The Impact of Tax Loss Carryforwards on Debt Issuance*

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Abstract

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ABSTRACT

We examine the market impact of issuances of public and private debt by firms with sizeable tax loss carryforwards. Such public issuances are met with a significantly negative stock price reaction, on average, while private debt placements are associated with a small positive and significant stock price reaction. The existence of tax loss carryforwards suggests a decreased ability to fully exploit the tax deductibility of interest payments on the new debt issued. Further support for the hypothesis on reduced ability to use tax loss carryforwards is obtained from the negative relationship between the stock price reaction and the amount of loss carryforwards scaled by operating income before depreciation as of the preceding fiscal year-end. The larger the loss carryforward, the more negative the stock price reaction to the issuance. This evidence supports the relevance of taxes for debt usage, after controlling for measures related to asymmetric information. Additionally, the stock price reaction is less adverse if the firm has a larger profit margin. This suggests that the issuer may be able to use the new debt to increase sales, which in turn, leads to higher income which can be sheltered from taxes using the loss carry forward.

1. Introduction

The area of corporate capital sources and securities issuance has been extensively researched in finance. Smith (1986) comprehensively summarizes early evidence in this regard, while Ritter (2005) discusses more recent developments. The evidence, in general, indicates that public equity issuance is associated with a strongly negative stock price reaction, while public straight debt financing is associated with an insignificant stock price reaction. Several reasons have been provided for the latter result on the insignificant stock price reaction to public issuances of straight debt financing. These explanations are based not only on theoretical concepts, but also on empirical measurement issues.

The most appealing empirically-based explanation by Chaplinsky and Hansen (1993) is that public straight debt issuances are predictable. Consequently, no reaction will be **empirically observable** in an event study since stock prices may have adjusted to the information on the expected leverage change prior to the actual debt issuance. There are also theoretical explanations for this lack of reaction. One such explanation, based on the tradeoff

theory of capital structure (e.g., see Myers, 1984), is that debt financing provides a tax advantage from deductibility of interest payments but also causes an increase in default risk. Since these two factors may (on average) offset one another, there will be no added value from debt financing, and consequently, no stock price reaction is observed. Another possibility could be the irrelevance of debt financing for value at the individual firm level (Miller, 1977).

However, theoretical models under asymmetric information (e.g., Bolton and Freixas, 2000; Myers and Majluf, 1984; Myers, 1977) show that debt financing can be used to mitigate adverse selection and agency-related costs.[1] If these theories hold, debt financing should result in a positive stock price reaction. While empirical studies of **public** straight debt financing (which report an insignificant stock price reaction) have not supported this line of thought, finance research has reported a positive stock price reaction to the issuance of privately placed convertible debt, and bank loans.[2] However, the evidence for straight debt private placements is limited and mixed. James (1987) reports on a sample of private placements as part of an overall examination into the stock price effects associated with bank loan financing. For 37 private debt placements over the period 1974 to 1983, he reports a negative but *insignificant* stock price reaction to the private debt placement announcement. However, Szewczyk and Varma (1991) find a significant, positive stock price reaction to private debt placements over the 1963-1986 period by *utility* companies. Thus, it would appear that controlling for the public versus private nature of the debt issuance is a critical factor in empirical studies.

As mentioned earlier, very few studies have shown that publicly issued straight debt is associated with a significant stock price reaction.[3] We believe, in general, that extant empirical studies in the literature on public straight

[1] In what follows, we categorize these theories as asymmetric information theories.

[2] See Fields and Mais (1991) for privately placed convertible bonds, and James (1987), Lummer and McConnell (1989), and Billett, Flannery and Garfinkel (1995) for bank loans.

[3] An interesting departure is Datta, Iskander-Datta, and Patel (2000) where they examine **initial** offerings of public debt (debt IPOs) and show that this is associated with a negative stock price reaction. The explanation offered is that through the debt IPO, the borrower is substituting public debt for private/bank debt which leads to reduced monitoring of the borrower. This reduced monitoring leads to increased agency costs, which is detrimental to stockholders, and thus, results in a negative stock price reaction.

debt issuance have not used a setting where they can effectively differentiate between the different theories and explanations. Consequently, we focus on a setting designed to control for several underlying factors to determine whether debt issues are associated with a stock price reaction, if any. Our main interest rests on whether, after controlling for asymmetric information effects, the tax deductibility of interest payments is valued by the market when debt is issued. Specifically, we are assuming that asymmetric information and tradeoff theories of capital structure are applicable simultaneously (as opposed to being mutually exclusive). What makes one dominate over the other is dependent on the information environment associated with the firm. In our empirical examination, we use debt issuances by firms with tax loss carryforwards (TLCFs).[4] We next discuss why this setting is uniquely suited to address the research issues raised earlier.

First, if one subscribes to the tradeoff theory of capital structure, when a firm has sizeable TLCFs, it is **less likely**, *ceteris paribus*, to use debt financing for its capital needs (see Mackie-Mason, 1990). This is because the TLCFs will reduce the probability of exploiting the tax shield on future interest payments associated with the incremental debt. Thus, by studying debt issuances conducted by firms with sizeable TLCFs, we are able to avoid the problem proposed by Chaplinsky and Hansen (1993) where debt issues are predictable.

Second, we are able to study whether such debt issuances are positive indicators of firm value as suggested by asymmetric information theories. This is due to the fact that a firm that issues debt even when such financing is not favored by tax considerations may be sending out a strong signal because it may be expecting future taxable income to be larger than the combined amount of the loss-carryforward and the interest expense on the new debt. In a signaling equilibrium, firms that do not expect to earn as much in taxable income will not employ debt financing because of the opportunity cost of the forgone tax shield on interest payments, and more importantly, the increased bankruptcy risk that the incremental debt brings. Signaling becomes even

[4]Mackie-Mason (1990) uses tax loss carryforwards in a seminal paper that shows that non-debt tax considerations influence the managerial choice of whether to issue debt or equity. DeAngelo and Masulis (1980) is one of the first papers to theoretically consider non-debt tax shields in a capital structure context.

more plausible when the debt is in the form of a private placement.[5] The confidentiality of information and the possibility of stronger monitoring by the lender alleviates the informational concerns that the market may have about the borrower. Thus, obtaining the private debt in the face of the TLCFs could be perceived as a stronger signal of firm value. Besides just a signaling story, agency theory would also predict that debt financing may be optimal (see Denis and Mihov, 2003).

Third, we are able to examine whether the magnitude of loss carryforwards (a tax-shield substitute) affects tax deductibility of interest payments, and in turn, the value of the firm. While Mackie-Mason (1990) has demonstrated strongly that the security issuance choice is influenced by tax considerations, Graham (2005) comments on the importance of, and the need for increased research that can provide a clear view on the role of taxes in market-based valuation effects after effectively controlling for asymmetric information effects. In this context, we study whether a larger TLCF relative to pre-issuance operating earnings leads to a differential stock price reaction to the issuance after instituting such controls. This provides a market-based view of the value of tax deductibility of interest payments.

Our results indicate that issuances of **public** debt by firms with large TLCFs are associated with a significantly negative stock price reaction, on average, while the reverse is true for privately placed debt. Upon further examination, the stock price reaction is more negative when the loss carryforward amount is large relative to pre-issuance operating income before depreciation. Thus, the evidence appears supportive of the tradeoff theory view of capital structure, after controlling for asymmetric information effects. Specifically, debt financing is optimal only when interest expense is likely to be tax deductible. The rest of this paper proceeds as follows. In section 2, we discuss the literature and our hypotheses regarding the impact of loss carryforwards. Sample details and the data are presented in section 3. We discuss the empirical methods and the associated results in Section 4 and conclude in section 5 with a summary of our results.

[5]For a thorough discussion of the implications of private placements, see Kwan and Carleton (1998).

2. Prior Literature and Hypotheses

In the previous section, we discussed briefly some of the hypotheses and empirical evidence on the use of debt financing. In this section, we focus on loss carryforwards and the relationship to debt financing, depending on the information environment.[6] The seminal paper in this area that demonstrates the influence of taxes on security issuance choice is Mackie-Mason (1990). Specifically, Mackie-Mason finds that the choice between public debt and equity issuance is associated with tax effects. One of the main factors examined by Mackie-Mason is loss carryforwards. Using discrete choice analysis, he finds that firms with high TLCFs are less likely to use debt as opposed to equity. Given this predisposition to not use debt when the firm has loss carryforwards, we ask the question, "What happens when a firm with large loss carryforwards goes against the grain, and actually issues debt?" This question is important from a research perspective because it presents an ideal setting to test several capital structure concepts.

To justify our study's premise, it is important to examine the "predictability criticism" raised by Chaplinsky and Hansen (1993). Chaplinsky and Hansen report that debt issuances are predictable and hence, they are basically "no news events". To control for this, they use a logit model to measure the likelihood of issuing public debt, and then, examine what the stock price reaction to the issuance would be after incorporating this likelihood. They report that after controlling for the likelihood of issuance, the stock price reaction associated with debt issuance is negative for unanticipated offers. However, to estimate their logit model they employ only the firms that issued debt. They state (p. 722),

> "We use the predicted value generated from the logit models in Table 5 to measure investors assessment of the likelihood of debt issue. Because the logit analysis is conditioned on a debt offer, the predicted value is not an estimate of investors ex ante probability of issue (i.e., the probability whether to issue). Formally modeling the ex ante probability of issue would require analyzing debt issuers in relation to all nondebt firms, a task beyond the scope of this article."

Thus, a potential criticism of the Chaplinsky and Hansen (1993) conclusion

[6] Ritter (2005) summarizes the literature on security issuance while Graham (2005) discusses the importance of tax issues in corporate finance. Obviously, these two topics, securities issuance and tax implications, are related.

is that their result could be driven by their estimated logit model. In our study, we do not need to estimate a model to predict debt issuance. We use a **completely transparent** metric, TLCFs, as Mackie-Mason suggests, to capture the fact that such firms are not expected to issue debt. Thus, from an empirical standpoint, since such issuances are not "expected", they are more likely to elicit a stock price reaction than the debt issuances studied in past literature. Our study could also provide further evidence on the Chaplinsky-Hansen conclusion of a negative stock price reaction for debt issuances after controlling for predictability of the issuance.

Our study's setting is also suited to testing adverse-selection and agency based theories of debt issuance (i.e., asymmetric information based theories). If a firm that has sizeable TLCFs issues debt, signaling theory would predict that the firm expects to earn taxable income that exceeds the TLCFs and interest expense on the incremental debt. Firms that do not expect to earn as much will not issue debt because of increased bankruptcy costs associated with the incremental debt, and the inability to expense the interest expense for tax purposes. Under this equilibrium, debt issues by firms with sizeable TLCFs should be perceived as positive signals of firm value and should elicit a positive stock price reaction. If this signaling explanation is valid, a debt issuance when one is not expected, should manifest itself strongly and be measurable in an event study. The same is also true of agency based theory which argues that debt imposes a disciplining effect on managers.

A related issue here is the nature of the debt that is employed by the borrower. If there is significant information asymmetry, companies may borrow through a private placement as opposed to a public bond issue. Privately placed debt is viewed in the literature as a more sophisticated mechanism to deal with information asymmetry related moral hazard and adverse selection (see Kwan and Carleton, 1998; Dennis and Mihov, 2003.) This is because private placements are negotiated between a financially sophisticated lender and the borrowing firm, wherein among other factors, the lender:

- conducts a thorough due diligence investigation of the borrower prior to lending money,
- is a monolithic entity enabling it to (a) better monitor the normal functioning of the borrower, and (b) to coordinate punitive actions against the borrower in case of malfeasance,

- brings expertise in the industry and provides it to the borrowing firm in order to safeguard its investment.

Given the above, the ability to place private debt will be construed by the market as a positive signal of the future prospects of the borrower despite the presence of TLCFs and also a better funding mechanism to curtail moral hazard related costs. Consequently, the type of debt issuance - public issuance or private placement, may have serious consequences for the nature of the stock price reaction to the debt issuance announcement.

The asymmetric information theory explanation above, while theoretically appealing, may not be entirely consistent with the evidence in Auerbach and Poterba (1986). Auerbach and Poterba show that firms with TLCFs have a high probability of again facing a zero marginal tax rate in the future. Given this finding, it would seem that firms with TLCFs do not have them extinguished in short order. Specifically, such firms may not be earning enough taxable income in future years to eliminate the TLCFs. Thus, a debt issuance for firms with TLCFs may not be a signal of positive future prospects for the issuing firm. Nonetheless, this is an empirical question that we explore in this paper.

Finally, if the results of Auerbach and Poterba (1986) are valid for firms with sizeable TLCFs and which also issued debt, we may have a situation where signaling is not the *raison d'etre* of such issuances. Given the absence of signaling, the event then devolves to a pure tax effect and bankruptcy costs question. Larger firms, which are characterized by lower asymmetric information (see Atiase, 1985; Collins and Kothari, 1989; Barclay and Smith, 1995a, 1995b) would be perceived as the issuers where signaling is not the prime motivation underlying the debt issuance. If signaling is absent due to the lack of a high future taxable income, the new debt issuance is not optimal. This is because of increased bankruptcy costs and the inability to exploit the tax deductibility of interest payments on the new debt. Thus, the stock price reaction to the issuance will shed light on the true effect of the lack of tax deductibility of interest payments on equity value conditional on the asymmetry of information. We next discuss how the concepts above lead to our empirical predictions tested in our study.

Ceteris paribus, the ability to deduct interest payments for tax purposes

is lower the higher is the TLCF. This is because the firm has to have much higher taxable income to exceed the TLCFs and the new interest payments. Consequently, the higher the TLCF relative to the firm's earnings prospects, the lower is the probability that the firm will be able to exploit the tax deductibility of interest payments. This leads to our first prediction which states that the stock price reaction to a debt issuance will be more negative when the TLCF is high relative to the pre-tax operating earnings prospects of the issuer.

Our second empirical prediction builds on the first one above. If the firm is using the debt to fund sales growth, then that sales growth should provide higher pretax income that can be sheltered using the TLCFs going forward. Thus, measures of profitability relative to the sales revenues should suggest how fast and effectively the TLCFs and interest tax deductions can be utilized to enhance after tax cash flow. Thus, our second empirical prediction states that the stock price reaction should be positively related to the profitability ratio of the borrowing firm.

Our third empirical prediction pertains to the strength of the effect in the absence of asymmetric information. When the issuing firm is characterized by lower asymmetric information, signaling using the debt issuance becomes less of a possibility. Instead, the tradeoff theory would predict that tax related and increased bankruptcy costs become more dominant for such firms. Additionally, whether the issuance is a public issuance or private placement can affect the stock price reaction. Given that private debt placements are used by those borrowers who are most affected by asymmetric information and can benefit the most from the signal, it is important to control for the nature of the issuance. Thus, our third prediction here is that larger firms which have lower asymmetric information who issue public debt will find themselves suffering a more negative stock price reaction to the debt issuance. Conversely, smaller issuers who use private placements should experience a more positive stock price reaction.

3. Data and Sample Details

The sample was constructed as follows. From the COMPUSTAT primary, secondary and tertiary files, all non-financial firms (i.e., with SIC codes less than 6000 and greater than 6999) and with net operating loss carryforward (COMPUSTAT data item 52) greater than or equal to 5% of sales revenue (COMPUSTAT data item 12) were selected.[7] From this universe of firms, we next matched it to straight debt issuances and private placements from the SDC Platinum Global Offerings database. This matching was done for three samples of debt issuances over the 1983 - 2003 time frame. The first consisted of regularly registered debt, the second sample consisted of debt issued through takedowns of shelf registrations, and the third sample was composed of private placements of straight debt. The matching was performed such that the debt was issued in the year following the fiscal year-end in which the sizeable TLCF was first reported.

The separation into the two public debt subsamples by method of issuance, regular registration versus shelf takedowns, is predicated on the claim that shelf takedowns (since they are completed rapidly via an amendment to the original registration statement) may be subject to less scrutiny prior to issuance.[8] Also, shelf registrations are typically undertaken by larger, more financially secure firms. These structural differences may cause differences in issuance effects and thus, we make this distinction in our tests for the stock price reaction to the issuance.

We also subjected each public issuance subsample and the private straight debt placement sample to additional screens as follows:

- Proceeds of debt issued scaled by pre-issuance total assets to equal or exceed 5%. This restriction was imposed to ensure that we only include sizeable debt issuances and not include trivial debt issuances which may not engender any stock price reaction.

- No simultaneous issues. This restriction was imposed so that the stock

[7] The 5% cutoff is admittedly arbitrarily chosen. However, our aim in using this cutoff was to ensure that our sample would have a sizeable TLCF. Further such a sizeable TLCF will be more likely to influence managerial choice in how capital is raised.

[8] For example, see Allen, Lamy and Thompson (1990), Blackwell, Marr, and Spivey (1990), and Sherman (1999).

price reaction would be solely driven by the straight debt issuance and not be contaminated by the reaction to any other security that is simultaneously issued.

- No unit issues. This restriction was imposed because of the possibility of follow-on issues that unit issues entail.

- Sufficient data exists on the CRSP database to enable an event study to be performed.

Following those screens, there were 76 regularly registered debt issuances, 71 shelf takedowns, and 145 private debt placements. For the regularly registered sample, the event date was selected to be the filing date. The offering date as provided by SDC was selected to be the event date for the shelf takedown issuances, and the private debt placement sample. Given this choice of event dates, a search using Dow Jones News Retrieval/Factiva was performed for two purposes -

- to see whether the debt issuance was mentioned in any earlier news release. If such an earlier news release was identified, the date of that news release was employed as the event date.

- to see whether the event dates were associated with other significant corporate events which could contaminate the stock price reaction on the event dates. A window of [-2,+2] around the event date, where day 0 is the event date, was used to identify contaminated announcements.

After this process, the sample size reduces to 41 for the regularly registered sample, 52 for the shelf takedown sample, and 111 for the private debt placement sample.[9] We refer to these samples without any contemporaneous announcements as "clean samples". Table 1 presents the chronological distribution of events in the three samples. From Table 1, it would seem that firms with sizeable TLCFs are issuing their public debt using shelf takedowns in more recent times as opposed to regular registrations. This could be the case since shelf registrations are completed more expeditiously. Similar to regular registrations, private placements taper off in recent years.

[9]We note here that there were only six firms which made both public as well as private placements. Thus, there is not a large overlap between the private placement and public issuance samples.

We next present the industrial composition of the sample in Table 2. From Table 2, large concentrations appear in the industry groups of Manufacturing, Natural Resources, and Radio, TV, and Telecom. There do not appear to be major differences in industry grouping across the issuance subsamples. In Table 3, 4, and 5 we present characteristics of the issuers and the debt issued for the regular registration, the shelf takedown, and the private placements samples, respectively. A comparison of the characteristics between the regular registration sample in Table 3 and the shelf takedown sample in Table 4 reveals some interesting facts.[10] First, shelf takedown issuers are significantly larger than regular registrants in terms of total assets, sales, and market value of equity. They are also significantly less levered as seen from the preissue debt ratio, with significantly higher profit margins, and interest coverage ratios. Both issuer types seem to have similar current ratios. Issuers employing regular registrations have significantly higher loss carryforwards (scaled by Operating Income before Depreciation) than the shelf takedown issuers, and they also have significantly lower Altman Z-scores.[11]

With respect to the characteristics of the issues themselves, in Panel B of Table 3 and 4, we see that the amount issued in shelf takedowns is significantly larger than the amount issued through regular registration. Additionally, the Yield to Maturity (YTM) at initial issuance for the shelf takedown sample is significantly lower than the regular registration sample (median difference of about 4%). While some of the difference in YTM can be due to the distribution of the two samples over time and the associated time variation in interest rates, it is also possibly due to the regular registration sample possessing higher leverage, lower Altman Z-scores, and lower interest coverage ratios. Both types of issuers employ similar maturities for the debt issued (median of 10 years). Lastly, the issuances examined appear to be a smaller percentage of total preissue assets outstanding for the shelf takedown sample versus the regular registration sample. This result follows since the former sample consists of firms that have larger total assets, and larger sales

[10] In Table 3, we also present results of nonparametric Wilcoxon Rank Sum tests comparing various characteristics between the regular registration subsample and the shelf registration subsample. These tests indicate that there are *significant* differences on numerous dimensions, thus justifying the separate examination of each public issuance subsample.

[11] This is not surprising since shelf registrants have to satisfy stringent SEC requirements on size, total assets, etc in order to qualify to access the shelf registered debt market. See Blackwell, Marr, and Spivey (1990), and Sherman (1999).

revenues. Given the differences in the samples, we will present event study results after making the distinction between the two public issuance mechanisms.

Next, using the evidence in Table 5, we discuss the nature of the informationally clean versions of the private placement sample versus the combined sample of public debt issuances consisting of both regular registrations and shelf takedowns. While the discussion in the previous paragraph emphasized the difference in regular registrations versus shelf takedowns, they are combined for the comparison with the private placement sample. This is because this latter comparison focuses on the difference in informational aspects of disclosures involved with the issuance. Specifically, private placements do not involve filing a registration statement or associated disclosure with the Securities and Exchanges Commission. Conversely, regular registrations and shelf takedowns both involve filings with the SEC. In Table 5, to facilitate the comparison of the private placement versus the public issuance sample, we present results of nonparametric Wilcoxon Rank Sum tests.

First, we observe that private debt placement firms are significantly smaller in terms of total assets, sales revenue, and market value of equity. For example, the median total assets for the former is $158 million, while the medians for regular registrants and shelf issuers are $358.3 and $2,453 million, respectively. Their smaller size implies that these private debt placement issuers are more susceptible to the effects of asymmetric information. The private placement sample is also significantly less levered as shown by the preissue debt ratio, and also less profitable as measured by the profit margin. With respect to liquidity (as measured by the current ratio), the two issuance samples seem comparable. However, the Alman Z-score is higher for the private placement issuers. Finally, we note that there is no difference in the variable measuring unused loss carryforwards scaled by pretax operating income between the private placement sample and the public issuance sample. With respect to the characteristics of the actual debt issued, private placement debt issues are smaller in terms of actual dollar size (median of $35 million for private placements versus $119.6 and $245.6 million respectively for regular registrations and shelf takedowns, respectively), but not different as a percentage of pre-issuance total assets. The maturity of the debt issued through private placements (median of about 8 years) is somewhat lower

than the maturity of public issuances (median of about 10 years).[12]

4. Empirical tests and associated results

4.1. Stock price reactions

Our first empirical test consists of employing one of several standard event study methods using the event dates as defined earlier.[13] Our method is similar to that in Mikkelson and Partch (1988). In our event study, we estimate the market model for each issuer over a 255 day period ending on day -51 relative to the event date. We use the CRSP equally-weighted and value-weighted indexes as proxies for the market's rate of return. A further criterion for inclusion in the event study was that at least 50 non-missing daily returns should be available for the firm in the market model estimation period. We report the results of two tests to assess whether the returns in each event window are abnormal. The first statistic pertains to a two-tail test of the null hypothesis that the mean standardized abnormal return over the event window is zero. The second statistic comes from a non-parametric generalized sign test (see Cowan, 1992) of the hypothesis that the ratio of positive to negative abnormal returns in the event window is not different from this ratio computed over the market model estimation period. We perform the event study over the full and clean samples for both the regular registrations and shelf takedown issuances, as well as the sample of private debt placements. Our results are presented in Table 6 for regular registrations, in Table 7 for shelf takedowns, and in Table 8 for private placements. In Panel A of each table, results for the full sample are presented while results for the informationally clean sample are presented in Panel B of each table.

The results in Table 6 and 7 show clearly that the stock price reaction to public debt issuances by firms with sizeable TLCFs is, on average, negative and significant. This result is robust to the choice of market proxy used, and the issuance mechanism (regular registration versus shelf takedown). Both

[12]The SDC database does not provide data on the YTM of private placements and consequently, we are unable to compare that variable to the public issuance sample.

[13]Prabhala (1997) provides a justification for using standard event-study methods to detect short-window abnormal returns.

statistical tests also confirm that the negative abnormal return is statistically significant. The results in Table 6 and 7 suggest that the average abnormal return over day [+1] in event time, depending on the method, range from -.58% to -.75%. Our event study results support the "predictability criticism" in Chaplinsky and Hansen (1993) of studies of public debt issuances. To examine whether the stock price reaction to public issuances is dependent on the issuance mechanism (i.e., regular registrations versus shelf takedowns), we performed difference of location tests using a nonparametric Wilcoxon Rank Sum test and a parametric t-test. Our results, which are not reported in a table, show that there is no statistically significant difference between the abnormal return to shelf takedowns or to regular registrations, whether using the full samples or the clean samples. Admittedly, this type of univariate test does not control for other factors, and we return to this issue when we discuss cross-sectional regression results.

The above discussed results are in sharp contrast to the stock price reaction to private debt placements shown in Table 8. We find that the average stock price reaction to private debt placements by firms with sizeable TLCFs is positive and marginally significant at the 0.1 level when using the clean sample and the CRSP equally weighted index as the market proxy, while they are somewhat weaker when using the value weighted index. Nonetheless, difference of location tests (not shown in a table) using a nonparametric Wilcoxon Rank Sum test and a parametric t-test between this abnormal return for the private placement sample and the combined public issuance sample (regular registrations and shelf takedowns) is significant at the 0.01 level in a two tail test. This suggests that private placement debt issuers are not as significantly negatively affected as public debt issuers with tax loss carryforwards. These results imply that the nature of the debt - whether private or public is an important factor in setting market expectations.

4.2. Determinants of the stock price reaction

Here, we explore the determinants of the stock price reaction to the issuance event using cross-sectional regressions. In particular, we are interested in exploring the empirical predictions mentioned in Section 2. To facilitate this examination, we construct the following explanatory variables and explain their relationship to the predictions made earlier:

- *TLCFPOT*
  This is computed as the net operating loss carryforward (COMPUSTAT data item 52) scaled by the operating income before depreciation (COMPUSTAT data item 13) as of the fiscal year-end immediately preceding the event date. This variable is our proxy for the potential to exploit the tax deductibility on interest payments. Assuming a random walk for operating income (i.e., the denominator of *TLCFPOT*), the expected value for the operating income will be the most recent value. If the TLCF is much larger than the expected operating income, the issuing firm is less likely to be able to exploit the tax deductibility of interest payments on the new debt. Thus, our prediction here is that the abnormal return should be negatively related to *TLCFPOT*.

- *PROFITMARGIN*
  This is computed as net income (COMPUSTAT data item 172) scaled by sales revenue (COMPUSTAT data item 12). This variable serves to measure the profitability of the firm. As stated previously, if the incremental debt is being used to fund increasing sales revenues, a higher *PROFITMARGIN* would imply that the firm has more taxable income per dollar of sales that it could shelter from income taxes by employing the TLCFs. As such, a higher *PROFITMARGIN* would lead to faster usage of a particular amount of TLCF, thereby justifying the use of the incremental debt. Thus, our prediction here is that the abnormal return should be positively related to *PROFITMARGIN*.

- *LNMVE*
  This variable is the natural logarithm of the market value of equity measured 10 trading days prior to the event date. Data to compute this variable comes from the CRSP database. Given the discussion in section 2, large firms have less asymmetric information, and signaling through the debt issuance is less of a motivation. Consequently, such firms are going to be penalized more for issuing a sub-optimal security given their current tax situation (i.e., issuing debt when the tax deductibility of interest cannot be exploited). Thus, our prediction here is that the abnormal return should be negatively related to *LNMVE*.

- *PUBLIC*
  This variable is an indicator variable that takes on the value of one if the issuance is a public debt issuance and zero if it is a private placement.

As mentioned in section 2, a private placement may be more optimal in resolving asymetric information related problems as opposed to a public issuance. Our prediction here is that firms that do not suffer from asymmetric information related problems (as is the case for the *LNMVE* variable) will be penalized if they issue debt when they have sizeable TLCFs on their books. Thus, the abnormal return should be negatively related to *PUBLIC*.

In our empirical tests, we use the abnormal return measured over the two day window, (0,+1), using the CRSP equally weighted index as the market proxy as our dependent variable.[14] We use Ordinary Least Squares regressions with the explanatory variables discussed above.[15] For the regression analysis, we combine the informationally clean samples of regular registrations (41 observations), shelf takedowns (52 observations), and private placements (111 observations) to obtain a final sample of 204 observations.

The regression results are presented in Table 9. Our results are from estimations where we checked for influential observations based on Cook's Distance (Belsley, Kuh and Welch, 1980). Additionally we use Variance Inflation Factors to test for multicollinearity. None of the estimations were affected by multicollinearity. For the regression coefficients, p-values are from t-statistics adjusted for heteroscedasticity using the White (1980) procedure.

In rows 1 through 3 of Table 9, we see strong evidence that the abnormal return is significantly negatively related to *TLCFPOT*. The higher the TLCFs relative to the operating income before depreciation, the more negative is the stock price reaction. In other words, the equity market recognizes when the security issuance choice is suboptimal from a tax perspective, and penalizes the firm for issuing debt. This result dovetails extremely well with the conclusions in Mackie-Mason (1990) where security issuance choice favors

[14] We also employed the abnormal return on day +1 as the dependent variable and the results are similar. Our decision to employ a two-day return is consistent with past work in this area.

[15] We also used several other independent variables but were unable to obtain a significant relationship. These variables included an indicator variable to capture the shelf takedown versus regular registration difference, indicator variables to capture whether bond is callable, is collateralized, and also continuous variables such as size of the debt issuance (scaled by sales, scaled by total assets), Altman Z-score, and growth rate measures.

equity when TLCF is high. Additionally, our evidence indicates why managers of firms with sizeable TLCFs are more likely to choose equity over debt - because there are penalties (in terms of equity value reductions) associated with suboptimal issuance decisions.

In rows 1 through 3 of Table 9, the abnormal return to the issuance is significantly positively related to *PROFITMARGIN*. The higher the earnings after taxes relative to sales revenues, the less negative is the stock price reaction to the debt issuance. Specifically, if the debt is being issued to accomodate sales growth, and if a large portion of each dollar of that revenue flows in as taxable income, then the TLCF becomes even more valuable since the firm is able to exploit that TLCF faster and more effectively. Consequently, the firm is better off. On the other hand if the firm converts only a small portion of sales revenues into taxable income, then the TLCF will linger on for a longer time and the present value of the tax savings it provides is now much lower.

In row 1 of Table 9, we see that the abnormal return is marginally negatively related (at the 0.1 level) to *LNMVE*. What this means is that after controlling for the magnitude of the TLCFs, the potential to utilize the tax deductibility of the interest payments, and the profitability of the firm, the coefficient of *LNMVE* is negative. Thus, high market value of equity firms with TLCFs are penalized more for issuing debt, *ceteris paribus*. This is because high market value equity (i.e., large) firms have lower asymmetric information. Consequently, any issuance of debt in the face of sizeable TLCFs is viewed by the equity markets not as a signal, but more as a suboptimal security issuance decision because of the inability to deduct interest expenses for tax purposes. This view is buttressed when we employ *PUBLIC* as the measure of absence of asymmetric information in row 2. Recall that this variable is equal to one for a public issuance and zero for a private placement. In section 2, we argued that the monitoring, bonding, and signaling implications are much stronger for a private placement as opposed to a public issuance. Further in Table 5, it was evident that private placements are undertaken by significantly smaller firms and raise much smaller amounts of debt. The negative coefficient for *PUBLIC* in row 2 of Table 9 supports our earlier prediction that a firm making a public issuance will suffer a more negative stock price reaction to the issuance than a private placement.

Lastly in row 3, we create a composite measure of the absence of asymmetric information, *NOASYINFO*, which is the product of *LNMVE* and *PUBLIC*. The logic behind this variable is as follows: a large firm (i.e., one with a large value of *LNMVE*) which makes a public issuance ($PUBLIC = 1$) is one where the mitigation of asymmetric information related problems is least likely to be the motivation underlying the issuance. The market will then realize that the issuance is suboptimal from a tax perspective and will penalize that firm more, *ceteris paribus*. Consistent with this prediction, the coefficient of *NOASYINFO* is significantly negative. Given the above discussion, the main point to be made here is that after controlling for asymmetric information related variables, the variable measuring the TLCF status, and the ability to extinguish it in short order are both significant in determining the stock price reaction to debt issuance irrespective of the issuance method, which is consistent with the tradeoff theory of capital structure.

5. Conclusions

The stock market reaction to public straight debt issuances is typically insignificant. Chaplinsky and Hansen (1993) show that the main reason for this is that such debt issuances are predictable. To negate this problem of predictable debt issues, we examine the stock market reaction to issuances of debt by firms with sizeable tax loss carryforwards. Our motivation for this is driven by the Mackie-Mason (1990) study, which demonstrates that firms with tax loss carryforwards are more likely to issue equity as opposed to debt. Mackie-Mason (1990), thus, is the first study to report that security issuance decisions are predicated on tax considerations. Given that firms with sizeable tax loss carryforwards are not expected to issue debt, we are able to surmount the problem noted by Chaplinsky and Hansen (1993) that debt issuances are predictable. We find that the equity market reacts negatively to such unexpected public debt issuances; evidence that is consistent with Chaplinsky and Hansen (1993). Additionally, we note that private placements by firms with sizeable tax loss carryforwards are not received as negatively as public issuances. This suggests that asymmetric information effects may be at work in such private placements.

Furthermore, after controlling for asymmetric information related vari-

ables, the stock market reaction is more negative when the amount of the loss carryforward is larger, and when the ability to fully exploit the tax loss carryforward is lower. This is strong evidence, consistent with the tradeoff theory of capital structure, that tax considerations are important in the security issuance decision. It behooves managers to consider tax impacts when deciding on the security to issue. Our results also support the view that tax deductibility of interest payments is important in determining the contribution of debt to the overall value of the firm.

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Table 1.
Chronological distribution of events

The sample was extracted from COMPUSTAT and the SDC Global New Issues database and spans the period from January 1983 to December 2003. The data below reflects the sample used in the actual event study.

Year	Number of Events					
	Regular Registrations		Shelf Registrations		Private Placements	
	Full Sample	Clean Sample	Full Sample	Clean Sample	Full Sample	Clean Sample
1983	1	1	0	0	0	0
1984	5	5	0	0	7	6
1985	4	3	0	0	7	7
1986	5	2	0	0	11	10
1987	5	2	0	0	12	10
1988	1	1	0	0	17	11
1989	2	1	1	1	18	12
1990	0	0	0	0	5	5
1991	2	2	1	1	7	6
1992	10	6	2	1	2	2
1993	13	7	2	2	10	10
1994	4	2	0	0	5	5
1995	3	2	5	5	8	6
1996	6	2	4	4	4	3
1997	7	5	8	6	2	0
1998	6	0	10	5	7	6
1999	2	0	10	9	10	5
2000	0	0	2	2	5	3
2001	0	0	8	4	6	2
2002	0	0	7	3	2	2
2003	0	0	11	9	0	0
All Years	76	41	71	52	145	111

Table 2.
Industry membership of issuing firms

The sample was extracted from COMPUSTAT and the SDC Global New Issues database and spans the period from January 1983 to December 2003. The data below reflects the sample used in the actual event study.

Industry (as per SDC designation)	Regular Registrations		Shelf Registrations		Private Placements	
	Full Sample	Clean Sample	Full Sample	Clean Sample	Full Sample	Clean Sample
Agriculture	0	0	1	1	1	0
Construction	2	2	1	1	4	4
Healthcare	4	1	0	0	0	0
Investment Bank	0	0	0	0	1	1
Leisure	1	1	0	0	3	2
Manufacturing	24	16	19	13	55	39
Natural Resources	12	5	28	23	13	10
Other Utility	2	2	0	0	1	1
Pers, Bus, Rep Svc	3	0	4	2	19	10
Radio/TV/Telecom	16	7	5	3	12	11
Restaurant/Hotel	2	2	2	2	4	3
Retail	1	1	3	1	6	5
Sanitation	1	1	3	1	1	1
Telephone Communications	5	0	2	2	1	1
Transportation	3	3	1	1	20	19
Wholesale	0	0	2	2	4	4
All	76	41	71	52	145	111

Table 3
Issuer and issue characteristics for regular registrations

The sample sizes in the rows vary due to availability of data. All balance sheet and income statement items are extracted as of the fiscal year-end immediately preceding the event date. OIBD is the operating income before depreciation, EAT is earnings after taxes, CA is current assets, CL is current liabilities, and YTM is the yield to maturity of the debt at initial issuance. To compare the regular registration sample against the shelf offerings listed in Table 4, we use nonparametric Wilcoxon Rank Sum tests.

Variable	Full Sample					Clean Sample				
	N	Mean	Median	σ	Relative to Shelf[a]	N	Mean	Median	σ	Relative to Shelf[a]
Panel A. Issuer Characteristics										
Total Assets, TA (in $million)	76	1015.8	422.5	1730.9	L ***	41	595.7	358.3	612.6	L ***
Sales Revenues (in $million)	76	592.6	227.8	889.6	L ***	41	433.3	292.1	433.4	L ***
Market Value of Equity (in $million)	71	878.8	154.4	2048.3	L ***	39	379.3	120.8	742.7	L ***
Preissue Debt Ratio (Total Debt/TA)	62	0.482	0.42	0.4	H *	34	0.397	0.381	0.315	NS
Profit Margin (EAT/Sales)	76	-0.074	-0.0002	0.29	L ***	41	-0.047	-0.003	0.346	L ***
Times Interest Earned (OIBD/Int expense)	76	2.74	1.56	4.76	L ***	41	2.69	1.55	5.83	L ***
Current Ratio (CA/CL)	73	1.9	1.3	1.86	NS	40	1.72	1.29	1.62	NS
Loss carryforward/OIBD	76	6.05	1.83	24.09	H ***	41	8.91	2.12	28.24	H ***
Altman Z-score	62	2.36	1.82	2.35	L **	32	2.6	1.79	3.09	NS
Panel B. Debt Issue Characteristics										
Amount Issued (in $million)	76	172.3	128.2	148	L ***	41	134.4	119.6	100.7	L ***
Offer YTM (%)	67	11.25	11.00	2.38	H ***	36	11.74	11.94	1.98	H ***
Maturity in years	76	9.93	10.00	4.15	NS	41	10.12	10	4.08	NS
Amount issued divided by total assets	76	0.41	0.27	0.42	H ***	41	0.37	0.28	0.33	H ***

[a] NS means no significant difference; H (L) means higher (lower) than the shelf registration sample value. *, **, *** indicate significance at the .1, .05, and .01 levels, respectively.

Table 4
Issuer and issue characteristics for shelf takedowns

The sample sizes in the rows vary due to availability of data. All balance sheet and income statement items are extracted as of the fiscal year-end immediately preceding the event date. OIBD is the operating income before depreciation, EAT is earnings after taxes, CA is current assets, CL is current liabilities, and YTM is the yield to maturity of the debt at initial issuance.

Variable	Full Sample				Clean Sample			
	N	Mean	Median	σ	N	Mean	Median	σ
Panel A. Issuer Characteristics								
Total Assets, TA (in $million)	71	3196.7	2650.4	2267.9	52	2892.5	2453.6	1954.6
Sales Revenues (in $million)	71	2222.9	1403.9	2390.4	52	1950.7	935.2	2180.6
Market Value of Equity (in $million)	71	2682.5	2282.7	2225	52	2362.3	1695.2	1999.9
Preissue Debt Ratio (Total Debt/TA)	52	0.35	0.331	0.16	39	0.378	0.376	0.163
Profit Margin (EAT/Sales)	71	0.0304	0.0369	0.218	52	0.035	0.041	0.246
Times Interest Earned (OIBD/Int expense)	71	5.87	4.79	4.33	52	5.4	4.5	4.2
Current Ratio (CA/CL)	70	1.48	1.19	0.98	51	1.55	1.19	1.08
Loss carryforward/OIBD	71	1.02	0.65	1.73	52	0.78	0.63	1.18
Altman Z-score	69	5.11	2.6	16.62	50	5.45	2.45	19.33
Panel B. Debt Issue Characteristics								
Amount Issued (in $million)	71	296.4	249.4	161.2	52	273.1	245.6	147.3
Offer YTM (%)	69	7.94	7.44	1.54	50	7.95	7.51	1.56
Maturity in years	71	10.45	10	16.07	52	13.62	10	10.21
Amount issued divided by total assets	71	0.12	0.09	0.07	52	0.12	0.09	0.07

Table 5
Issuer and issue characteristics for private placements

The sample sizes in the rows vary due to availability of data. All balance sheet and income statement items are extracted as of the fiscal year-end immediately preceding the event date. OIBD is the operating income before depreciation, EAT is earnings after taxes, CA is current assets, and CL is current liabilities. To compare the private placement sample against the public debt issuance sample (consisting of the regular and shelf offerings; see Tables 3 and 4), we use nonparametric Wilcoxon Rank Sum tests.

Variable	Full Sample					Clean Sample				
	N	Mean	Median	σ	Relative to Public Issuances[a]	N	Mean	Median	σ	Relative to Public Issuances[a]
Panel A. Issuer Characteristics										
Total Assets, TA (in $million)	145	482.70	194.30	913.10	L ***	111	381.00	158.10	589.90	L***
Sales Revenues (in $million)	145	434.56	148.80	748.10	L ***	111	360.45	130.40	654.00	L ***
Market Value of Equity (in $million)	145	281.95	88.79	466.77	L ***	111	262.19	95.25	413.83	L ***
Preissue Debt Ratio (Total Debt/TA)	119	0.404	0.307	0.853	L **	91	0.417	0.287	0.968	L **
Profit Margin (EAT/Sales)	145	-0.084	0.013	0.331	NS	111	-0.107	0.011	0.370	L **
Times Interest Earned (OIBD/Int expense)	144	2.400	2.460	7.680	L *	110	2.489	2.492	8.593	NS
Current Ratio (CA/CL)	134	1.720	1.620	1.000	H **	103	1.631	1.485	1.032	NS
Loss carryforward/OIBD	145	0.687	1.125	11.710	NS	111	0.212	1.113	12.529	NS
Altman Z-score	125	7.390	2.650	37.950	H *	95	4.330	2.750	6.485	H *
Panel B. Debt Issue Characteristics										
Amount Issued (in $million)	145	83.00	40	232.200	L ***	111	55.9	35	66.1	L ***
Maturity in years	130	8.60	7.00	5.23	L *	98	8.77	7.96	5.08	L *
Amount issued divided by total assets	145	0.26	0.18	0.25	NS	111	0.263	0.169	0.263	NS

[a] NS means no significant difference; H (L) means higher (lower) than the public issuance sample value. *, **, *** indicate significance at the .1, .05, and .01 levels, respectively in a two tail test.

Table 6
Results for regular registration debt issuances

The event date, day 0, is the earlier of two dates: filing date of the registration statement or the date on which the newswire services reported on the issuance. Two proxies for the market index are used for estimating the market model. The estimation period spans a 255 day period ending on day -51 relative to the event date.

Event window	Mean abnomal return	Number of positive to negative abnormal returns	Z-statistic for abnormal return	Z-statistic to test ratio of positive to negative abnormal returns
Panel A. Results for Full Sample (N=76)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	-2.33%	36:40	-0.423	0.437
(0)	0.09%	37:39	0.310	0.667
(+1)	-0.72%	24:52	-2.536**	-2.331**
(0,+1)	-0.64%	30:46	-1.040	-0.947
(+2,+50)	-0.98%	40:36	-0.059	1.359
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	-1.15%	34:42	-0.027	-0.050
(0)	0.05%	36:40	0.271	0.411
(+1)	-0.76%	26:50	-2.779***	-1.894*
(0,+1)	-0.71%	28:48	-1.180	-1.433
(+2,+50)	-2.74%	33:43	-0.698	-0.280
Panel B. Results for Clean Sample (N=41)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	-1.28%	17:24	-0.500	-0.433
(0)	-0.55%	16:25	-1.431	-0.748
(+1)	-0.70%	13:28	-2.042**	-1.690*
(0,+1)	-1.26%	13:28	-2.266**	-1.690*
(+2,+50)	-0.09%	21:20	-0.459	0.823
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	-0.34%	15:26	-0.070	-1.040
(0)	-0.55%	15:26	-1.325	-1.040
(+1)	-0.58%	17:24	-1.887*	-0.412
(0,+1)	-1.13%	11:30	-2.084**	-2.296**
(+2,+50)	-2.32%	17:24	-1.033	-0.412

*, **, *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively in a two tail test.

Table 7
Results for shelf takedown debt issuances

The event date, day 0, is the earlier of two dates: offer date of the shelf takedown as provided in the SDC Global New Issues database or the date on which the newswire services reported on the issuance. Two proxies for the market index are used for estimating the market model. The estimation period spans a 255 day period ending on day -51 relative to the event date.

Event window	Mean abnomal return	Number of positive to negative abnormal returns	Z-statistic for abnormal return	Z-statistic to test ratio of positive to negative abnormal returns
Panel A. Results for Full Sample (N=71)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	-3.19%	32:39	-1.371	-0.465
(0)	-0.05%	36:35	-0.281	0.485
(+1)	-0.60%	23:48	-2.454**	-2.604***
(0,+1)	-0.65%	30:41	-1.739*	-0.941
(+2,+50)	-2.40%	36:35	-0.742	0.485
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	-3.47%	30:41	-1.000	-1.064
(0)	-0.14%	34:37	-0.470	-0.114
(+1)	-0.71%	21:50	-2.650***	-3.201**
(0,+1)	-0.85%	25:46	-2.017**	-2.251**
(+2,+50)	-2.39%	34:37	-0.664	-0.114
Panel B. Results for Clean Sample (N=52)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	-3.96%	24:28	-1.436	-0.218
(0)	-0.06%	26:26	-0.367	0.337
(+1)	-0.63%	16:36	-1.988**	-2.440**
(0,+1)	-0.69%	22:30	-1.472	-0.774
(+2,+50)	-2.08%	27:25	-0.430	0.615
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	-4.27%	22:30	-0.899	-0.881
(0)	-0.14%	25:27	-0.426	-0.049
(+1)	-0.75%	15:37	-2.051**	-2.823***
(0,+1)	-0.88%	19:33	-1.565	-1.713*
(+2,+50)	-1.83%	28:24	-0.091	0.784

*, **, *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively in a two tail test.

Table 8
Results for private debt placements

The event date, day 0, is the offer date of the shelf takedown as provided in the SDC Global New Issues database or the date on which the newswire services reported on the issuance, whichever is earlier. Two proxies for the market index are used for estimating the market model. The estimation period spans a 255 day period ending on day -51 relative to the event date.

Event window	Mean abnomal return	Number of positive to negative abnormal returns	Z-statistic for abnormal return	Z-statistic to test ratio of positive to negative abnormal returns
Panel A. Results for Full Sample (N=145)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	0.81%	74:71	0.412	1.149
(0)	0.30%	63:82	-0.017	-0.683
(+1)	0.21%	80:65**	0.963	2.148**
(0,+1)	0.51%	75:70	0.629	1.315
(+2,+50)	2.76%	72:73	1.419	0.816
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	1.62%	77:68	0.671	1.526
(0)	0.31%	65:80	0.091	-0.471
(+1)	0.19%	78:67*	0.859	1.692*
(0,+1)	0.50%	73:72	0.635	0.86
(+2,+50)	3.56%	76:69	1.755*	1.359
Panel B. Results for Clean Sample (N=111)				
CRSP equally weighted index as proxy for market portfolio				
(-50,-1)	1.56%	61:50*	0.767	1.860*
(0)	-0.21%	49:62	-0.638	-0.425
(+1)	0.40%	60:51*	1.733*	1.669*
(0,+1)	0.19%	55:56	0.888	0.717
(+2,+50)	3.76%	59:52	1.730*	1.479
CRSP value weighted index as proxy for market portfolio				
(-50,-1)	1.52%	63:48*	0.689	2.088**
(0)	-0.22%	51:60	-0.613	-0.194
(+1)	0.39%	59:52	1.687*	1.327
(0,+1)	0.16%	56:55	0.9	0.757
(+2,+50)	4.49%	61:50*	1.991**	1.708*

*, **, *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively in a two tail test.

Table 9
Cross-sectional determinants of abnormal return

The dependent variable in the ordinary least squares regressions is the abnormal stock return over days (0,+1) where day 0 is the event date. The estimation is performed on the combined sample of 93 informationally clean public debt issuances (regular registrations and shelf takedowns), and 111 private debt placements. *TLCFPOT* is measured as the net operating loss carryforward scaled by the net operating income before depreciation as of the fiscal year-end preceding the issuance. *PROFITMARGIN* is computed as net income scaled by sales revenue as of the fiscal year-end preceding the issuance. *LNMVE* is the natural log of the market value of equity obtained as the shares outstanding multiplied by the share price 10 trading days before the event date. *PUBLIC* is an indicator variable that is equal to one for a public issuance and zero for private placements. *NOASYINFO* is a measure of the absence of asymmetric information related problems, and is computed as the product of *LNMVE* and *PUBLIC*. For the regression coefficients, p-values for significance in a two-tail test appear in parenthesis below the estimates.

Row	Regression Coefficient and p-value in Parenthesis						Adjusted R^2	F-value (p-value)
	Intercept	*TLCFPOT*	*PROFITMARGIN*	*LNMVE*	*PUBLIC*	*NOASYINFO*		
1	.03250 (.1105)	-.00049 (.0045)	.01957 (.0153)	-.00272 (.0947)	-	-	.0553	4.96 (.0024)
2	.00417 (.2675)	-.00042 (.0140)	.02046 (.0112)	-	-.01170 (.0350)	-	.0631	5.56 (.0011)
3	.00444 (.2340)	-.00043 (.0123)	.02078 (.0100)			-.000927 (.0250)	.0659	5.77 (.0008)