Do Financing Expectations Affect Firm Performance?

Abstract

The practice of firms' issuance of securities has been hypothesized in prior studies to be an adjustment toward optimal capital structure, a signal of true firm value in the presence of information asymmetry, or an attempt to take advantage of higher valuations through market timing. Employing both firms that issue securities and those that do nothing, exploiting transactions-level issuance data and empirical modeling techniques developed for asset-pricing applications, we develop empirical models of the probability of firms' security issuance, given the history of the firm and its characteristics. We classify firms based on these financing expectations, for instance labeling firms with high ex ante probability of issuing equity, equity-type firms, and those with high ex ante probability of issuing debt, debt-type firms. The paper then examines the impact of ex ante financing expectations on the announcement effect, long-run stock performance, and long-run operating performance, subsequent to any security issue. The unique contribution of our paper is that we show, irrespective of the security issued, the announcement effect, the long-run stock market performance, and the long-run operating performance differ across firms with different financing expectations; equity-type firms have much stronger negative average announcement returns when issuing equity than debt-type firms and stronger positive announcement effect returns when issuing debt, again relative to debt-type firms; issuing equity does precede long run under-performance for both equity and debt-type firms but this under-performance is far worse for equity-type firms; issuing debt by equity-type firms, in spite of the positive announcement effect, is followed by a long-run under-performance, though this under-performance is much less than that experienced by equity-type firms issuing equity, more comparable to that experienced debt-type firms issuing equity. Similar results also hold for the long-run operating performance following equity and debt issues. We also show that firms that engage in "pure market timing" have significantly stronger run-up in stock prices prior to equity issuance, however their long-run stock performance following equity issuance is significantly better (less negative) than non market-timers that issue equity.

JEL: G30, G32

Do Financing Expectations Affect Firm Performance?

1 Introduction

Why do some firms choose to issue private (public) debt, while others choose to issue convertible bonds or equity to finance ongoing or new projects? Corporate theory provides various explanations for these financing choices, motivated out of consideration for asymmetric information and signaling, notions of optimal capital structure, or market-timing arguments, to name a few.[1] Leveraging off these theoretical models and employing empirical modeling techniques developed for asset-pricing applications, we develop empirical models of the probability of firm security issuance, given the history of the firm and its characteristics. These models allow us to categorize firms by propensity to issue various securities. For instance, at any given time, firms are identified as equity-type if they have a high ex ante probability of issuing equity and identified as debt-type if they have a high ex ante probability of issuing debt. Exploiting these firm-types, we find that equity-type firms drive the long-run underperformance puzzle; debt type firms realize much smaller negative abnormal long-run return when issuing equity, though these returns are still negative. Equity-type firms that issue debt (against-type) experience long-run underperformance though not as severe as experienced when they issue equity (with-type). When debt-type firms issue debt (with-type), there is no negative long-run abnormal return performance. We also find clear unequivocal evidence that a price run-up improves our models' ability to predict a subsequent equity issuance, evidence consistent with market-timing. It is also true, however, that our basic results on announcement effects and long run underperformance of equity and debt-type firms are robust to ignoring market-timing information, suggesting that firms that do not market-time exhibit ex post performance identical or worse than firms that do market-time. That is, market-timing helps to explain when a firm will issue equity, but does not itself seem to be responsible for the long-run under-performance,

[1] Some of the seminal capital structure and security issuance papers include Ross (1977), Myers (1984), Myers and Majluf (1984), and Lucas and McDonald (1990), who focus on asymmetric information. Modigliani and Miller (1963), Jensen and Meckling (1976), Fisher, Heinkel and Zechner (1989), Stulz (1990), and Harris and Raviv (1990), focus on optimal capital structure. Stein (1996) and Baker and Wurgler (2002) propose market-timing explanations for capital structure choice.

following equity issues.

We also perform a host of event studies on announcement effects, classified by firm type. We find that a surprise debt issuance by an equity-type firm (against-type) has a positive and significant announcement effect versus a zero announcement effect for debt-type firms. We also find that a surprise equity-issuance by a debt-type firm has a negative announcement effect but less negative than that experienced by an equity-type firm, suggesting that equity issuance, expected or not is viewed by the market as a negative signal (consistent with the pecking order hypothesis), and also suggesting that debt-type firms are viewed more favorably by the market when issuing equity. The long-run underperformance of equity-type firms regardless of what they issue suggests that equity-type firms are destroying firm value regardless of how they raise capital, though they destroy the capital more slowly when issuing debt than equity. Similar results for equity- and debt-type firms are also documented for long run operating performance following security issues.

Our paper is most closely related to Bayless and Chaplinsky (1991), who identify unexpected equity and debt issues by the predicted probability of issuing equity (debt) and document that unexpected issues have more negative abnormal stock return in absolute value at announcement, and Jung, Kim and Stulz (1996), who demonstrate that abnormal returns on equity (debt) issues are positively (negatively) correlated with the probability of issuing equity. Our paper differs substantially from these studies in that we cover a broader range of data (security issuance types) over a longer study horizon; our analysis is run on transactions data; we include in our analysis firms that issue no securities ("do-nothing" firm-quarter observations) thus avoiding a potential sample selection bias; and we introduce the concept of ex ante financing expectations into our empirical capital structure model. Further, our empirical models also allow us to identify pure market timers and analyze their performance following security issues.

We analyze all security issues provided by Securities Data Corporation's (SDC's) New Issues database, including public and private debt, convertible bonds, common equity and stock repurchases over 25 years (1980-2004). Utilizing a multinomial, security-choice model, we estimate the financing expectations for each COMPUSTAT firm using a number of ex ante explanatory

variables motivated by the capital structure theories.[2] We then compare firms' actual financing decisions to their ex ante financing expectations, and sort them into different groups. In particular, given ex ante financing expectations, we distinguish between "with-type" and "against-type" financing decisions.

The multinomial predictive model of financing security choice we develop using transactions data and security-issuance-event firm-quarter observations as well as firm-quarter observations on non-issuance activity of firms (do-nothing firm-quarters) achieves substantially improved predictive power on a wide range of financing alternatives relative to previous efforts in the literature. To the best of our knowledge, this is the first paper that successfully captures the significant information content of ex ante financing expectations for security choice. By using this information, a unique contribution of our study is its ability to somewhat reconcile the different (and sometimes conflicting) empirical findings of prior papers in the literature, supporting the three different theories of capital structure, namely, the trade-off hypothesis, the pecking order hypothesis, and the market timing hypothesis. Another unique methodological contribution of this paper is the fashion in which we capture the information content of do-nothing firm-quarters. The appropriate modelling of the cross-sectional and time-series covariances and correlations of the approximately 800,000 do-nothing firm quarters over our 25 year data sample is infeasible, and ignoring the panel cross-section time-series nature of the data leads to extremely poor model fit. Borrowing from empirical asset pricing, we work around these issues by forming 25 portfolios based on firm size and market-to-book quintiles in each quarter, forming value-weighted averages of our variables by quarter, then using this portfolio do-nothing firm-quarter data and individual firm-quarter observations for firms that conducted issuances to estimate our model.

The rest of the paper is organized as follows. Section 2 briefly reviews the related literature; Section 3 discusses the Data nd the Empirical methodology; Section 4 presents the discussion of our empirical Results, and Section 5 concludes.

[2] Our multinomial, security-choice model yields 4 probability estimations, which add up to 1, for each firm at any given point of time: the probability of doing nothing, issuing debt, convertible bonds, equity, and repurchasing stock. These estimated probabilities for a firm represent the ex ante financing expectations perceived by the market at each point of time. In each period, the market adjusts the financing expectations based on the changing fundamental information of the firm and on market conditions.

2 Related Literature - A Brief Review

How corporate capital structure is determined is one of the most debated topics in corporate finance. Since Modigliani-Miller Proposition I in 1958, researchers have developed various theoretical models explaining corporate capital structure and financing decisions. So far, these theories can be broadly classified into three strands: trade-off based theories (Modigliani and Miller (1963), Jensen and Meckling (1976), Diamond (1989), Hirshleifer and Thakor (1992), Fisher, Heinkel and Zechner (1989), Harris and Raviv(1990), Stulz (1990), among others), information theories (Ross (1977), Leland and Pyle (1977), Myers (1984), Myers and Majluf (1984), Lucas and McDonald (1990), among others), and behavioral finance theories (Baker and Wurgler (2002) and Welch (2004)).

The common theme underlying the trade-off theories is that an optimal capital structure can be achieved by balancing the benefits of debt against the costs. The benefit-cost trade-off arises due to the existence of various market imperfections: such as corporate taxes and bankruptcy costs as suggested by Modigliani and Miller (1963) and agency costs (conflicts of interest between shareholders and managers and between shareholders and debtholders) as suggested by Jensen and Meckling (1976). The trade-off theories imply a mean-reverting pattern of firms' leverage ratios and predict that any deviation from optimal capital structures should be temporary. Another strand of corporate capital structure and financing decision theory starts with the assumption that managers possess private information about firms' future prospects. Ross (1977) pioneers this area of research suggesting that better quality firms use larger debt ratios to signal their quality, while poorer quality firms cannot imitate this signal due to the higher costs of bankruptcy. Leland and Pyle (1977) draw a similar inference under the assumption of managerial risk aversion. In Myers and Majluf (1984), however, firms' capital structures evolve to mitigate the investment inefficiency induced by information asymmetry between managers and the market. An important result from their model is that firms always prefer internal to external funds, safe to risky debt, and risky debt to equity. This is referred to as a 'pecking order' that firms follow to make their financing choices.[3] Finally, Baker and Wurgler (2002) argue that observed capital structures are nothing

[3] Related studies, which follow Myers and Majluf (1984) but do not yield a 'pecking order' result, include Brennan

but the realization of management's past attempts to opportunistically capture temporary market misvaluations.

Existing empirical evidence on capital structure is mixed. One strand of empirical studies examines the observed capital structure. Studies supporting the trade-off theory show that some classic factors, such as the marginal tax rate, the interest coverage ratio, profitability, size, growth opportunities and particularly, the deviation from the target debt ratio, are found to be significantly associated with firm's' leverage ratios in a way that is consistent with the trade-off theories' prediction (Titman and Wessels (1988), Rajan and Zingales (1995), Graham (1996), among others). Studies supporting the pecking order theory show that firms' financing deficits are mainly and preferentially financed by debt (Shyam-Sunder and Myers (1999), Lemmon and Zender (2004)). This result is challenged by Fama and French (2002) and Frank and Goyal (2003) where a larger sample over a longer study period is used. Additionally, Leary and Roberts (2005) illustrate that adjustment costs play a nontrivial role in firms' financing policies leading to the habitual departure of firms' leverage ratios from the optimum. Compared to those directly testing the trade-off and the pecking order theories, papers aiming to test the market-timing hypothesis are relatively few. Baker and Wurgler (2002) is the first study to show that the effect of past market valuation on the leverage ratio is strong and persistent.[4] Huang and Ritter (2007), one of the follow-up papers supporting this hypothesis, shows that, consistent with market-timing, a greater portion of firms' financial deficits is financed by equity when the equity risk premium is low. However, in another recent paper, DeAngelo, DeAngelo, and Stulz (2007) argue that firms conduct SEOs to resolve a near-term liquidity squeeze, and not primarily to exploit market timing opportunities.

Another branch of empirical research studies firms' marginal debt-equity financing choices, making it different from those examining the observed capital structure. Many papers in this branch of the literature support the trade-off theory (Marsh (1982), Jalilvand and Harris (1984), Hovakimian, Opler and Titman (2001), Hovakimian (2004), Korajczyk and Levy (2003), Hov-

and Kraus (1987), Noe (1988), and Constantinides and Grundy (1989). An extensive survey of capital structure theories and empirical studies can be found in Harris and Raviv (1991).

[4]Hovakimian (2006), however, argues that the long lasting effect of historical market-to-book ratios on capital structure found in Baker and Wurgler (2002) is not due to past equity market timing.

akimian, Hovakimian and Tehranian (2004), among others). For example, Marsh (1982) finds that, in line with the trade-off theory, deviation from a target debt ratio seems to help explain firms' equity/debt choice. At the same time, the choice is heavily influenced by market conditions and stock price history. Hovakimian, Opler and Titman (2001), Hovakimian (2004) and Hovakimian, Hovakimian, and Tehranian (2004) substantiate these findings by endogenizing the target leverage ratio or taking a closer look at the dual equity and debt issues.

2.1 Implications of Various Capital Structure Hypotheses

Unlike prior empirical studies, we do not directly test any particular capital structure theory. Rather, we adopt an innovative approach and examine how the implications of the various capital structure theories are built into financing expectations, and in turn, how the market responds to these expectations. Using standard event study methodology (both at announcement and in the long run), we investigate whether market reactions to equity (debt) issues made by firms with different financing expectations are different. By doing so, we infer which theories of capital structure are most likely to be integrated into ex ante financing expectations. In addition, we also analyze long-run operating performance of firms to investigate if ex ante expectations are systematically associated with long-run firm performance.

2.1.1 Target Debt Ratio Hypothesis

Trade-off theories predict that there is an optimal capital structure that balances the benefits and the costs of debt and maximizes firm value. Any drift from the optimum in either direction results in a decrease in firm value. In the spirit of these theories, we assume that the majority of the firms in the market set a target leverage ratio and gradually adjust their capital structure toward the optimal level. Under these circumstances, comparing our ex ante measures of the predicted probability of issuing equity (or debt) with actual practice would indicate how well a firm is moving toward its optimal debt level by selecting among various financial securities. That is, if a firm issues equity (debt) when the predicted probability of issuing equity (debt) is low,

then it is likely moving away from its optimal leverage level. As a result, firms that conduct an against-type issue should be punished more severely by the market at announcement than those which undertake a with-type issue. According to the trade-off hypothesis, a less favorable market reaction is expected to be associated with against-type equity (debt) issues compared to with-type ones. In the long run, firms continuously making against-type issues and sending negative signals to the market would accumulate the most negative stock returns; because they insist on making the 'wrong' decisions. Consequently, these firms would be responsible for a significant portion of the 'long-run underperformance' documented in prior studies.

2.1.2 Pecking Order Hypothesis

As stated above, the pecking order theory suggests a financing hierarchy in which firms heavily rely on debt financing when external funds are needed, whereas equity is used only as a last resort. Thus, there is typically a strong negative reaction following equity announcements. Similarly, the announcement of a risky debt issue could also trigger a reduction in stock price, but the impact of risky debt issues is smaller than that of equity issues and the impact of safer debt issues is smaller than that of riskier debt issues (Myers (1984) and Myers and Majluf (1984)).[5] Despite the direct implications of the theory on security issue announcement effects, it does not distinguish between against-type and with-type equity issues as well as their announcement effects, nor does it rationalize the existence of against-type equity issues. In one scenario, against-type equity issues made by debt-type firms could occur if these firms have low costs of information asymmetry. In these circumstances, such equity issue announcements are expected to be associated with a less negative change in stock price than with-type equity issues. In another, against-type equity issues made by debt-type firms are not justified by the pecking order theory if the firms have high information asymmetry costs. Against-type debt issues made by equity-type firms, on the other hand, presumably face a less negative (or more positive) price reaction than with-type debt issues, because debt

[5] One possible explanation for the different market response to debt and equity issues under the tradeoff theory is that issuing debt may signal that debt capacity has improved revealing a reduction in the firm's risk, an increase in value and a change in the target debt ratio. Therefore, issuing debt is good news, and issuing equity bad news. However, under the pecking order theory, asymmetric information between managers and investors can alone explain the phenomenon without saying anything about the target leverage ratio (Myers (1984)).

issue announcements made by equity-type firms reveal positive information and better news than what was expected by the market. Finally, the pecking order hypothesis makes no prediction about long run stock performance because it assumes that all the new information revealed at the time of the security announcement should be incorporated immediately into the stock price, thus resolving the information asymmetry. The pecking order theory does however have implications for the long-run operating performance of firms. Positive announcement effect, reflecting good news would be realized in the long-run through better operating performance, while negative announcement effect would be reflected in the long-run through operating underperformance.

2.1.3 Market Timing Hypothesis

The market-timing hypothesis holds that corporate executives issue equity when their stock prices are high and thus, firm capital structure reflects the results of the cumulative efforts of management to exploit temporary equity misvaluations. Therefore, if investors believe that the majority of firms are market timers, a higher predicted probability of issuing equity simply reflects greater stock overvaluation. In other words, at any point in time, equity-type firms are more overvalued than debt-type firms. If this is the case, then equity issues made by equity-type firms should elicit lower (more negative) announcement stock return than those made by debt-type firms. By the same logic, equity-type firms issuing debt are perceived to be more overvalued than debt-type firms issuing debt. In brief, equity-type firms should face a greater stock price decline no matter whether they decide to issue equity, debt or other securities simply because of their excessive stock overvaluation.

Nevertheless, it remains an open question how quickly the market adjusts the stock price back to its intrinsic value. Unfortunately, no prior theory has suggested a reasonable length of adjustment period. The theories built upon the efficient market hypothesis, such as trade-off theories and the pecking order theory, implicitly assume that prolonged stock misvaluations will not be observed. Thus, neither of the theories can predict how companies' stock would perform in the long-run following a capital structure adjustment. However, as Baker and Wurgler (2002) point

out, market-timing theory involves irrational investors and time-varying mispricing even though it does not necessarily require that the market actually be inefficient. The market-timing theory is not built upon the EMH and therefore it does not make predictions about the potential long-run under/over performance of one group of firms over others. If one group of firms (say equity-type firms) have experienced an excessive stock price run-up in the past, it should not be surprising to observe a significant price drop associated with this group of firms in the future. Thus, market-timing implies that a great part of post-issue underperformance can be attributed to equity-type rather than to debt-type firms.

[Figure 1 here]

The expected results associated with the short-run and the long-run stock performance under the three hypotheses are summarized in Figure 1. In short, upon the announcement, against-type issues will have more negative stock returns than with-type issues under the trade-off hypothesis. This result holds for both equity issues and debt issues. Under the pecking order hypothesis, it is clear that equity issue announcements trigger more negative stock returns than debt issue announcements. However, the pecking order theory offers no guidance when comparing against-type issues and with-type issues and thus it remains an empirical question. Finally, under the market-timing hypothesis, with-type equity issue announcements elicit more negative stock returns than against-type equity issue announcements, while against-type debt issue announcements are accompanied by a more negative stock return than with-type debt issue announcements.

3 Data and Empirical Methodology

3.1 Data and Variable Definitions

Our base data is the Compustat Quarterly files from 1980 till 2004. To this we match data from multiple sources: SDC's global new issues, CRSP, Thomson Financial 13f, and the monthly sentiment index provided by Baker and Wurgler. The sample we use includes all U.S. new issues which includes, bank loans, public bonds, convertible bonds, common equities (SEOs), rights issues,

and stock repurchases from 1980 through 2004. During this period, there were 12,044 loan issues (facility-level), 8,096 public bond issues, 1,498 convertible debt issues, 9,411 equity issues, 467 rights offerings and 3,932 completed stock repurchases. We combine the loan issues and public bond issues into a debt issue category and equity issues and right issues into an equity issue category and thus obtain four security issue categories: debt, convertible bond, equity issues and stock repurchases.[6] Then we combine the same type of issues made by the same firm within the same quarter to obtain security specific quarterly data. If a firm issued different types of securities in the same quarter, we classify the company into one of the four security issue categories based on the largest dollar amount of issue during that quarter.[7] We then match the quarterly issuance data to the entire COMPUSTAT quarterly database and identify the non issuing firm quarters and retrieve firms' financial informations. The data combination and matching process leaves us with 8,264 straight debt issue firm quarters, 972 convertible bond issue firm quarters, 6,345 common equity issue firm quarters, and 1,675 stock repurchase firm quarters. In addition to these security issue firm quarters, we retain 800,567 do-nothing firm quarters representing 97.9% of the sample. [8] The large number of do-nothing firm quarters is then combined into 25 size- and market-to-book-ratio ranked portfolios in each quarter. Applying a portfolio approach to organize the unbalanced large number of do-nothing firm quarter observations effectively reduces the idiosyncratic noise across firms in each size-market-to-book portfolio category.

Firms' ex ante characteristics and other control variables are calculated at each quarter and include financial leverage (defined as the four quarter moving average of financial-debt-to-asset-ratio), size (defined as log of assets), depreciation (defined as depreciation-to-asset ratio),

[6] In an earlier version of this paper, we had classified these categories separately. Our earlier results from that analysis indicated very little difference between these categories, but however it substantially increased our computation time. The results from our earlier analysis are qualitatively very similar to those presented here and can be obtained from the authors upon request.

[7] In unreported tests we also included a "mixed" category as the fifth category in our multinomial logit regressions, to account for these multiple mixed issues. Our results remain qualitatively unchanged in this setup too.

[8] For our long run analysis, we eliminate all IPO firms for a period of one year (for robustness we also tried 3 years, with our results remaining qualitatively unchanged) after the IPO, since it has been empirically shown that IPOs underperform in the long run and we do not want this to contaminate our results. All firm specific variables are winsorized from each tail of the sample, by 1%. In addition, to retain the maximum number of observations, we fill in the missing values of all firm specific variables with the 4-digit SIC industry median for the sample year. The final observations in our multinomial logit regression models slightly vary subject to the avialability of the explanatory variables required in the model.

cash (defined as the four quarter moving average of cash-to-asset ratio), tax (defined as taxes paid to total assets), tangible assets (defined as the ratio of net property, plant, equipment to total asset), profitability (defined as the four quarter moving average of profit), Altman Z-score (defined as the four quarter moving average of z-score, which is defined as 3.3*EBIT/SALES + SALES/TA + 1.4*RE/TA + 1.2*WC/TA, where EBIT is earnings before interests and taxes, SALES is the total sales in quarter, TA is the total assets, WC is the working capital and RE is the retained earnings), retained earnings (defined as the ratio of retained earnings to total assets), R&D expenses (defined as ratio of R&D to sales), amount raised (defined as log of the total dollar amount of external financing raised in the past one year), IPO in -3 (a dummy variable which equals 1 if the firm had its IPO within the past 3 years), institutional ownership (defined as the percentage of total shares outstanding held by institutions), market share (defined as firm sales scaled by total sales by all firms in the same 3-digit industry), bid-ask spread (defined as the monthly average of the firm's bid-ask spread), market-book ratio (defined as the four quarter moving average of the market-to-book ratio), stock price volatility (defined as the standard deviation in the firm's stock price over the last four quarters), Amihud ratio (defined as the four quarter moving average value of (absolute value of daily stock return/daily trading volume)), adjusted stock return (defined as the abnormal stock return in the prior fiscal year (calculated based on Daniel et al. (1997)), and sentiment index (defined as monthly market sentiment index obtained from Jeff Wurgler's web page).[9]

[Table 1 here]

Table 1 reports the number of firms in each year of the sample period. The total number of firms and the number of firms that issued debt, equity, any other security, or nothing are reported in column 2-6 respectively. The last 3 columns shows the percentage of non-issuers, debt issuers, and equity issuers respectively for each year. Consistent with the number of firm quarter observations,

[9] In the Appendix of the paper we provide motivation as to why these variables are included in our regression analysis. All variables are calculated quarterly *ex ante*. As mentioned above, we apply a 4-period moving average smoothing to some variables including financial leverage, cash, profitibility, Altman's Z score, market to book ratio and amihud ratio. We delete firms for 1 year after their IPOs as their pre-issue performance is contaminated by the post IPO underperformance (Ritter (1991)). In the unreported tests, we also delete IPO firms for 3 years and obtain qualitatively similar results. For Nasdaq-listed firms, trading volume is divided by 2 when computing the Amihud ratio.

on average about 93.2% of firms do not issue any kind of security in any given year over our sample period. On the other hand, approximately 3% of firms issue either debt or equity in any given year within our sample period.

[Table 2 here]

Table 2 reports the summary statistics of the main explanatory variables used in our multinomial logit regression models. t-statistics for the mean difference between the non-issuance category and each type of security issue is reported in the last column. In most of the cases, the t-tests are statistically significant, meaning that the do-nothing category is generally very different from other categories. The table also discloses that do-nothing firms tend to be smaller while security issuers in general are larger; a comparison within security issuers reveals that equity issuers are smaller than debt issuers.[10] Interestingly, the pre-issue mean financial leverage ratio of straight debt issuers is higher than that of equity issuers and other issuers.[11] Straight debt issuers have the least average cash on hand compared to other security issuers and do-nothing firms, while equity issuers seem to have the largest cash to asset ratio. Consistent with the implication of the pecking order theory, the pre-issue mean Altman's Z-score, profitability and retained earnings generally rank in the order of stock repurchasers, straight debt issuers, convertible debt issuers, and equity issuers. Compared to straight debt issuers, stock repurchasers and do-nothing firms, a higher percentage of equity issuers and convertible bond issuers had their IPO within the past three years, suggesting that these are young firms. A greater fraction of straight debt issuers and stock repurchasers' shares are held by institutional investors compared to equity and convertible bond issuers and do-nothing firms. The information asymmetry proxy, bid-ask spread reveals that the equity and convertible

[10] This result is different from Hovakimian, Opler and Titman (2001)'s result where they find firms relying on equity financing are the smallest ones, but they find firms that do not issue securities are the largest ones. Unlike their paper, this paper uses the actual transaction-based data instead of the 5% change in leverage ratio rule to identify security issues.

[11] This fact bears directly to the recent issue raised by Welch (2007) as to the appropriateness of using financial-debt-to-asset-ratio as a measure of leverage, since the converse of this is not necessarily an equity-to-asset ratio. However, as pointed out by Welch (2007) himself, when including all micro-cap firms from Compustat (as we do), the correlation between this ratio and the liabilities-to-asset ratio is very high, around 95% and estimation results do not usually change in significance and sign. Our results are robust to using the liabilities-to-asset ratio; we chose to report results using the financial-debt-to-asset ratio, which we call financial leverage, to maintain comparability of our results to those in the prior literature which has traditionally used this ratio as a measure of firm leverage.

bond issuers (with a higher bid-ask spread) tend to be more informationally opaque than other security issuers and do-nothing firms. In addition, equity issuers and convertible bond issuers tend to spend more resources on R&D, consistent with the idea that such firms are primarily growth firms. Equity issuers have the highest mean market-to-book ratios (2.847) followed by convertible bond issuers, while debt issuers have the lowest mean market-to-book ratios (1.572). We measure adjusted stock returns using the method as in Daniel et. al. (1997) and Wermers (2004) (DGTW returns from here on). The evidence from the past one year DGTW adjusted stock return appears to be consistent with the market-timing story that firms are more likely to issue equity following a stock price run-up. Equity issuers have the highest pre-issue mean 1-year stock return, while do-nothing firms and stock repurchasers have the lowest mean values in returns over the past one year.

3.2 Empirical Methodology

3.2.1 Security Choice Model: Predicting the Probability of Security Issuance

In our empirical investigation we first, we set up security choice models (the first-satge models) using the multinomial logit framework. We construct a multinomial dependent variable, Y, and predict a set of probabilities including the probability of issuing debt, convertible bonds, common equity, repurchasing stock, and doing nothing. The probability of security issuance can be written as follows:

$$\Pr(Y_t = j) = \frac{e^{\left(X'_{t-1}\beta_j\right)}}{\sum_{i=0}^{J} e^{X'_{t-1}\beta_i}}, where Y_t \in \{0, 1, 2, ...j\} \tag{1}$$

We assume that X, firms' ex ante characteristics, past stock returns, and other stock market-related variables and path-dependent variables, are exogenously determined. In our model, firms have 5 choices, where *j=0* if the firm does not issue any security, *j=1* if the firm issues straight debt, *j=2* if the firm issues convertible bond, *j=3* if the firm issues common equity, *j=4* if the firm

repurchases stocks.[12] We use do-nothing category as the base category in our regressions. We estimate this multinomial logit model both for the full sample period, i.e., 1980 to 2004, and also separately as a five year rolling window. In both cases we get equivalent results. In all our tests, we employ two variations of (1); one without any market variables (which we call the base model) and the other including all market variables (which we call the full model). The intuition behind doing so, is to be able to identify "pure" market timing firms, i.e., firms that are not identified as equity-type firms by the base model, but identified as equity-type firms by the full model, when we condition on market timing variables.

Ignoring the do-nothing firm quarters could induce a selection bias because the characteristics of do-nothing firm quarters, which come into play when firms make their financing decisions, are omitted. To overcome this problem, we incorporate all do-nothing firm quarters into our analysis. However, incorporating all do-nothing firm quarters directly is computationally cumbersome. Thus, we apply a portfolio approach borrowed from the asset pricing literature and sort the do-nothing sample by size and market-to-book ratio (Fama and French (1993)) in each quarter. The use of portfolios reduces idiosyncratic noise and allows us to correctly estimate the multinomial logit regression models while incorporating the information content of the do-nothing firm quarters. Specifically, we rank our sample by firm size (total assets) in each quarter and divide the sample into quintiles. We next rank the firms in each size quintile by market-to-book ratio, and further divide each size quintile into 5 market-to-book quintiles. In this way, we group all the do-nothing observations into 25 (5X5) portfolios ranging from the smallest firms with the highest market-to-book ratios to the largest firms with the lowest market-to-book ratios, in every quarter. Over the 25 sample years (100 quarters), we obtain 2,500 do-nothing portfolios and calculate total-assets-weighted average variables (including all the explanatory variables except for the IPO dummy variable) for each portfolio and an equally-weighted IPO dummy variable.[13] We then stack up the do-nothing portfolios

[12] The choice of scaling from 0 to 4 does not affect the coefficient estimations of the multinomial logit model. For convenience, we sort the security issues from the safest issues to the most risky issues implied by the pecking order theory except for stock repurchases.

[13] In unreported regressions, we also estimated the model by further classifying the 25 portfolios in each quarter by the IPO dummy, keeping firms that had the dummy equal to 1 in one portfolio and the those that had the dummy equal to 0 in the other portfolio. This classification gives us an unbalanced number of portfolios in each quarter with an unbalanced number of firms in each portfolio, which increases the idiosyncratic noise of these portfolios, somewhat

with the individual security issue observations and use this individual-portfolio-combined sample to estimate the multinomial logit models. However, to avoid an over-sampling bias and thus over-prediction of the security issuance probabilities caused by combining the individual and portfolio data, we use weighted regressions, where effectively we replicate the 2,500 do-nothing portfolio observations based on the actual number of firm observations in each portfolio thus effectively reproducing the actual proportion of do-nothing firm quarters in the data. [14]

3.2.2 Analysis of the Announcement Effect

In the second group of tests, we focus on the announcement effect of equity, debt, and all issues made by equity- and debt-type firms. Using the predicted probability estimated by the first stage models, we classify the firms into equity- and debt type-firms. We define a firm as equity-type or debt-type firm in a particular quarter if the predicted probability of issuing equity or debt surpasses the probability of doing anything else.[15] We then test whether the average announcement effects of equity, debt, or all issues made by equity-type and debt-type firms are significantly different. Following the standard event study methodology, we calculate abnormal return using the market model:

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right) \tag{2}$$

where R_{it} is the rate of return of security i over period t, R_{mt} the rate of return on the CRSP value-weighted market index over period t, $\hat{\alpha}_i$and $\hat{\beta}_i$the ordinary least squares estimates of firm i's market model parameters.[16] To mitigate the problem of the potential inaccuracy of the SDC

negating our original motivation for adopting the portfolio approach for the do-nothing firms. However, our results remain qualitatively similar when using this specification.

[14] In unreported regressions, we also tried running the multinomial logit model using individual observations which gives us qualitatively similar results, but is computationally much more cumbersome and produces nosier estimates.

[15] That is, in any given quarter, the maximum probability between any of the alternatives in our model, determines the firm type in that quarter. In unreported results, we employ several robustness checks for this classification. In different classifications, we require this maximum probability to be at least 10%, 15%, or 20% larger than the second largest probability for that firm in that quarter. All these classifications yield us qualitatively similar results, though our sample size decreases gradually as we tighten the criterion. These results are available from the authors upon request.

[16] The market model is estimated over a 250-day window (-295, -46). The choice of estimation window here is consistent with that in prior studies. Typically the estimation window cannot overlap the event window (Mackinlay (1997). In addition, we require that there be at least 50 observations during the estimation period.

reported announcement date, we look at multiple event windows, which include (-3, +3), (-1, +1), (0), (-1, 0), and (0, +1) with day 0 representing the reported announcement day.

3.2.3 Analysis of Long-run Stock Performance

In the third group of tests, we examine both the pre-issuance stock run-up and post-issuance long-run performance for equity- and debt-type firms around equity, debt and all security issuances. We first analyze whether equity-type firms with typically exhibit major pre-issue stock run-up are responsible for the post-issuance long-run underperformance. To address this question, we calculate the pre- and post-issuance one-quarter, one-, two- and three-year abnormal holding period returns around the security issue date. Following the long-run performance literature, we use the following equation to calculate buy and hold abnormal holding period returns:

$$BHAR_{it} = \pi_{t=1}^{T}\left(1 + R_{it}\right) - \pi_{t=1}^{T}\left[1 + E\left(R_{it}\right)\right] \tag{3}$$

where R_{it} is the monthly rate of return of security i in month t, and $E\left(R_{it}\right)$ is the expected rate of return of firm i (benchmark return) during the same month.[17] In the second set of tests, we examine if market timers alone drive the long-run underperformance results following equity issues. As mentioned earlier we utilize the two different specifications of (1) to identify firms that seem to engage in pure market timing. We then compare the stock performance of this sub-sample of firms to those that were identified by our model as equity type firms when not conditioning on the market timing variables.

3.2.4 Analysis of Long-run Operating Performance

In the final group of tests, we examine the pre- and post- issuance operating performance around the equity, debt issue quarter for the equity- and debt-type issuers. We ask whether the pre- and post-issuance operating performance of the equity-type and debt-type issuers is consistent

[17] We use the market index (CRSP value-weighted market index) as the benchmark return. In addition, in unreported tests we also use expected return derived from the Fama-French 3 factor model as the benchmark return and we also calculate our holding period returns using the DGTW adjusted returns. In both cases, our results remain qualitatively unchanged.

with the announcement effect and long-run stock performance of these issuing firms. In parallel with the long run stock performance calculation, we compute the pre- and post-issuance one-, two- and three-year operating performance for equity-type and debt-type firms. Following the prior literature (see, Lougran and Ritter (1997)), we adopt four operating performance measures: (1) gross profit margin, which is defined as (sales(t) - cogs(t))/sales(0), where sales(t) is the sales in year t, cogs(t) is the cost of goods sold in year t, and sales(0) is the sales in the issuing quarter; (2) gross ROA, which is defined as (sales(t) - cogs(t))/assets(0), where assets is the total assets in the issuing quarter; (3) ROA, which is defined as net income(t)/assets(0); and (4) operating income/assets, which is defined as (operating income before depreciation (OIBD)(t)/assets(t).

4 Discussion of Empirical Results

4.1 Security Choice Model

The results of the multinomial logit model estimating the probabilities of issuing various securities against the do-nothing alternative are reported in Table 3. We report two specifications, the base model which does not include any variable with market valuations, such as market-to-book ratio etc., and the full model that includes all variables in the base model plus all market timing variables.[18] The reported models, yield very decent goodness of fit, reflected by the high pseudo R-squares. Our pseudo R-square of 28.3% on the base model and 32% on the full model is substantially higher than that of 11.2% reported in Hovakimian, Opler and Titman (2001) where do-nothing firms are not controlled and 8.1% reported in Huang and Ritter (2007) where only three categories (equity, debt, and do-nothing) are considered. Our model provides stronger predictive power while covering a much broader sample, including all the existing firms in the quarterly COMPUSTAT database. In addition, to ensure that the probability measures estimated by the model represent public information available on an ex ante basis, we exclude any ex post information

[18] It is worth mentioning that our results are robust to several other model specifications. We get the largest increase in R-square, when including all the market timing variables together, which is why we choose to report these two specifications. Further, the difference between these two specifications allow us to condition firms purely on market timing variables.

from our model, making it different from Jung, Kim and Stulz (1996) where the post-issue stock return is incorporated into the equity-debt choice model based on an assumption that managers have private information about the firms' future prospects.

[Table 3 here]

For both models in Table 3, we report a fifth column where we present a test of the difference between the debt and equity coefficients for ease of interpretation. As can be seen from our results, firms issuing equity are significantly smaller than any other category. Cash to asset ratio is significantly lower for every category of issuers, compared to non-issuers, while it is significantly greater for firms that repurchase equity. Debt issuers tend to have higher Z-scores and higher retained earnings consistent with theory. We find that institutional ownership and firm market share are significant determinants of any kind of security issuance; in particular firms with the highest level of institutional ownership tend to issue debt relative to equity. Consistent with the market-timing theory, we find that the coefficient on the past 1-year stock return is significant for all issuance categories and in particular for equity issuance which is significantly greater than the debt issuance category. The evidence indicates that when their stock prices are high, firms' propensity to use external financing generally increases. The effect of past stock return is especially strong for equity and equity-like convertible bond issues, followed by debt. The signs of the coefficients on the market-to-book ratio, cash, profitability and retained earnings are consistent with the pecking order theory. The higher the market-to-book ratio (the greater the information asymmetry), the less likelihood of the firm seeking external financing. Consistent with the results in Huang and Ritter (2007), we also find that firms with high levels of cash, in general avoid issuing securities. Additionally, we find stock volatility is highly significant and positive for all security issuance categories and negative and significant for the repurchase category. This evidence also seems consistent with market-timing; since higher stock volatility normally accompanies stock price appreciation, the positive relation between stock volatility and the probability of security issuance is likely driven by the higher propensity to issue when stock prices are high. Consistent with our expectations, firms that have been actively involved in the capital markets have a greater

tendency to issue again.[19] Finally, we find that firms that had an IPO within the last three years are much more likely to issue equity than debt, which is not surprising since equity issuers tend to be smaller, high growth firms, while debt issuers in general tend to be firms that are larger and more mature.

4.1.1 Probability Estimations

Table 4 presents the predicted probabilities calculated from the multinomial logit model reported in Table 3 categorized by the actual firm response, i.e., whether the firm actually issued a particular security or did nothing. We report the probabilities for our base model as well as our full model, calculated in-sample as well as out-of-sample. For the out-of-sample predictions, we first estimate the regression models on a rolling 5 year data window and predict the probability for the sixth year, e.g., we run the regressions on quarterly data from 1980 to 1984 that allows us to predict the probabilities for 1985; we then roll the estimation window one year ahead and predict for 1986 and so on.

[Table 4 here]

The results presented in Table 4 provide some very interesting evidence. First, we show that it is relatively difficult to accurately predict the exact type of security a firm will issue at any point in time. In general, our model does an excellent job of correctly predicting the do-nothing firms both in- and out-of-sample (on average around 85% correct predictions). However, at the same time, for any other issuance or repurchase category our model also predicts that the highest average probability for a firm is to do-nothing, though in reality it does engage in some form of security issuance or repurchase. Thus, our model predicts that the status quo for a firm is to do-nothing, which is not surprising given that on average 93% of firms in our sample are actually non issuers.

[19] In unreported results we also find that firms tend to repeatedly issue the same type of instruments. This result of ours is in line with the recent evidence of Billet, Flannery, and Garfinkel (2007) who argue that the long run underperformance following security issues is driven by a relatively small subsample of firms engaging in multiple issues. In an earlier version of our model we had categoried these multiple issuers into a distinct category, which however did not change our results qualitatively.

Second, for each model we find that the average probability of being in a category is always highest for the correct category. For example, the average probability of 18% of issuing equity, when firms actually issue equity, is the highest probability of issuing equity that is attained across all categories for that particular model (it is 4.1% in the no-issue category, 4% in the debt category, 9% in the convertible debt category, and 3.4% in the repurchase category). This result is consistent for all categories in both models and estimation techniques, thus suggesting that our predictive model is consistent and minimizes misclassification across categories. In general, our model does equally well for all categories, other than the convertible debt category for which we have quite poor predictions. However, a closer look at this category reveals that the average probability of issuing equity or straight debt is similar for firms issuing convertible debt, which is not surprising given that convertible debt has features of both equity and straight debt embedded in it which may be the reason why it is not possible for our model to separately identify it as a different category.

Third, our predictive models perform better out-of-sample than in-sample, suggesting that pooling our entire data somewhat increases the idiosyncratic noise in our estimation, possibly leading to some issue specific effects cancelling each other out when we pool across all 25 years of data. In particular, our model does better at predicting debt issuances (an increase of 6%), equity issuances (an increase of 4% to 5%), convertible debt issuances (an increase of 3%) and equity repurchases (an increase of 7%) compared to our in-sample predictions. Finally, we show that including market timing variables unambiguously increases our ability to correctly predict equity issuances, while not significantly affecting the predicted probabilities in other categories. In particular, both in- and out-of-sample, the correct average probability of equity issuance increases by about 6% when conditioning on market timing variables in our multinomial logit predictive regressions.

[Table 5 here]

In Table 5 we classify the predicted probabilities of non-issuance, debt, and equity issuance on quintiles (low to high) of firm specific variables and also their distribution over time. The time distribution shows that the probability of security issuance has increased somewhat over the last

20 years, particularly the probability of debt issuance, which has more than tripled. Also, during 1997 to 2000, we do observe a somewhat higher probability of equity issuance compared to other time periods. Overall, there has been a steady increase in the propensity of firms to issue more securities compared to the early 1980s.

Classifying the probabilities based on the percentage of institutional shareholding in the firm, we find an interesting result. We show that for very low levels of institutional shareholding (bottom quintile) firms have a very low probability of issuing debt compared to equity (which is around 5 times larger). On the other hand, for the top quintile of firms, the probability of issuing debt is much higher than that of issuing equity and the probability of non-issuance of any security is also significantly lower compared to the other quintiles. When classifying the probabilities on quintiles based on profit, financial leverage, and z-score, we obtain a distribution of the predicted probabilities that is consistent with most capital structure theories; for example, we show that as the level of profit increases, the probability of issuing debt increases while that of issuing equity decreases. Classifying on the cash to asset ratio of the firm however gives us puzzling results. Contrary to our intuition, we find that as the cash to asset ratio increases, the probability of issuing debt decreases while that of issuing equity increases. While this result is at odds with the notion that a cash reserve would enable a firm to increase its leverage, it could potentially be explained by the market timing motivation of managers. If one assumes that managers who engage in market timing horde cash (since the primary reason they raise equity is to take advantage of market overvaluation and not due to any pressing investment objective of the firm), then it follows that firms which already have high levels of cash holdings are the ones to also have a higher probability of issuing equity. Finally, our classification based on the Hirfindhal index shows that firms in the top quintile of the index have a higher probability of issuing debt and a lower probability of issuing equity compared to firms in the bottom quintile of the index, supporting the notion that higher levels of debt may have a disciplining effect on firm management which decreases with the competitiveness of the industry structure.

4.1.2 Potential Selection Bias Arising due to Omitting Non-Issuers

In this section, we analyze the impact of the potential selection bias that may arise when predicting the probability of security issuance by omitting non-issuers from the analysis. Panel A of Table 6 reports the regression results of our full model in (1) both including and excluding the do-nothing firms.[20]

[Table 6 here]

Our results from Panel A shows that with the exception of a few variables (such as profit, z-score, R&D, bid-ask spread, and investor sentiment) the results of the multinomial logit regression are qalitatively similar between the two specifications. When including the do-nothing firms, we find that (consistent with the pecking order theory) that the probability of issuing both convertible debt and equity decreases (compared to the probability of issuing straight debt) as the bid-ask spread (or information asymmetry) increases, with the magnitude on convertible debt being less negative than that on equity. However, these results are not so, when we estimate the same regression by dropping the do-nothing firms, with only the coefficient on equity being negative and marginally significant. Similarly, the coefficient on profit fails to achieve significance for all categories when including the do-nothing firms, while it is negative and highly significant in all categories when we drop the do-nothing firms.

Overall our results suggest, that while by excluding do-nothing firms, it is not obvious that this selection biases the results systematically, it is nonetheless important to recognize this deficiency, since in certain cases (depending on the objective of the researcher) this bias may systematically affect the results.[21] If the objective of the research is simply to compare and contrast debt versus equity issuers, then omitting the do-nothing firms may not qualitatively alter the

[20] For appropriate comparison between the two models we estimate both multinomial logit regressions with the base category as debt issuers. The regression and estimation sample is exactly the same as in Table 3, except that the coefficients in Table 3 were with respect to the do-nothing firms as the base category.

[21] For example, it may be argued that when testing theories of capital structure, particularly the pecking order theory, omitting the do-nothing firms may systematically affect the results. This is because, the pecking order theory suggests that in the presence of information asymmetry, firms should first resort to financing through their internal funds and thus these firms will not undertake any security issue. Omitting these firms from the analysis then may systematically bias the results, as seen from the coefficient of the bid-ask spread in our regressions.

conclusions. However, if the objective is to predict the probability of any security issuance (as is our objective), omitting do-nothing firms from the analysis severely affects the results, which we illustrate in Panel B of Table 6. The results in Panel B show that omitting the do-nothing firms result in severe misclassification of firms, since we force the regression model to predict every firm as a security issuer (by not allowing non issuance as a category in the multinomial logit model), resulting in 40% of the do-nothing firms being incorrectly classified as an equity issuer and another 40% as a debt issuer. By comparing these results to that presented earlier in Table 3 (where we correctly classify 80% to 90% of the do-nothing firms as non-issuers), one can understand the magnitude of the potential impact. This misclassification is potentially vital for research the conducts matching firm analysis, using techniques such as the propensity score matching algorithm.[22]

4.2 Announcement Effect of With-type and Against-type Issues

Table 7 presents the announcement effect results. Panel A presents the results for equity issues, Panel B for debt issues, and Panel C for all issues (both debt and equity) pooled together. As mentioned earlier, we define a firm as equity-type or debt-type firm in a particular quarter if the predicted probability of issuing equity or debt surpasses the probability of doing anything else in that quarter. Our announcement effects are calculated using (2) for various event windows.

[Table 7 here]

We first discuss the results in Panel C, which shows that irrespective of the security actually issued, the announcement effect of equity-type firms is significantly more negative than that of debt-type firms for both models and for all event windows. Thus, based on this result it appears that markets react to the type of firm that undertakes a security issue and not to the particular security per se. The results in Panels A and B shed further light. Panel A shows that equity issues in general

[22] In this kind of situation, by not allowing a do-nothing category, researchers will match actual equity issuers with misclassified "equity type" non-issuers and benchmark their performance against these firms. On the other hand, if we allowed for this category in the analysis, we would correctly (or better) predict the equity type non-issuers, to which the actual equity issuers should be matched.

are associated with negative announcement effects, consistent with the pecking order hypothesis and several prior empirical studies. However, the results also show that the announcement effect is significantly less negative for against-type issues compared to with-type issues, i.e., debt-type firms issuing equity have significantly less negative announcement effects that equity-type firms issuing equity. Thus, the market does not view equity issuances of debt-type firms to have a similar level of negative information content as that of the equity type firms decision to issue equity. Panel B presents the results for debt issuances. Similar to panel A, the results show that with-type issues have significantly worse announcement effects compared to against type issues. Debt-type firms issuing debt have slightly negative (or zero) announcement effects consistent with prior findings (e.g., Eckbo (1986)), while equity type firms issuing debt have positive announcement effects and significantly better than debt-type firms. Thus markets react more favorably to equity-type firms when they announce their decision to issue debt, which comes as a positive surprise to the market.

Overall, these results support the pecking order hypothesis. In addition, we show that market reaction to security issuance announcement is conditional on firm type; when debt-type firms undertake an equity issue the negative reaction of the market is less compared to equity-type firms (since the prior of the market is that these firms are capable of issuing debt and therefore potentially have stronger future cash flows), while when equity-type firms undertake a debt issue, the positive reaction of the market is greater compared to debt-type firms, as positive information regarding the equity-type firm is revealed to the market.

4.3 Long-run Stock Market Performance of With-type and Against-type Issues

Several papers have shown significant long-run underperformance following equity issues and have suggested that this underperformance may partially be driven by overvaluation of the firm's stock at issuance. In addition, Spiess and Affleck-Graves (1999) and Lee and Loughran (1998) show that debt issues are also followed by significant underperformance and suggested that debt offerings also deliver a signal of market overvaluation. In this section, we consider how firms perform in the long run and whether equity-type firms' and debt-type firms' stock prices behave differently before

and after external financing activities. We present these results in Table 8, separately for equity issues, debt issues, and both equity and debt issues combined. As mentioned earlier, the long-run abnormal stock returns are calculated using (3).

[Table 8 here]

Overall, our long run performance results are consistent with that of the announcement effects and highlight several interesting trends. First, we show that prior to both debt and equity issuances there is a positive stock price run-up, though this positive price run-up is more pronounced in the case of equity issues, while in the case of debt issues, we only detect this positive stock price run-up when we explicitly condition our regression model using market timing variables. In other words, in the case of equity issues, we find this positive stock price run-up even when we omit all market variables from our model. Second, this positive stock price run-up is significantly more for equity-type firms compared to debt-type firms irrespective of actual equity or debt issuance. Third, consistent with prior studies, we show that there is significant long-run underperformance following equity issues, while the long-run underperformance following debt issues is relatively much less. Fourth, the underperformance of debt-type firms issuing equity is significantly less than that of equity-type firms issuing equity, suggesting that most of the long-run underperformance is in fact driven by equity-type firms. In the case of debt issues, even though equity-type firms have significantly greater positive stock price run-ups prior to the issue, they do not underperform debt-type firms subsequent to the issue except in the third year after issuance. Finally, our results on equity-type firms driving the long-run underperformance following equity issues is robust to the market timing argument, even in the absence of any variables that condition on market valuation, we find that equity-type firms significantly underperform debt-type firms subsequent to equity issues, thus driving the long-run negative underperformance following equity issues. We delve deeper into this issue in the following table.

[Table 9 here]

In Table 9 we present the results for a sub-sample of firms that we classify as "pure market timers". Our intuition is as follows. First, we identify equity-type firms based on our base model which does not condition on any market timing variables. We then run our full model and identify the additional firms that we classify as equity-type from our full model. These additional firms which are now identified as equity-type firms due to conditioning on market timing variables are labeled as "pure market timers". We then analyze the stock price run-up and post issue performance of this group of firms following equity issues, benchmarked against both our base model identified equity-type firms as well as our full model identified equity-type firms (i.e., all firms identified by the full model minus the pure market timers).

Consistent with the market timing hypothesis, the pure-market-timing subgroup of firms clearly have very significant positive stock price run-up prior to equity issues. However, contrary to the expectation of the market timing hypothesis, this sub-group of firms do not drive the long-run stock market underperformance of firms following equity issues. In fact, the long-run stock performance of this group of firms is significantly better (less negative) than both the benchmark groups upto two years following the security issue. Our results thus suggest that market-timing helps to explain when a firm will issue equity, but does not itself seem to be responsible for the long-run under-performance, following equity issues.

4.4 Long-run Operating Performance of With-type and Against-type Issues

Finally, we analyze the long term operating performance of debt and equity issuers after classifying then by firm-type. Table 10 presents the long-run operating performance following equity issues, while Table 11 presents the long-run operating performance following debt issues.

[Table 10 and 11 here]

Panel A presents the performance for debt-type firms, Panel B for equity-type firms, Panel C presents the difference in medians, while Panel D reports the z-statistics for the wilcoxon rank sum test for the difference in distributions in the operating performance between the two types. As can be seen from the results, for all variables considered, debt-type firms outperform equity-type

firms both before and after equity issues, consistent with the announcement effect results as well as the long-run stock performance results. Table 11 reports the results before and after debt issues and is organized in the same manner. Our results from this analysis however remains inconclusive, while for two of the variables considered, namely ROA and operating income to asset ratio, the results reflect that debt-type firms always outperform equity-type firms both before and after debt issues, for the other two variables considered, namely, gross profit margin and gross ROA, the results are mixed. These results show that prior to the issue, debt-type firms outperform equity-type firms, but however after the issue they underperform equity-type firms. While this seems consistent with the announcement effect results presented earlier, where equity-type debt issuers had significantly positive announcement effects compared to debt-type debt issuers, it is not possible for us to state this conclusively since the other two metrics do not correspond to this pattern. Overall, however we can conclusively conclude that the operating performance of firms do systematically differ across different firm-types following both debt and equity issues.

5 Conclusion

The practice of firms' issuance of securities has been hypothesized in prior studies to be an adjustment toward optimal capital structure, a signal of true firm value in the presence of information asymmetry, or an attempt to take advantage of higher valuations through market timing. Employing both firms that issue securities and those that do nothing, exploiting transactions-level issuance data and empirical modeling techniques developed for asset-pricing applications, we develop empirical models of the probability of firms' security issuance, given the history of the firm and its characteristics. We classify firms based on these financing expectations, for instance labeling firms with high ex ante probability of issuing equity, equity-type firms, and those with high ex ante probability of issuing debt, debt-type firms. The paper then examines the impact of ex ante financing expectations on the announcement effect, long-run stock performance, and long-run operating performance, subsequent to any security issue. The unique contribution of our paper is that we show, irrespective of the security issued, the announcement effect, the long-run stock market

performance, and the long-run operating performance differ across firms with different financing expectations; equity-type firms have much stronger negative average announcement returns when issuing equity than debt-type firms and stronger positive announcement effect returns when issuing debt, again relative to debt-type firms; issuing equity does precede long run under-performance for both equity and debt-type firms but this under-performance is far worse for equity-type firms; issuing debt by equity-type firms, in spite of the positive announcement effect, is followed by a long-run under-performance, though this under-performance is much less than that experienced by equity-type firms issuing equity, more comparable to that experienced debt-type firms issuing equity. Similar results also hold for the long-run operating performance following equity and debt issues. We also show that firms that engage in "pure market timing" have significantly stronger run-up in stock prices prior to equity issuance, however their long-run stock performance following equity issuance is significantly better (less negative) than non market-timers that issue equity.

References

[1] Amihud, XXX , 2002.

[2] Baker, M., Wurgler J., 2002. Market timing and capital structure, *Journal of Finance* 57, 1-32.

[3] Bayless, M., Chaplinsky, S., 1991. Expectations of security type and the information content of debt and equity offers. *Journal of Financial Intermediation* 3, 195-214.

[4] Bayless, M., Chaplinsky, S.,1996. Is there a window of opportunity for seasoned equity issuance? *Journal of Finance* 51, 253-278.

[5] Billett, M. T., Flannery M. J., Garfinkel, J. A., 2006. Are bank loan special? evidence on the post-announcement performance of bank borrowers. *Journal of Financial and Quantitative Analysis* 41, 733-751.

[6] Billett, M. T., Flannery M. J., Garfinkel, J. A., 2007. Long-run Underperformance Following External Finance Issues? Working Paper.

[7] Brennan, M., Kraus, A., 1987. Efficient financing under asymmetric information. *Journal of Finance* 42, 1225-1243.

[8] Constantinides, G. M., Grundy, B. D., 1989. Optimal investment with stock repurchase and financing as signals. *The Review of Financial Studies* 2, 445-466.

[9] Daniel, K., M.Grinblatt, S. Titman, and R. Wermers, 1997, Measuring Mutual Fund performance with Characteristic-based Benchmarks, *Journal of Finance*, 52(3) 1035-1058.

[10] DeAngelo, H., Masulis, R. W., 1980. Optimal capital structure under corporate and personal taxation. *Journal of Financial Economics* 8, 3-29.

[11] DeAngelo, H., DeAngelo, L., Stulz, R.M., 2007. Fundamentals, Market Timing, and Seasoned Equity Offerings. NBER Working Paper 13285.

[12] Dichev, I. D., Piotroski, J. D., 2001. The long-Run stock returns following bond rating changes. *Journal of Finance* 56 (1), 173-203.

[13] Diamond, D., 1989. Reputation acquisition in debt markets. *Journal of Political Economy* 97, 828-862.

[14] Eckbo, B.E., 1986. Valuation effects of corporate debt offerings. *Journal of Financial Economics* 15, 119-151.

[15] Eckbo, B. E., Masulis, R, W., Øyvind Norli, 2000. Seasoned public offerings: resolution of the 'new issues puzzle'. *Journal of Financial Economics*, forthcoming.

[16] Fama, E., French, K., 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33, 3-56.

[17] Fama, E., French, K., 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies* 15, 1-33.

[18] Frank, M. Goyal, V., 2003. Testing the pecking order theory of capital structure. *Journal of Financial Economics* 67, 217-248.

[19] Fischer, E.O., Heinkel, R., Zechner, J., 1989. Dynamic capital structure choice: theory and tests. *Journal of Finance* 44,19-40.

[20] Graham, J.R., 1996. Proxies for the corporate marginal tax rate. *Journal of Financial Economics* 42, 187-221.

[21] Hadlock, C. J., James, C., 2002. Do bank provide financial slack? *Journal of Finance* 57, No.3, 1383-1419.

[22] Harris, M., Raviv, A., 1990. Capital structure and the informational role of debt. *Journal of Finance* 45, 321-349.

[23] ———————, 1991. The theory of capital structure. *Journal of Finance* 46, 297-355.

[24] Hirshleifer, D., Thakor, A. V., 1992. Managerial conservatism, project choice and debt. *The Review of Financial Studies* 5, No. 3, 437-470.

[25] Hovakimian, A., 2004. The role of target leverage in security issues and repurchases. *Journal of Business* 77, 1-31.

[26] Hovakimian, A., 2006. Are observed capital structures determined by equity market timing? Working Paper, Barauch College, CUNY.

[27] Hovakimian, A., Hovakimian, G., Tehranian, H., 2004. Determinants of target capital structure: the case of dual debt and equity issuers. *Journal of Financial Economics* 71, 517-540.

[28] Hovakimian, A., Opler T., Titman, S., 2001. The debt-equity choice. *Journal of Financial and Quantitative Analysis* 36, 1-24.

[29] Huang, R., Ritter, J., 2007. Testing Theories of Capital Structure and estimating the Speed of Adjustment. *Journal of Financial and Quantitative Analysis*, forthcoming.

[30] Jalivand, A., Harris, R.S., 1984. Corporate behavior in adjusting to capital structure and dividend targets: an econometric study. *Journal of Finance*, 39, 127-145.

[31] Jensen, M.C., Meckling, W. H., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.

[32] Jung, K., Kim, Y., Stulz, R. M., 1996. Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics* 42, 159-185.

[33] Korajczyk, R. A., Levy, A., 2003. Capital structure choice: macroeconomic conditions and financial constraints. *Journal of Financial Economics* 68, 75-109.

[34] Leary, M.T., Roberts, M.R., 2005. Do firms rebalance their capital structure? *Journal of Finance* 60, 6, 2575-2619.

[35] Lee, I., Loughran, T., 1998. Performance following convertible bond issuance. *Journal of Corporate Finance* 4, 185–207.

[36] Leland, H., Pyle, D., 1977. Information asymmetries, financial structure, and financial intermediation. *Journal of Finance* 32, 371-388.

[37] Lemmon, M., Zender,J., 2004. Debt capacity and tests of capital structure theories. University of Colorado Working Paper.

[38] Lipson, M.L., Mortal, S., 2006. Capital structure decisions and equity market liquidity. Working Paper.

[39] Loughran, T., Ritter, J., 1995. The new issues puzzle. *Journal of Finance* 50, 23-51.

[40] Loughran, T., Ritter, J., 1997. The Operating Performance of Firms Conducting Seasoned Equity Offerings. *Journal of Finance* 52, 1823-1850.

[41] Lucas, D. and MacDonald, R., 1990. Equity issues and stock price dynamics. *Journal of Finance* 45, 1019-1043.

[42] Mackinlay, A.C., 1997. Event studies in Economics and Finance. *Journal of Economic Literature* 35 (March), 13-39.

[43] Marsh, P.R., 1982. The choice between equity and debt: an empirical study. *Journal of Finance* 37 (March), 121-144.

[44] Mikkelson, W., Partch, M., 1986. Valuation effects of security offerings and the issuance process. *Journal of Financial Economics* 15, 31-60.

[45] Modigliani, F, Miller, M., 1963. Corporate income taxes and the cost of capital: a correction. *American Economic Review* 53, 433-443.

[46] Myers, S.C., 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5, 147-175.

[47] Myers, S.C., 1984. The capital structure puzzle. *Journal of Finance* 39, 575-592.

[48] Myers, S.C., Majluf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187-221.

[49] Masulis, R. W., 1988. The debt and equity choice. Ballinger Publishing Company, New York.

[50] Masulis R., Korwar A., 1986. Seasoned equity offerings. *Journal of Financial Economics* 15, 91-118.

[51] Noe. T., 1988. Capital structure and signaling game equilibria. *Review of Financial Studies* 1, 331-356.

[52] Rajan, R. G., Zingales, L., 1995. What do we know about capital structure: some evidence from international data. *Journal of Finance* 50, 1421–1460.

[53] Ritter, J. R., 1991. The Long-run Performance of Initial Public Offerings. *Journal of Finance*, 46(1), 3-27.

[54] Ross, S., 1977. The determination of financial structure: the incentive signaling approach. *Bell Journal of Economics* 8, 23-40.

[55] Shyam-Sunder, L., Myers, S., 1999. Testing static tradeoff against pecking order models of capital structure. *Journal of Financial Economics* 51, 219-244.

[56] Spiess, D.K., Affleck-Graves, J., 1995. Underperformance in long-run stock returns following seasoned equity offerings. *Journal of Financial Economics* 38, 243-267.

[57] Stein, J. C., 1996. Rational capital budgeting in an irrational world. *Journal of Business* 69, No.4, 429-455.

[58] Stulz, R., 1990. Managerial discretion and optimal financing policies. *Journal of Financial Economics* 26(1), 3-26.

[59] Titman, S., Wessels, R., 1988. The determinants of capital structure choice. *Journal of Finance* 43, 1-21.

[60] Welch, I., 2004. Capital structure and stock returns. *Journal of Political Economy* 112-1, 106-131.

[61] Welch, I., 2007. Common Flaws in Empirical Capital Structure Research. Working Paper, NBER and Brown University.

[62] Wermers, R., 2004, Is Money Really 'Smart'? New Evidence on the Relation Between Mutual Fund Flows, Manager Behavior, and Performance Persistence, Working paper, University of Maryland.

Appendix

A Explanatory Variables

In this paper, we use several groups of variables that are considered important to firms' security choice. These variables used in our multinomial logit model are also motivated by the three prominent capital structure theories: the trade-off theory, the pecking order theory, and the market-timing theory. All pre-issue firm characteristics are normalized either by total assets or sales in the same period. It is worth noting that some of the variables we have introduced could have implications from more than one theory; examples include tangibility, profitability, cash, and retained earnings. Since distinguishing among theories is not our main objective here, we do not intend to unravel these entanglements.[23]

A.1 Variables related to the trade-off theory

(1) The benefit of tax shields. Mackie-Mason (1990) argues that firms are more likely to issue debt rather than equity when they are in higher tax brackets, measured here by Taxation.[24] In addition, we also use depreciation and amortization as in DeAngelo and Masulis (1980) and Titman and Wessels (1988) to measure non-debt tax shields that could offset the tax benefits of debt financing. According to the trade-off theory, we expect the probability of issuing debt to be increasing in taxation and decreasing in depreciation and amortization.

(2) Financial distress and bankruptcy costs. The trade-off theory posits that risky firms borrow less. We use Altman's Z-score and stock price volatility (measured as the standard deviation of the monthly stock returns over the last year) to capture firms' financial distress costs. In

[23] Because we choose do-nothing firm quarters as the base category in our multinomial logit model, a positive coefficient estimate on an explanatory variable implies that the probability of issuing a type of security is more positively associated with that variable compared to the probability of doing nothing.

[24] Definitions of all variables are in the text, in section 3.1.

unreported tests, alternatively, we employ the leverage ratio to control for distress. We also employ firms' profitability (measured by net operating income) as an alternative proxy for risk. Firms that are less profitable are assumed to be riskier and to have higher financial distress costs. Therefore, they are less likely to choose debt financing. In addition, following Rajan and Zingalas (1995) and Leary and Roberts (2004), we also use tangibility (measured by property, plant, and equipment (PPE)) to measure financial distress costs. The trade-off theory predicts that since specialized intangible assets or growth opportunities are more likely to lose value when insolvency actually occurs, firms holding tangible assets are able to borrow more.

A.2 Variables related to the pecking order theory

(3) Asymmetric information between managers and outside investors. Myers and Majluf (1984) demonstrate that, equity financing is extremely expensive when a firm's costs of asymmetric information are high. We use bid ask spread, firm size (calculated as log (total assets plus market value of equity minus book value of equity)), and also tangibility to measure information asymmetry.

(4) More profitable firms have fewer external financing requirements and such firms enjoy high levels of cash and marketable securities on hand as well as, ample internal funding resources in the form of retained earnings.

A.3 Variables related to the market-timing theory

(5) We use prior adjusted stock return (measured as the cumulative monthly DGTW adjusted stock return over the last one-year) to capture the market-timing effects. In addition, we employ market-to-book ratio (calculated as total assets plus market value of equity minus book value of equity divided by total assets) and the investor sentiment index to proxy for market timing.

A.4 Liquidity and other path-dependent variables

(6) Liquidity. Lipson and Mortal (2006) argue that firms with more liquid stock liquidity are more likely to choose equity than debt. Accordingly, we include the Amihud ratio (measured as the average value of (absolute value of daily stock return/daily trading volume) during the past quarter (Amihud (2002)).

(7) Other path-dependent variables include the total amount of external financing (measured as the total raised through external channels during the past three years) and total number of security issues/stock repurchases (measured as the total number of specific security issues/stock repurchases during the past three years), and an IPO Dummy (which takes the value of 1 if the firm did an IPO during the past one year, and 0 otherwise). We expect that the more a firm has been involved in external fund-raising activities in the past, the more likely it will be to seek funds from outside channels in the future. However, a firm with a newly listed IPO will be less likely to seek external financing in the near future.

A.5 Multi-period moving average variables

(8) Additionally, inspired by Baker and Wurgler (2006) and Hovakimian (2006), we also introduce a number of moving average lagged firm characteristics such as multi-period lagged profitability, z-score, financial leverage, amihud ratio, and market-to-book ratio to capture some persistent effects from the past.

Figure 1: The Expected Empirical Results Based on Trade-off, Pecking Order, and Market Timing Hypothesis: This table presents the expected empirical results under the trade-off, the pecking order, and the market timing hypothesis respectively. Firms are defined as equity-type firms if they have high *ex ante* probability of issuing equity and defined as debt-type firms if they have high *ex ante* probability of issuing public debt. Equity (debt) issues made by equity- (debt-) type firms are called with-type issues, while those made by debt- (equity-) type firms are called against-type issues. "<" means "is less favorable than". "=" means "is indifferent from".

<table>
<tr><td></td><td colspan="2">Short-run Performance</td><td colspan="3">Long-run Performance</td></tr>
<tr><td>Hypothesis</td><td>Equity Announcement</td><td>Debt Announcement</td><td>Equity Issues</td><td>Debt Issues</td><td>All Issues</td></tr>
<tr><td>Trade-off Hypothesis</td><td>Against-type<In-type</td><td>Against-type<In-type</td><td>No effect</td><td>No effect</td><td>No effect</td></tr>
<tr><td rowspan="2">Pecking Order Hypothesis</td><td colspan="2">Equity <Debt</td><td rowspan="2">No effect</td><td rowspan="2">No effect</td><td rowspan="2">No effect</td></tr>
<tr><td>Against-type=In-type</td><td>Against-type=In-type</td></tr>
<tr><td>Market Timing Hypothesis</td><td>In-type<Against-type</td><td>Against-type<In-type</td><td colspan="3">Equity-type<Debt-type</td></tr>
</table>

Table 1: Summary of Issuers and Non-Issuers by Year: This table presents the distribution in our sample of firms in the quarterly Compustat database, from 1980 to 2004 classified as security issuers or non-issuers. For each year we report the total of firms in the Compustat quarterly data; the number of firms that within them that issued any kind of public or private debt; the number of firms that issued equity; the number of firms that engaged in any other kind of activity such as issuance of convertible debt or engaging in equity repurchase; and the number of firms that were not involved in any kind of security issuance or repurchase activity in that year. We then present the percentage of non-issuers, debt-issuers, and equity-issuers in every year in our sample.

Year	Total Number of Firms	Debt Issuers	Equity Issuers	Any Other Issuers	Non-Issuers	Percentage of Non-Issuers	Percentage of Debt Issuers	Percentage of Equity Issuers
1980	5181	122	57	36	4971	95.95%	2.35%	1.10%
1981	5529	154	84	53	5253	95.01%	2.79%	1.52%
1982	5876	175	118	49	5574	94.86%	2.98%	2.01%
1983	6342	435	125	113	5719	90.18%	6.86%	1.97%
1984	6834	91	115	256	6394	93.56%	1.33%	1.68%
1985	7188	162	191	131	6732	93.66%	2.25%	2.66%
1986	7546	173	226	134	7037	93.25%	2.29%	2.99%
1987	7856	145	203	104	7417	94.41%	1.85%	2.58%
1988	7792	66	241	65	7442	95.51%	0.85%	3.09%
1989	7713	115	202	103	7314	94.83%	1.49%	2.62%
1990	7676	73	181	135	7304	95.15%	0.95%	2.36%
1991	7711	238	214	99	7189	93.23%	3.09%	2.78%
1992	8018	241	250	107	7456	92.99%	3.01%	3.12%
1993	8448	317	326	105	7733	91.54%	3.75%	3.86%
1994	9030	248	272	92	8440	93.47%	2.75%	3.01%
1995	9318	334	446	123	8462	90.81%	3.58%	4.79%
1996	9878	366	395	119	9031	91.43%	3.71%	4.00%
1997	10196	315	428	145	9351	91.71%	3.09%	4.20%
1998	10786	233	463	121	10008	92.79%	2.16%	4.29%
1999	10882	270	419	81	10145	93.23%	2.48%	3.85%
2000	10960	286	347	69	10280	93.80%	2.61%	3.17%
2001	10548	311	375	98	9794	92.85%	2.95%	3.56%
2002	10203	323	373	95	9450	92.62%	3.17%	3.66%
2003	9999	386	385	79	9198	91.99%	3.86%	3.85%
2004	9642	457	370	58	8800	91.27%	4.74%	3.84%
Average	8446.08	241.44	272.24	102.8	7859.76	93.20%	2.84%	3.06%

Table 2: Descriptive Statistics by Issuers and Non-Issuers: This table presents the descriptive statistics of various firm characteristics classified by issuance categories, namely, non-issuers, debt issuers, equity issuers, convertible debt issuers, and equity repurchasers. *t*-statistics on the difference in means between each issuance category and the non-issuers are presented in parenthesis. Financial leverage is financial-debt-to-asset-ratio, Ln assets is log of assets, cash to asset ratio is the four quarter moving average of cash-to-asset ratio, profit is the four quarter moving average of profit, retained earnings is the ratio of retained earnings to total assets, R&D to sales is the ratio of R&D to sales, IPO in -3 is a dummy variable which equals 1 if the firm had its IPO within the past 3 years, pct institutional ownership is the percentage of total shares outstanding held by institutions, market share is firm sales scaled by total sales by all firms in the same 3-digit industry, bid-ask spread is the average bid-ask spread of the firm's stock every month, market-book ratio is the four quarter moving average of the market-to-book ratio, and adjusted return -1 is the abnormal stock return in the prior fiscal year (calculated based on Daniel et al. (1997)). ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

	Non-Issuers			**Debt Issuers**				**Equity Issuers**			
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	t-Statistics (diff with non-issuers)	Obs	Mean	Std. Dev.	t-Statistics (diff with non-issuers)
Financial Leverage	799819	2.331	14.195	8264	2.119	10.847	(1.34)	6342	1.453	9.523	(4.91)***
Ln Assets	800331	1.263	1.385	8264	3.162	1.683	(-120)***	6344	1.265	1.195	(-0.05)
Cash to Asset Ratio	800162	0.136	0.173	8264	0.057	0.075	(41.658)***	6343	0.218	0.239	(-37.72)***
Profit	800009	-0.016	-0.086	8264	0.007	0.022	(-24.532)***	6341	-0.020	-0.087	(3.98)***
Z-score	799632	0.685	0.596	8264	0.772	0.506	(-13.307)***	6341	0.696	0.614	(-1.42)
Retained Earnings	800295	-0.884	4.061	8264	0.117	-0.414	(-22.412)***	6344	-0.810	3.024	(-1.45)
IPO in -3	800567	0.076	0.265	8264	0.083	0.276	(-2.548)**	6345	0.287	0.452	(-62.67)***
Pct Institutional Ownership	799788	0.232	0.210	8264	0.456	0.239	(-96.637)***	6344	0.327	0.242	(-35.95)***
Market Share	800340	0.033	0.099	8264	0.103	0.149	(-63.698)***	6344	0.036	0.104	(-2.65)***
Bid-Ask Spread	799953	0.059	0.060	8264	0.034	0.022	(37.184)***	6344	0.051	0.033	(10.06)***
R&D to Sales	800567	0.083	0.400	8264	0.024	0.127	(13.403)***	6345	0.309	0.833	(-44.13)***
Market to Book ratio	799878	2.039	2.489	8264	1.572	0.925	(17.052)***	6342	2.847	2.874	(-25.69)***
Adjusted Return -1	798965	-0.078	-0.287	8261	-0.044	-0.283	(-10.695)***	6342	0.114	-0.503	(-52.59)***

	Convertible Debt Issuers				**Equity Repurchases**			
Variable	Obs	Mean	Std. Dev.	t-Statistics (diff with non-issuers)	Obs	Mean	Std. Dev.	t-Statistics (diff with non-issuers)
Financial Leverage	972	1.767	10.019	(1.23)	1675	1.625	11.191	(2.03)**
Ln Assets	972	1.906	1.455	(-14.44)***	1675	2.175	1.608	(-26.9)***
Cash to Asset Ratio	972	0.138	0.152	(-0.3)	1675	0.148	0.162	(-2.94)***
Profit	972	-0.013	-0.081	(-0.95)	1675	0.006	-0.035	(-10.59)***
Z-score	972	0.823	0.580	(-7.22)***	1674	1.085	0.609	(-27.45)***
Retained Earnings	972	-0.763	3.831	(-0.92)	1675	0.139	1.452	(-10.31)***
IPO in -3	972	0.163	0.369	(-10.18)***	1675	0.059	0.235	(2.68)***

Pct Institutional Ownership	972	0.326	0.239	(-13.93)***	1675	0.381	0.237	(-28.97)***
Market Share	972	0.061	0.137	(-8.82)***	1675	0.062	0.127	(-11.78)***
Bid-Ask Spread	972	0.045	0.036	(6.9)***	1675	0.038	0.032	(14.3)***
R&D to Sales	972	0.119	0.482	(-2.78)***	1675	0.045	0.214	(3.85)***
Market to Book ratio	972	2.143	2.076	(-1.29)	1675	1.724	1.178	(5.18)***
Adjusted Return -1	972	0.031	-0.369	(-10.69)***	1674	-0.048	-0.286	(-4.28)***

Table 3: Multinomial Logit Regressions on Security Choice: This table presents the results of our weighted multinomial logit regressions on the ex ante determinants of a firm's security choice decision. We present two alternate specifications: the base model which does not contain any market valuation related variable, and the full model which includes all market valuation related variables that potentially influence the security choice. The base (omitted) category in both specifications is the no-issuance category and as such the coefficients in each column represent the impact of a variable on the firm's decision on that particular security choice with respect to non issuance. The last column in each specification presents a *t*-test comparing the coefficients on debt versus equity issuance. Financial leverage is the four quarter moving average of financial-debt-to-asset-ratio, ln assets is log of assets, depreciation to asset is the depreciation-to-asset ratio, cash to asset ratio is the four quarter moving average of cash-to-asset ratio, tax to asset ratio is taxes paid to total assets, tangible assets is the ratio of net property, plant, equipment to total asset, profit is the four quarter moving average of profit, Z-score is the four quarter moving average of z-score, which is defined as 3.3*EBIT/SALES+SALES/TA+1.4*RE/TA+1.2*WC/TA, where EBIT is earnings before interests and taxes, SALES is the total sales in quarter, TA is the total assets, WC is the working capital and RE is the retained earnings, retained earnings is the ratio of retained earnings to total assets, R&D is the ratio of R&D to sales, amount raised is the log of the total dollar amount of external financing raised in the past one year, IPO in -3 is a dummy variable which equals 1 if the firm had its IPO within the past 3 years, pct institutional ownership is the percentage of total shares outstanding held by institutions, market share is firm sales scaled by total sales by all firms in the same 3-digit industry, bid-ask spread is the monthly average of the firm's bid-ask spread, market-book ratio is the four quarter moving average of the market-to-book ratio, stdev of returns is the standard deviation in the firm's stock price over the last four quarters, Amihud ratio is the four quarter moving average value of absolute value of daily stock return scaled by daily trading volume, adjusted return -1 is the abnormal stock return in the prior fiscal year (calculated based on Daniel et al. (1997), and sentiment index is the monthly Baker-Wurgler market sentiment index. Heteroscadasticity corrected robust standard errors clustered at the firm level are presented in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

	Base Model					**Full Model**				
	Debt	Convertible Debt	Equity	Repurchase	t-test: Debt - Equity	Debt	Convertible Debt	Equity	Repurchase	t-test: Debt - Equity
Financial Leverage	0.033***	0.013	0.008	0.006	1.73*	0.032***	0.020	0.016	-0.043	1.87*
	[0.008]	[0.031]	[0.017]	[0.042]	[0.083]	[0.009]	[0.016]	[0.011]	[0.117]	[0.062]
Ln Assets	-0.056	-0.133	-0.516***	-0.138	3.03***	-0.021	-0.012	-0.364**	-0.160	2.8***
	[0.159]	[0.173]	[0.171]	[0.152]	[0.002]	[0.155]	[0.154]	[0.143]	[0.138]	[0.005]
Depreciation to Asset	-1.093	-0.921	-97.935***	46.868**	2.91***	-8.010	-19.838	-77.291***	58.342***	2.49**
	[26.370]	[26.793]	[32.283]	[19.312]	[0.004]	[27.071]	[22.401]	[26.591]	[17.225]	[0.013]
Cash to Asset Ratio	-22.674***	-7.167***	-4.613**	5.281***	-4.68***	-25.142***	-7.208***	-5.373***	8.023***	-5.57***
	[3.717]	[2.513]	[2.066]	[1.304]	[0.000]	[3.363]	[2.090]	[1.660]	[1.241]	[0.000]
Tax to Asset Ratio	-42.544**	-26.206	38.153**	-32.415*	-5.06***	-50.663***	-9.283	32.494**	10.400	-5.85***
	[20.258]	[24.873]	[17.568]	[19.227]	[0.000]	[14.959]	[18.153]	[14.052]	[14.044]	[0.000]
Tangible Assets	-0.456	-1.644	-1.002	0.837	0.560	-0.164	-1.198	-0.507	-0.099	0.380
	[1.138]	[1.653]	[1.097]	[1.577]	[0.575]	[1.143]	[1.376]	[1.046]	[1.444]	[0.706]
Profit	-1.742	-5.726*	-7.311***	-6.942	0.670	-2.456	-12.713***	-12.918***	-4.118	1.270
	[8.448]	[3.063]	[2.521]	[4.511]	[0.500]	[8.071]	[3.298]	[2.975]	[9.442]	[0.203]

Z-score	1.025***	1.901***	-0.104	3.160***	2.3**	1.102***	1.871***	0.282	2.877***	1.91*
	[0.377]	[0.423]	[0.493]	[0.708]	[0.021]	[0.384]	[0.385]	[0.427]	[0.662]	[0.056]
Retained Earnings	1.125*	-0.065	0.012	1.134	1.85*	1.308**	-0.272***	-0.166**	0.722	2.38**
	[0.602]	[0.073]	[0.068]	[1.286]	[0.065]	[0.627]	[0.049]	[0.065]	[1.255]	[0.017]
R&D to Sales Ratio	-1.696	1.738***	1.913***	-3.565	-1.100	-2.460	1.645***	1.901***	-0.191	-1.260
	[3.276]	[0.358]	[0.194]	[2.594]	[0.272]	[3.453]	[0.327]	[0.205]	[1.054]	[0.207]
Ln Amount Raised	13.136***	13.540***	10.643***	3.907*	3.66***	12.851***	13.145***	10.700***	5.990***	3.42***
	[1.066]	[1.065]	[1.271]	[2.042]	[0.000]	[1.135]	[1.067]	[1.211]	[1.735]	[0.001]
IPO in -3	3.339***	4.149***	5.189***	-1.978	-7.26***	3.402***	4.552***	5.788***	0.208	-8.49***
	[0.326]	[0.408]	[0.278]	[2.149]	[0.000]	[0.344]	[0.383]	[0.292]	[0.968]	[0.000]
Pct Inst Ownership	9.618***	5.268***	5.571***	5.790***	3.85***	9.349***	4.660***	4.616***	7.215***	4.66***
	[0.811]	[1.102]	[1.191]	[0.862]	[0.000]	[0.785]	[1.091]	[1.165]	[0.836]	[0.000]
Market Share	3.448***	4.027***	4.115***	-3.502	-0.740	3.759***	4.575***	4.610***	-3.136	-1.070
	[0.982]	[1.307]	[1.269]	[4.018]	[0.462]	[1.022]	[1.183]	[1.182]	[3.112]	[0.287]
Bid-Ask Spread	5.891	-4.680	-6.255	-21.712***	2.35**	-4.258	-19.245**	-19.825***	-24.181***	2.78***
	[5.080]	[6.875]	[5.036]	[8.204]	[0.019]	[4.820]	[7.866]	[4.639]	[8.686]	[0.005]
Market to Book						0.107	-0.578***	-0.406***	-0.887***	3.07***
						[0.175]	[0.131]	[0.119]	[0.291]	[0.002]
Stdev of Returns						11.392***	20.455***	16.761***	-12.356***	-2.62***
						[2.106]	[2.476]	[2.060]	[4.503]	[0.009]
Amihud Ratio						0.019	-0.078	-0.036	0.053***	2.43**
						[0.013]	[0.058]	[0.026]	[0.011]	[0.015]
Adjusted Return -1						1.705***	3.463***	4.362***	-0.881	-7.41***
						[0.445]	[0.343]	[0.269]	[0.718]	[0.000]
Sentiment Index						-0.090**	0.190***	-0.028	0.410***	-1.040
						[0.039]	[0.065]	[0.052]	[0.087]	[0.296]
Constant	-6.929***	-8.733***	-4.520***	-10.159***		-7.769***	-9.564***	-5.902***	-8.291***	
	[0.978]	[1.101]	[1.166]	[1.368]		[0.930]	[1.122]	[1.179]	[1.356]	
Observations	817352	817352	817352	817352		817347	817347	817347	817347	
Chi Square	984.59					1218.66				
Pseudo R-square	0.283					0.320				

Table 4: Predicted Probabilities of Issuing Securities: This table presents the security issuance probabilities calculated from our multinomial logit regressions presented in Table 3. We report the probabilities calculated both in-sample, where we estimate the regressions over our entire sample period from 1980 to 2004, and out-of-sample, where we estimate the regressions over a rolling 5 year window starting with 1980 to 1984 and predict the probabilities one year ahead, i.e., starting with 1985. We present the probabilities calculated using both the base model as well as the full model. We first categorize the firms based on their actual issuance decisions, i.e., no issuance, debt, convertible debt, equity, or repurchase, and then within each category we report the average probabilities of the firms of undertaking each decision. The probabilities highlighted in bold represent the average probability of the correct predictions in each category.

		In Sample Predictions				Out of Sample Predictions			
Actual Response		Base Model		Full Model		Base Model		Full Model	
	Probability Category	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
No Issuance	No Issuance	799097	**0.880**	798387	**0.856**	685759	**0.810**	685141	**0.789**
	Debt	799097	0.052	798387	0.055	685759	0.071	685141	0.078
	Convertible Debt	799097	0.005	798387	0.009	685759	0.013	685141	0.018
	Equity	799097	0.041	798387	0.052	685759	0.056	685141	0.066
	Repurchase	799097	0.022	798387	0.027	685759	0.050	685141	0.049
Debt	No Issuance	8264	0.654	8261	0.636	7680	0.555	7677	0.540
	Debt	8264	**0.280**	8261	**0.281**	7680	**0.340**	7677	**0.343**
	Convertible Debt	8264	0.009	8261	0.011	7680	0.020	7677	0.023
	Equity	8264	0.040	8261	0.051	7680	0.057	7677	0.064
	Repurchase	8264	0.017	8261	0.021	7680	0.029	7677	0.030
Convertible Debt	No Issuance	972	0.751	972	0.693	756	0.612	756	0.555
	Debt	972	0.121	972	0.127	756	0.173	756	0.178
	Convertible Debt	972	**0.018**	972	**0.029**	756	**0.046**	756	**0.064**
	Equity	972	0.090	972	0.126	756	0.139	756	0.176
	Repurchase	972	0.021	972	0.025	756	0.030	756	0.028
Equity	No Issuance	6340	0.685	6338	0.609	5315	0.580	5314	0.515
	Debt	6340	0.102	6338	0.110	5315	0.128	5314	0.136
	Convertible Debt	6340	0.014	6338	0.021	5315	0.028	5314	0.040
	Equity	6340	**0.180**	6338	**0.242**	5315	**0.229**	5314	**0.280**
	Repurchase	6340	0.019	6338	0.018	5315	0.035	5314	0.029
Repurchase	No Issuance	1674	0.760	1674	0.733	1372	0.598	1372	0.594
	Debt	1674	0.117	1674	0.116	1372	0.163	1372	0.163
	Convertible Debt	1674	0.006	1674	0.007	1372	0.022	1372	0.021
	Equity	1674	0.034	1674	0.039	1372	0.049	1372	0.050
	Repurchase	1674	**0.083**	1674	**0.105**	1372	**0.168**	1372	**0.173**

Table 5: Predicted Probabilities Classified on Quintiles of Various Explanatory Variables: This table presents the predicted probabilities as calculated in Table 4 classified by quintiles of various explanatory variables, as well as the distribution of the probabilities across years. These probabilities are the in-sample predictions as calculated by the full model reported in Table 3. In each quintile, we present the average probability of no issuance, debt issuance, and equity issuance, conditional on the firm having actually not issued or issued a particular security respectively. As such, the probabilities represent the average probability of the correct predictions in each category. The explanatory variables include percentage of institutional shareholding, Cash, Profit, Financial leverage, Altman's Z-score (as defined in Table 3), and Herfindahl index which is defined as the sum of the squared market shares of firms in each 3 digit SIC industry.

	Variables	Percentage of Institutional Shareholding	Cash	Profit	Financial Leverage	Altman's Z Score	Herfindahl Index	Distribution Across Years	
	Probability Category	Mean Probability	Mean Probability	Mean Probability	Mean Probability	Mean Probability	Mean Probability	Years	Mean Probability
Bottom Quintile	No Issue	0.939	0.832	0.861	0.809	0.885	0.871		0.906
	Debt	0.035	0.388	0.109	0.132	0.188	0.181	1980-1984	0.123
	Equity	0.160	0.116	0.343	0.318	0.312	0.324		0.164
2nd Quintile	No Issue	0.921	0.861	0.900	0.850	0.917	0.859		0.892
	Debt	0.048	0.315	0.220	0.269	0.242	0.243	1985-1989	0.193
	Equity	0.214	0.171	0.201	0.250	0.235	0.254		0.163
3rd Quintile	No Issue	0.907	0.890	0.876	0.869	0.879	0.863		0.852
	Debt	0.065	0.205	0.276	0.297	0.290	0.285	1990-1996	0.256
	Equity	0.240	0.191	0.200	0.218	0.221	0.194		0.265
4th Quintile	No Issue	0.871	0.880	0.854	0.877	0.841	0.844		0.830
	Debt	0.110	0.110	0.293	0.318	0.320	0.322	1997-2000	0.301
	Equity	0.277	0.249	0.192	0.174	0.230	0.186		0.296
Top Quintile	No Issue	0.635	0.818	0.788	0.877	0.758	0.844		0.819
	Debt	0.407	0.018	0.334	0.260	0.289	0.337	2000-2004	0.411
	Equity	0.260	0.342	0.223	0.151	0.196	0.194		0.259

Table 6: Selection Bias and Multinomial Logit Regressions: Panel A of this table presents two multinomial logit regressions of the full model as in Table 3. The first specification is the same as in Table 3, while in the second specification we omit the non-issuers from our regression model. For comparison purposes, in both regressions the base (omitted) category is the category of debt issuers. All variable definitions are as in Table 3. Heteroscadasticity corrected robust standard errors clustered at the firm level are presented in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively. Panel B of the table presents the average probabilities of the no issuance category calculated by the second regression estimated on the sample excluding non issuers, i.e., with sample selection. The panel highlights the misclassification of the predicted probabilities as a result of ignoring the sample selection problem.

Panel A: Multinomial Logit Regressions

	Full Model Including Non Issuers				Full Model Excluding Non Issuers		
	No Issuance	Convertible Debt	Equity	Repurchase	Convertible Debt	Equity	Repurchase
Financial Leverage	-0.032***	-0.012	-0.016*	-0.075	-0.004	-0.005**	-0.004
	[0.009]	[0.013]	[0.009]	[0.115]	[0.004]	[0.002]	[0.003]
Ln Assets	0.021	0.009	-0.342***	-0.138	-0.215***	-0.570***	-0.247***
	[0.155]	[0.101]	[0.122]	[0.121]	[0.032]	[0.024]	[0.028]
Depreciation to Asset	8.010	-11.828	-69.282**	66.352***	4.241	-5.555*	15.254***
	[27.071]	[24.393]	[27.783]	[21.055]	[3.768]	[2.979]	[3.238]
Cash to Asset Ratio	25.142***	17.934***	19.768***	33.164***	3.651***	4.244***	7.025***
	[3.363]	[3.590]	[3.551]	[3.814]	[0.380]	[0.301]	[0.374]
Tax to Asset Ratio	50.663***	41.380***	83.157***	61.064***	6.970**	18.193***	14.164***
	[14.959]	[15.297]	[14.222]	[17.314]	[3.240]	[2.116]	[3.149]
Tangible Assets	0.164	-1.034	-0.344	0.065	-0.147	-0.208	0.141
	[1.143]	[1.082]	[0.912]	[1.271]	[0.216]	[0.132]	[0.193]
Profit	2.456	-10.257	-10.462	-1.662	-5.117***	-4.256***	-2.636*
	[8.071]	[8.332]	[8.216]	[11.012]	[1.224]	[1.106]	[1.599]
Z-score	-1.102***	0.769**	-0.820*	1.775***	0.529***	0.128**	0.807***
	[0.384]	[0.357]	[0.429]	[0.673]	[0.081]	[0.056]	[0.092]
Retained Earnings	-1.308**	-1.579**	-1.473**	-0.585	-0.197***	-0.147***	0.008
	[0.627]	[0.623]	[0.619]	[1.283]	[0.041]	[0.039]	[0.108]
R&D to Sales Ratio	2.460	4.104	4.360	2.269	0.169	0.384**	-0.156
	[3.453]	[3.442]	[3.453]	[3.527]	[0.180]	[0.154]	[0.200]
Ln Amount Raised	-12.851***	0.294	-2.151***	-6.861***	0.301	-0.553***	-2.568***
	[1.135]	[0.551]	[0.629]	[1.440]	[0.252]	[0.177]	[0.403]
IPO in -3	-3.402***	1.150***	2.386***	-3.194***	0.346***	0.927***	-0.687***
	[0.344]	[0.310]	[0.281]	[0.931]	[0.106]	[0.062]	[0.126]
Pct Inst Ownership	-9.349***	-4.688***	-4.733***	-2.134***	-1.239***	-0.372***	-0.401***
	[0.785]	[0.852]	[1.016]	[0.736]	[0.190]	[0.112]	[0.152]
Market Share	-3.759***	0.816	0.851	-6.895**	-0.074	-0.130	-1.188***
	[1.022]	[0.890]	[0.799]	[2.893]	[0.337]	[0.217]	[0.344]
Bid-Ask Spread	4.258	-14.987*	-15.567***	-19.923**	-1.487	-1.630*	-0.505
	[4.820]	[8.199]	[5.598]	[8.467]	[1.718]	[0.976]	[1.338]
Market to Book Ratio	-0.107	-0.684***	-0.513***	-0.994***	0.046	0.116***	-0.120**
	[0.175]	[0.159]	[0.167]	[0.224]	[0.043]	[0.039]	[0.051]
Stdev of Returns	-11.392***	9.063***	5.369***	-23.748***	3.734***	3.231***	-5.871***
	[2.106]	[2.340]	[2.051]	[4.381]	[0.721]	[0.452]	[0.765]

Amihud Ratio	-0.019	-0.098*	-0.055**	0.033***	-0.014**	-0.011***	0.011***
	[0.013]	[0.055]	[0.023]	[0.012]	[0.006]	[0.003]	[0.002]
Adjusted Return -1	-1.705***	1.758***	2.657***	-2.587***	0.768***	1.167***	-0.200*
	[0.445]	[0.337]	[0.359]	[0.686]	[0.098]	[0.074]	[0.113]
Sentiment Index	0.090**	0.280***	0.062	0.500***	0.327***	0.111***	0.278***
	[0.039]	[0.073]	[0.059]	[0.093]	[0.045]	[0.033]	[0.044]
Constant	7.769***	-1.795*	1.867*	-0.522	-2.488***	-0.186	-1.439***
	[0.930]	[0.993]	[1.128]	[1.294]	[0.216]	[0.139]	[0.205]
Observations	817347	817347	817347	817347	17245	17245	17245
Chi Square	1218.66				3491.96		
Pseudo R-square	0.320				0.241		

Panel B: Misclassification of Non-Issuers

		In Sample Predictions				Out of Sample Predictions			
		Base Model		Full Model		Base Model		Full Model	
Actual Response	Probability Category	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
No Issuance	Debt	799097	0.357	798387	**0.379**	685759	0.352	685141	**0.386**
	Convertible Debt	799097	0.071	798387	0.068	685759	0.068	685141	0.070
	Equity	799097	0.458	798387	**0.419**	685759	0.449	685141	**0.412**
	Repurchase	799097	0.114	798387	0.134	685759	0.131	685141	0.132

Table 7: Announcement Effect by Security Types: This table presents the announcement effects of issuing securities. Panel A presents the announcement effect of issuing equity, Panel B, the announcement effect of issuing debt, and Panel C, the announcement effect of issuing either debt or equity. In each panel we further classify the announcement effect based on the firm type that issues the security. Firms are identified as equity type if in any particular quarter, the probability of issuing equity surpasses the probability of doing anything else; similarly firms are classified as debt type if in any quarter the probability of issuing debt surpasses all other probabilities. In each panel we present this classification as according to both the base model and the full model presented in Table 3. We consider 5 different event windows around the announcement date, which is reported as day 0 in this table. For each event window, we present the cumulative abnormal announcement effects for the equity type and debt type firms and *t*-test for the difference in means between the announcement effect between the equity and debt type firms. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

Panel A: Equity Issues						
	Full Model			Base Model		
Event Windows	Equity Type	Debt Type	t statistic	Equity Type	Debt Type	t statistic
Car(-3,3)	-4.15%	-2.62%	(3.061)***	-3.48%	-2.93%	(1.027)
Car(-1,1)	-3.10%	-2.18%	(2.852)***	-2.81%	-2.22%	(1.659)*
Car(0)	-1.63%	-1.35%	(1.350)	-1.73%	-1.21%	(2.3)**
Car(0,1)	-2.83%	-1.92%	(3.273)***	-2.58%	-1.86%	(2.382)***
Car(-1,0)	-1.89%	-1.60%	(1.076)	-1.96%	-1.57%	(1.303)
Obs	1087	512		747	476	

Panel B: Debt Issues						
	Full Model			Base Model		
Event Windows	Equity Type	Debt Type	t statistic	Equity Type	Debt Type	t statistic
Car(-3,3)	-0.67%	-0.04%	(0.770)	0.82%	0.13%	(-0.705)
Car(-1,1)	0.25%	-0.15%	(-0.76)	0.91%	-0.10%	(-1.679)*
Car(0)	0.71%	-0.06%	(-2.500)**	1.29%	-0.04%	(-3.319)***
Car(0,1)	0.33%	-0.14%	(-1.083)	0.95%	-0.11%	(-2.12)**
Car(-1,0)	0.63%	-0.06%	(-1.667)*	1.25%	-0.03%	(-2.341)**
Obs	203	1133		124	1139	

Panel C: All Issues						
	Full Model			Base Model		
Event Windows	Equity Type	Debt Type	t statistic	Equity Type	Debt Type	t statistic
Car(-3,3)	-3.60%	-0.84%	(7.334)***	-2.87%	-0.77%	(4.861)***
Car(-1,1)	-2.57%	-0.78%	(7.107)***	-2.28%	-0.72%	(5.582)***
Car(0)	-1.26%	-0.46%	(5.163)***	-1.30%	-0.38%	(5.222)***
Car(0,1)	-2.34%	-0.70%	(7.563)***	-2.08%	-0.62%	(6.071)***
Car(-1,0)	-1.50%	-0.54%	(4.661)***	-1.50%	-0.48%	(4.48)***
Obs	1290	1645		871	1615	

Table 8: Long Run Stock Performance by Security Types: This table presents the long-run stock price performance following security issuance, where long-run returns are measured by buy and hold returns. We present the long-run returns around equity issues, around debt issues, and around either debt or equity issues. In each panel we further classify the long-run returns based on the firm type that issues the security. Firms are identified as equity type if in any particular quarter, the probability of issuing equity surpasses the probability of doing anything else; similarly firms are classified as debt type if in any quarter the probability of issuing debt surpasses all other probabilities. In each panel we present this classification as according to both the base model and the full model presented in Table 3. We present the long-run returns from 3 years prior to the security issuance to 3 years following the security issuance. For each year the percentage buy and hold returns are reported with *t*-tests for the difference in means in holding period returns between the equity and debt type firms. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

	Equity Issues				Debt Issues				All Issues			
	Full Model		Base Model		Full Model		Base Model		Full Model		Base Model	
Long Run Return	Equity Type	Debt Type	Equity Type	Debt Type	Equity Type	Debt Type	Equity Type	Debt Type	Equity Type	Debt Type	Equity Type	Debt Type
Last 3-year	205.44%	102.83%	109.58%	96.06%	159.41%	30.91%	57.34%	28.56%	197.48%	42.56%	91.15%	39.34%
Abnormal HPR		-5.29***		-0.714		-4.248***		-0.916		-10.896***		-3.587***
Obs.	619	394	231	361	96	1931	29	1920	780	2561	286	2505
Last 2-year	183.41%	79.24%	106.28%	81.63%	89.07%	19.16%	30.31%	16.33%	167.34%	30.02%	88.31%	27.87%
Abnormal HPR		-6.921***		-2.047**		-3.61***		-0.953		-11.955***		-7.132***
Obs.	849	472	422	440	160	2024	75	2015	1107	2752	556	2701
Last 1-year	131.51%	43.58%	73.26%	43.83%	55.07%	6.68%	0.65%	5.12%	114.95%	14.61%	59.18%	12.91%
Abnormal HPR		-14.736***		-5.408***		-6.048***		0.986		-21.892***		-11.267***
Obs.	1156	563	717	518	237	2127	141	2110	1524	2956	943	2882
Last 1-quarter	28.86%	13.68%	21.80%	15.41%	8.76%	0.83%	-0.86%	0.05%	24.57%	3.70%	17.71%	3.26%
Abnormal HPR		-10.422***		-3.873***		-3.88***		0.483		-20.544***		-12.735***
Obs.	1475	602	1004	558	297	2161	180	2144	1920	3037	1281	2963
Next 1-quarter	-1.52%	-1.62%	-2.88%	-1.52%	-2.87%	-0.68%	-3.99%	-0.43%	-1.90%	-0.99%	-2.98%	-0.74%
Abnormal HPR		-0.085		1.136		1.542		2.018**		1.216		2.692***
Obs.	1510	606	1040	562	302	2159	188	2141	1966	3039	1330	2964
Next 1-year	-11.86%	-7.27%	-14.23%	-7.18%	-6.98%	-0.58%	-11.69%	-0.49%	-11.19%	-2.07%	-13.18%	-1.87%
Abnormal HPR		1.841*		2.636***		1.571		2.369**		5.333***		5.966***
Obs.	1465	585	1009	542	280	2090	171	2076	1889	2944	1277	2875
Next 2-year	-22.88%	-9.59%	-28.78%	-9.84%	-9.63%	-0.46%	-25.42%	-1.44%	-21.37%	-2.40%	-27.47%	-3.14%
Abnormal HPR		3.148***		4.24***		1.385		3.380***		6.704***		8.578***
Obs.	1340	547	905	509	237	1978	139	1961	1710	2774	1133	2710
Next 3-year	-34.32%	-22.17%	-34.39%	-24.33%	-21.53%	2.11%	-39.06%	2.08%	-33.32%	-2.62%	-35.27%	-2.87%
Abnormal HPR		2.174**		1.600		2.705***		4.442***		7.955***		7.214***
Obs.	1126	452	750	421	195	1717	111	1708	1432	2397	934	2347

Table 9: Market Timing and Long Run Stock Performance of Equity Issues: This table presents the long-run stock price performance around equity issues, on separate sub-samples of firms that are identified by our base and full model as presented in Table 3. Firms are identified as equity type if in any particular quarter the probability of issuing equity surpasses the probability of doing anything else. We identify the equity type firms that are identified by our full model as equity type but missed by our base model, as the "pure market timers". Following this, we compare the long run performance of this group of firms around equity issuances to two benchmark groups: one comprising the firms identified by our base model only, and the other comprising of firms identified by our full model minus the pure market timers. We present the long-run returns from 3 years prior to the security issuance to 3 years following the security issuance. For each year the percentage buy and hold returns are reported with *t*-tests for the difference in means in holding period returns between the benchmark category and the pure market timing category of equity type firms. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

Long Run Return	Equity Type Identified by the Full Model	Equity Type Missed By the Base Model	Equity Type Identified by the Base Model	Equity Type Missed By the Base Model
Last 3-year Abnormal HPR	115.57%	245.25%	109.58%	245.25%
		-4.47***		-4.939***
Obs.	190	429	231	429
Last 2-year Abnormal HPR	111.72%	233.69%	106.28%	233.69%
		-5.000***		-5.361***
Obs.	350	499	422	499
Last 1-year Abnormal HPR	77.62%	187.68%	73.26%	187.68%
		-10.787***		-11.600***
Obs.	590	566	717	566
Last 1-quarter Abnormal HPR	22.23%	37.25%	21.80%	37.25%
		-6.685***		-7.025***
Obs.	824	651	1004	651
Next 1-quarter Abnormal HPR	-2.83%	0.18%	-2.88%	0.18%
		-1.881*		-1.980**
Obs.	853	657	1040	657
Next 1-year Abnormal HPR	-14.44%	-8.50%	-14.23%	-8.50%
		-1.69*		-1.698*
Obs.	827	638	1009	638
Next 2-year Abnormal HPR	-30.32%	-13.46%	-28.78%	-13.46%
		-2.805***		-2.602***
Obs.	749	591	905	591
Next 3-year Abnormal HPR	-36.49%	-31.68%	-34.39%	-31.68%
		-0.630		-0.367
Obs.	619	507	750	507

Table 10: Long Run Operating Performance following Equity Issues: This table presents the long run operating performance results around equity issues. In each year, we look at the gross profit margin, the gross ROA, ROA, and the operating income to asset ratio. Panel A presents the medians for each variable for the debt type equity issuers, while Panel B presents the medians for the equity type equity issuers. Panel C presents the difference in medians between the debt type and equity type firms, while Panel D presents the z-statistics on the equality of the distributions between the debt and equity type issuers.

Fiscal Year Relative to Security Issue	Gross Profit Margin	Gross ROA	ROA	Operating Income/Assets	Obs.
Panel A: Debt Type Issuer Medians					
-3	18.69%	4.91%	0.50%	3.35%	622
-2	19.14%	5.11%	0.49%	3.27%	622
-1	24.32%	6.10%	0.76%	3.73%	622
1	34.81%	8.90%	1.14%	3.35%	622
2	40.23%	10.22%	1.09%	3.20%	558
3	43.95%	11.53%	0.90%	3.11%	524
Panel B: Equity Type Issuer Medians					
-3	16.43%	4.65%	0.18%	1.99%	1574
-2	17.60%	4.82%	0.25%	1.95%	1574
-1	21.22%	5.01%	0.41%	2.38%	1574
1	35.02%	8.24%	0.16%	1.63%	1574
2	39.17%	9.54%	0.02%	1.56%	1440
3	40.95%	10.32%	0.07%	1.73%	1313
Panel C: Difference in Medians between Debt Type and Equity Type Issuers					
-3	2.26%	0.26%	0.31%	1.37%	2196
-2	1.54%	0.29%	0.24%	1.32%	2196
-1	3.10%	1.09%	0.35%	1.35%	2196
1	-0.21%	0.66%	0.98%	1.72%	2196
2	1.06%	0.68%	1.07%	1.63%	1998
3	3.00%	1.21%	0.83%	1.37%	1837
Panel D: Z-Statistics on the Equality of Distributions Between Debt and Equity Type Issuers					
-3	4.163	5.329	9.100	13.201	2196
-2	4.232	5.221	8.089	12.911	2196
-1	6.358	7.316	8.494	12.123	2196
1	2.130	4.776	7.376	13.057	2196
2	1.948	3.402	7.242	12.779	1998
3	1.940	3.817	7.295	12.262	1837

Table 11: Long Run Operating Performance following Debt Issues: This table presents the long run operating performance results around debt issues. In each year, we look at the gross profit margin, the gross ROA, ROA, and the operating income to asset ratio. Panel A presents the medians for each variable for the debt type equity issuers, while Panel B presents the medians for the equity type equity issuers. Panel C presents the difference in medians between the debt type and equity type firms, while Panel D presents the z-statistics on the equality of the distributions between the debt and equity type issuers.

Fiscal Year Relative to Security Issue	Gross Profit Margin	Gross ROA	ROA	Operating Income/Assets	Obs.
Panel A: Debt Type Issuer Medians					
-3	21.85%	5.47%	0.71%	3.69%	2259
-2	22.94%	5.65%	0.77%	3.70%	2259
-1	26.87%	6.56%	0.90%	3.73%	2259
1	30.99%	7.91%	1.01%	3.33%	2259
2	32.11%	8.49%	1.00%	3.26%	2056
3	33.69%	9.07%	0.98%	3.21%	1838
Panel B: Equity Type Issuer Medians					
-3	19.07%	5.23%	0.40%	3.01%	332
-2	19.43%	5.38%	0.41%	2.96%	332
-1	23.18%	6.19%	0.63%	3.10%	332
1	35.93%	8.31%	0.72%	2.71%	331
2	38.99%	9.35%	0.44%	2.72%	319
3	39.73%	9.25%	0.39%	2.64%	310
Panel C: Difference in Medians between Debt Type and Equity Type Issuers					
-3	2.78%	0.24%	0.31%	0.69%	2591
-2	3.51%	0.27%	0.36%	0.74%	2591
-1	3.69%	0.37%	0.27%	0.63%	2591
1	-4.94%	-0.39%	0.29%	0.62%	2590
2	-6.89%	-0.87%	0.56%	0.54%	2375
3	-6.04%	-0.17%	0.59%	0.58%	2148
Panel D: Z-Statistics on the Equality of Distributions Between Debt and Equity Type Issuers					
-3	3.138	1.81	7.117	7.826	2591
-2	3.854	2.371	8.093	7.644	2591
-1	3.724	2.517	4.586	4.983	2591
1	-3.022	-1.026	3.399	5.155	2590
2	-4.29	-2.017	4.988	5.344	2375
3	-3.336	-1.432	4.889	5.445	2148