where IES is the expected issuance expenses per new share and dN is the planned change in outstanding common shares, and inserting equation (8) into equation (7) produces

$$P0_{adj} = P0 - IES * (dN/N) \quad (9)$$

where dN/N is the planned percentage change in outstanding common shares. Inserting equation (9) into equation (6) gives

$$\text{Two-Day } CAR_{adj} = -(IES/Pb) * (dN/N) + (P0/Pb) - 1 - ER0 + AR1. \quad (10)$$

Noting that the last four terms in equation (10) are equation (5), then the first term in equation (10) is the adjusted two-day CAR minus the traditional two-day CAR . This positive difference is the flotation costs adjustment value or the value that must be added to the traditional two-day CAR to obtain the adjusted two-day CAR . Thus, the flotation costs adjustment is

$$ADJ = -(IES/Pb) * (dN/N) \quad (11)$$

where letting the actual issuance expenses per new share be an ex post proxy for IES gives an ex post flotation costs adjustment value. QED.

NOTES

1. Issuance expenses findings for "non-cash" equity offerings, where the newly issued equity is exchanged or swapped for debt, reach similar conclusions. For exchange offers and recapitalizations, Masulis [8] notes that issuance expenses average about two percent of the market value of common stock. The cash outflows from this average can account for about one-fifth of the sample fall in value of -9.91% reported by Masulis [9] for his common stock-for-debt sample ($n = 9$). For private swaps, Hand [5] finds that investment bankers receive commissions that average 0.038 of the proceeds of the equity side of the swap ($n = 245$), while the proceeds average 0.022 of the market value

of outstanding common stock. These figures indicate that issuance expenses average an estimated 0.084% ($0.038 \times 0.022 = 0.00084$) of the market value of outstanding common stock. The negative cash flows from this average can explain about one-tenth of the two-day CAR of -0.83% found by Peavy and Scott [12] for their common stock-for-debt private swaps ($n = 72$). The latter two-day CAR is typical of private swap studies where reported two-day CARs range from 0.40% ($n = 75$) as found by Copeland and Lee [4] to 1.11% ($n = 113$) as evidenced by Lys and Sivaramakrishnan [7]. Finally, Rogers and Owers [13] also report issuance expenses data for private swaps ($n = 108$) that is similar to Hand [5].

2. An ex ante measure relying upon firm-specific information that is correlated with the magnitude of the expected issuance expenses could be used as an alternative to an ex post measure. Firm-specific information typically known at the time of the announcement include issue size, firm size, and the historical relationship between the firm and the underwriter of the new issue. Although not reported in this paper, employment of an ex ante measure produces results similar to the ex post results.
3. Publication in *The Wall Street Journal* of the planned offering typically lags by one day the announcement date given by other sources (such as the *Investment Dealers' Digest*) that gather or publish information after the fact. Thus, for those 29 observations for which *The Wall Street Journal* is the only source, the day before the date of publication is taken as the announcement date.
4. Of the 150 cash offerings that survive the four screens, there are 19 observations that experience other firm-specific announcements for event days -3 to +3. Because inclusion of these 19 observations do not alter this investigation's results, these observations are not deleted.
5. For the 50 combination offerings, the actual issuance expenses are only considered for the primary portion of the offering. Issuance expenses associated with registered secondary offerings should be reflected in the price received by those current owners who are selling shares. For the combination offering sample, the mean (median) primary portion of the combined primary and secondary total is 68.74% (75.00%).
6. The two-day tests were repeated for a longer eleven-day period (event days -5 through +5). The eleven-day CARs are similar to the two-day CARs suggesting that leakage, or any lag in reporting, do not explain the two-day findings. For the primary sample, the eleven-day CAR is -2.35% compared to the two-day CAR of -2.23%. For the combination sample, the eleven-day CAR is -4.22% compared to the two-day CAR of -3.92%.
7. Equation (11) reveals that the flotation costs adjustment is a function of the issuance expenses per new share as a percentage of the stock's market price and the percentage change in outstanding common stock. The standard deviation for the latter is about 10 times greater than the former (16.48% versus 1.64%). This suggests that the key variable is the percentage change in outstanding common stock. Using this variable instead of the flotation costs adjustment variable to classify firms produce results similar to those reported in Table 3.

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