Determinants of Public Financing Choice*

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Determinants of Public Financing Choice

Abstract

We study determinants of public financing choice in relation to security issuance theories. We find that equity issuers are more overvalued than debt issuers and equity repurchasers, using the market-to-book equity ratio to measure valuation. Post-announcement long-run excess returns are lower for the high market-to-book equity issuers. These findings give support to the market timing theory of capital structure. A higher degree of financial constraint increases the probability of issuing equity compared to debt, but only after controlling for firm size. This result indicates that large firms use debt financing more than small firms do; after controlling for this size effect, firms' choice between debt and equity issuance is consistent with the pecking-order theory that less constrained firms prefer debt over equity. We do not find support for the theory that higher levels of agreement between insiders and outsiders of the firm lead the firm to prefer equity over debt.

1 Introduction

Notwithstanding many years of research and a large amount of research papers, the academic literature has yet to reach consensus over the security issuance decision. There are three important competing theories that explain this decision: the pecking-order model of Myers and Majluf (1984), the market timing theory (e.g., Stein, 1996), and the theory of agreement between insiders and outsiders of Dittmar and Thakor (2007). The pecking-order model argues that due to informational asymmetries different financing options bear different financing costs and firms will prefer flexibility in financing. They will only issue the "costliest" security (equity) when ultimately needed - i.e. when firms are financially constrained. Empirical research on this model shows mixed results with some studies confirming the model (see, e.g., Bayless and Chaplinsky, 1991; Hovakimian, Opler and Titman, 2001; Shyam-Sunder and Myers, 1999) and other papers rejecting it (e.g., Frank and Goyal, 2003; Leary and Roberts, 2005; Helwege and Liang, 1996). According to the market timing theory managers are able to time the market and issue equity when the firm's stock is overvalued and retire equity when undervalued. Jung, Kim and Stulz (1996) find evidence inconsistent with market timing, while a growing body of papers show that firms time the market with equity issues (e.g., Baker and Wurgler, 2002; Gomes and Phillips, 2005). More recently, Dittmar and Thakor (2007) postulate that firms issue

equity when the agreement between insiders and outsiders is high, regardless of the firm's valuation. Using US debt and equity issuance data, they find evidence consistent with this theory.

The objective of this paper is to study the three aforementioned theories of firms' public financing choice using a sample of Canadian firms that issued equity or debt, or repurchased shares between 1998 and 2004. Market timing is particularly interesting, since most previous research finds stock price run-ups prior to the announcement of equity issues, but subsequently fails to provide conclusive evidence that managers time the market. We therefore look at pre- and post-announcement period excess returns in relationship with market-to-book values to shed more light on the issue. We test the pecking-order theory using a comprehensive measure of financial constraint – the Kaplan and Zingales (1997) index – to examine if at least some firms are forced into issuing equity, a result that is consistent with this model of the preference for financial flexibility. Finally, we re-examine the theory of Dittmar and Thakor (2007) on the agreement between insiders and outsiders as a motive for issuing equity Since empirical tests on security issuance theories are mostly based on U.S. data, it is worthwhile to examine the theories in a non-U.S. market. We use Canadian issuance data to provide an out-of-sample test of the three theories.

To test for market timing, we use the market-to-book equity ratio to measure stock valuation. Consistent with market timing, we find that equity issuers have higher market-to-book ratios than debt issuers or repurchasers. However, market-to-book and related variables such as pre-issue stock returns and Tobin's Q may also indicate growth opportunities, managerial skills, etc. (Dong, Hirshleifer, Richardson and Teoh, 2006). To distinguish market timing from alternative interpretations, we further examine stock performance around and after the announcement of financing decisions.

We examine both the announcement period and long-run (3-month) stock returns after the announcement, because short-run market reactions may be inadequate to reflect the full extent of the pre-issue market valuation of the issuers. For example, the first-day returns of initial public offerings (IPOs) tend to be high, but the long-run returns of IPOs tend to reverse initial returns, suggesting IPOs may be overvalued (e.g., Purnanandam and Swaminathan, 2004). We find short-run announcement period returns do not offer a robust conclusion regarding the relation between market performance and market-to-book: while market-adjusted short-run returns

increase with market-to-book, this is not true when we adjusted returns using matching firms sorted by size and market-to-book. However, strikingly, the long-run returns are consistently lower for equity issuers with high market-to-book ratios, and this long-run return differential is an order of magnitude more significant than the differential in announcement period returns.

Overall, these results give support to the market timing argument for issuing equity, consistent with previous findings on market timing (e.g., Baker and Wurgler, 2002; Gomes and Phillips, 2005), but in contrast to Jung et al. (1996) who reject market timing on the basis of the finding that high market-to-book equity issuers earn higher announcement returns. Our long-run returns evidence indicates that investors tend to mis-react on the initial equity issuance announcement, but this misreaction is corrected in the months following the issuance.

Our evidence also gives support to the pecking-order theory of security issuance. We first find that firm size strongly affects the choice between debt and equity financing: large (small) firms tend to use debt (equity) financing. After controlling for the size of the issuer we find that firms with high KZ-index are more likely to issue equity. This result indicates that less constrained firms prefer debt over equity, consistent with the pecking-order theory. Somewhat surprisingly, the market-to-book ratio does not affect the choice between debt and equity after controlling for firms size, suggesting that firm size has a dominant effect in the debt and equity choice. However, the market-to-book ratio does affect the choice of equity issue versus repurchase after controlling for size. Furthermore, even after controlling for size and other factors, equity issuers with high market-to-book ratios earn much lower long-run returns than issuers with lower market-to-book ratios, suggesting that market timing does play a significant role in security issuance.

We find no evidence that companies issue equity when the agreement between outside investors and insiders is high (Dittmar and Thakor, 2007). On the contrary, we find that the probability of issuing equity increases in the level of "disagreement", as proxied by the discrepancy between actual and forecast earnings or dispersion of analyst forecasts. Since these proxies are also measures of information asymmetry, our results are inconsistent with findings based on US studies that firms with high levels of information asymmetry tend to issue debt to avoid high informational costs.

Our paper makes three contributions to the literature on security issuance. First, in order to distinguish market timing from alternative theories using market price-based valuation mea-

sures such as the market-to-book ratio, it is crucial to examine post-issue market performance, especially the long-run returns. We find that short-run market reaction to issuance announcements is an inadequate assessment of the market about the valuation consequence of the issuers, and the pre-issue misvaluation level is better measured by the long-run performance. Second, using a comprehensive measure of financial constraint – the Kaplan-Zingales (1997) index – we find that debt is preferred over equity for less constrained firms after controlling for firm size. This result indicates that pecking-order and market timing theories are not mutually exclusive and can affect issuance decisions simultaneously. Finally, we find that the probability of equity issue does not decrease with the level of information asymmetry between insiders and outsiders of firms in the Canadian market. At the very least, our evidence suggests that the insiders-outsiders agreement theory of Dittmar and Thakor (2007), and more broadly, the information asymmetry theory about debt-equity choice, are not robust to different capital markets.

The remainder of the paper is organized as follows. In Section 2 we discuss related research, present capital structure theories and relate them to hypotheses that we test. In Section 3 we describe proxies that we use to test the hypotheses and describe construction of the data. In Section 4 we present sample characteristics, explore the differences between different security issue types and investigate market timing, pecking-order and agreement theories of capital structure individually, but also jointly in a mulitinomial choice setting. Section 5 concludes.

2 Capital Structure Theories and the Security Issuance Choice

2.1 Previous Research

Previous research finds that equity offers coincide with high market valuations of equity (see for example Asquith and Mullins, 1986; Jung et al., 1996; Hovakimian et al., 2001). Two thirds of CFOs surveyed by Graham and Harvey (2001) claim that undervaluation (overvaluation) of equity was one of the most important considerations in their decision to issue equity. Baker and Wurgler (2002) show that past market valuations have a strong and persistent effect on capital structure or, in other words, managers try to time the market. Firms raise equity when the cost of equity is "unusually low" or market-to-book ratios (if considered as proxy for misvaluation) are extremely high. Bayless and Chaplinsky (1991) show that firms issue equity in periods of reduced information asymmetry in the markets, when the announcement period excess

returns are less negative (hot equity markets). They also find that higher-risk and larger firms prefer issuing equity over debt. Gomes and Phillips (2005) find evidence for the market timing hypothesis. The probability of issuing equity increases with excess stock returns prior to the announcement compared to the size-matched benchmark portfolio. Moreover, they show that market timing is a particular characteristic of public equity markets. However, they do not examine the post-issue stock performance, and therefore alternative interpretations about prior stock returns cannot be excluded.

According to the pecking-order model (Myers and Majluf, 1984) different financing options bear different financing costs due to informational asymmetries and firms will prefer flexibility in financing. Firms will only issue the "costliest" security (equity) when ultimately needed - i.e. when firms are financially constrained. Previous research, conducted for the US and the UK markets (see for example Bayless and Chaplinsky, 1991; Hovakimian et al., 2001), mostly finds that equity is preferred over debt by smaller and riskier companies, those with better growth opportunities and lower leverage, and less profitable firms. These results are consistent with pecking-order. Related to capital structure theories Shyam-Sunder and Myers (1999) also demonstrate support for the pecking-order theory, but they do so on a sample of mature firms. However, the pecking-order is refuted in other research. Frank and Goyal (2003) find some evidence that large firms exhibit "pecking-order" behavior, but their overall evidence goes against it. Fama and French (2005) show that equity issues are very frequent and are typically not a result of a "duress" or the last resort as predicted by the pecking-order model. Gomes and Phillips (2005) investigate the private versus public security decision and subsequent security type choice. They find that the probability of issuing securities in the private market increases with the degree of informational asymmetry. For securities issued in the public market they find support for their version of the pecking-order theory of capital structure: the probability of issuing equity decreases for firms with high degrees of informational asymmetry. The opposite holds for firms that issue debt.

Jung et al. (1996) use the security issue choice to test three theories of capital structure on a sample of US firms in the period 1977 to 1984: Myers' and Majluf's (1984) pecking-order model, the agency model, and the market timing model. The agency model refers to the agency cost of equity, which is mitigated with the use of debt. Debt serves as a disciplining device that lowers free cash flow and managerial discretion. Although the "timing model" is inherent

in both the pecking-order and the agency model, Jung et al. investigate whether timing is of first order importance in the security decision process. They find bond (debt) issuers to be significantly larger companies that pay more dividends, have less leverage, lower market-to-book ratios and have not experienced positive stock price run-ups during the 11 months prior to the announcement. Companies with better growth opportunities (measured by the market-to-book ratio) and better cumulative excess stock performance in the past are significantly more likely to issue equity. Jung et al. conclude that their findings support the agency model, since they find some evidence against the pecking-order model – some firms issue equity against their type. Moreover, they argue that no evidence is found for the market timing explanation of capital structure, since the announcement date excess returns are more negative for firms that have lower market-to-book ratios or that are less overvalued.

Boot and Thakor (2003) argue that firms value flexibility. They define flexibility as the ability to take action that the manager thinks is the best even when others, such as a group of investors, disagree. Flexibility depends on how the firm is financed, where flexibility increases from the debt to equity spectrum. Boot and Thakor argue that firms trade the flexibility provided by issuing equity against the tax shield of debt. The main implication of their idea is that firms issue equity when stock prices are high and issue debt when stock prices are low. Dittmar and Thakor (2007) provide an additional explanation on why firms issue equity. They argue that companies issue equity when agreement between managers and outside investors is high. This is typically the case in periods of high equity valuation (high stock prices). The main implication of their argument is that companies will issue equity when agreement with outsiders is high, regardless of the valuation of a company. This is in contrast to the market timing and pecking-order hypotheses, which predict equity issues in times of high stock prices and / or high degrees of financial constraint, regardless of the level of agreement between managers and outsiders. Using US data, Dittmar and Thakor (2007) and Gomes and Phillips (2005) all find the probability of public equity issuance increases when the information asymmetry between insiders and outsiders is low, consistent with the (dis)agreement theory of Dittmar and Thakor.

2.2 Hypotheses and Definitions of Proxy Variables

In this paper we examine three distinct explanations of the firm's capital structure – market timing, pecking-order and agreement between insiders and outsiders of a firm.

2.2.1 Market Timing

The market timing theory implies that companies issue equity when it is overvalued, leading to the following hypothesis:

Hypothesis 1: Equity issuers are more overvalued than debt issuers and stock repurchasers.

As discussed below, we use the market-to-book equity ratio (or allied variables such as Tobin's Q) to measure valuation. The market timing hypothesis predicts that equity issuers should have a higher MB than debt issuers or repurchasers. However, as discussed in Dong et al. (2006), MB and related variables (such as pre-issue stock returns) may also indicate growth opportunities, managerial skills, etc. To distinguish market timing from alternative interpretations, we further examine stock performance around and after the announcement of financing decisions.

We examine both the announcement period and long-run stock returns after the announcement, because short-run market reactions may be inadequate to reflect the full extent of the pre-issue market valuation of the issuers. For example, the first-day returns of initial public offerings (IPOs) tend to be high, but the long-run returns of IPOs tend to reverse initial returns, suggesting IPOs may be overvalued (Ritter and Welch, 2002; Purnanandam and Swaminathan, 2004). Jung et al. (1996) examine both short-run and long-run market performance of equity issuers. They find that high-Q firms earn higher announcement period abnormal returns than low-Q firms, and long-run returns do not seem to be related to Q. In their view this represents evidence against market timing. To test market timing in a different market and sample period, we additionally investigate Hypothesis 1A, which is related to market timing by equity issuers:

Hypothesis 1A: Post-announcement excess returns will be decreasing in the market-to-book ratio for equity issuers.

2.2.2 Pecking-Order Hypothesis

According to the pecking-order hypothesis (Myers and Majluf, 1984; Myers, 1984) companies are faced with different levels of informational asymmetries, which create an adverse selection problem. As a result there is a financing hierarchy that firms will follow, where in-

ternal financing (retained earnings) will be used first, followed by external debt-like financing. Equity financing will only be used when firms are financially constrained and cannot take up any additional leverage. In other words, this implies:

Hypothesis 2: Higher degree of financial constraints increases the probability of issuing equity-like security.

2.2.3 (Dis)agreement between insiders and outsiders

Dittmar and Thakor (2007) propose an alternative explanation of the security issuance choice to resolve the ambiguity of market timing hypotheses of capital structure. Compared to market timing or pecking-order explanations of capital structure, according to their proposition companies will issue equity when the agreement with outsiders is high, regardless of the (over)valuation of a company and / or degree of financial constraint.

Hypothesis 3: High "agreement" between insiders and outsiders increases the probability of issuing equity-like security.

3 Data and Definitions of Variables

3.1 Sample Construction

We analyze three types of public security issues or repurchases in the Canadian market between 1998 and 2004: nonconvertible debt (bond) issues, seasoned equity issues, and share repurchases (equity withdrawal). The data on the new issues is gathered from the SDC New Issues database. During this period, there were 1,075 corporate (nonconvertible) debt issues, 3,439 equity issues, and 1,415 intended share repurchases in the corporate sector.[1] We first eliminate all financial companies from our sample (SIC 6000-6999). This leaves us with 440 corporate debt issues, 2,271 corporate equity and 1,084 intended share repurchases. Next, we match the sample with the WorldScope accounting data, as well as stock price and market value of equity data from Datastream.[2] Since data in Datastream is not available for all non-

[1]Note that this does not include the issues placed by government or government agencies.

[2]Note that availability of data refers to a particular company being listed in Datastream and not to the actual accounting numbers per se. Number of companies in tables of descriptive statistics and regression tables might

financial companies in our sample, we are left with 142 corporate debt issues (made by 40 different companies), 682 corporate equity issues (made by 341 different companies) and 575 share repurchases (made by 238 different companies). The total sample contains 1,399 different security issues and share repurchases made by 546 different companies.

Next, we gather data on analysts forecasts from the I/B/E/S database available through Wharton Research Data Services (WRDS). Analysts' forecasts are available for 108 corporate debt issues, 463 equity issues and 469 share repurchases. However, quite a few companies are only covered by a single analyst. Therefore, we are only able to compute dispersion of forecasts for the companies that are covered by more than one analyst. We have valid observations of dispersion of earnings forecasts for 106 debt issues, 353 equity issues, and 360 intended share repurchases.

3.2 Definitions of Variables

As described in Section 2.2, where we define the hypotheses, we group our proxies such to test different hypotheses related to capital structure theories. We therefore define groups of variables that we use to test hypotheses regarding (1) market timing, (2) pecking-order and (3) agreement between insiders and outsiders.

3.2.1 Market Timing

According to Hypothesis 1 equity issuers should be overvalued compared to debt issuers or stock repurchasers. This implies that managers will exploit periods of equity overvaluation and will issue equity. Similarly, when managers perceive firm's equity to be undervalued they will repurchase firm's stock. To test this hypothesis we need measures of equity valuation (market-to-book ratio, Q-ratio), as well as stock price performance measures as defined below:

- **Growth opportunities - Q ratio**. Mainly to compare with prior literature (e.g., Jung, et al., 1996) we use the Q ratio as a measure of stock misvaluation. The Q, or market-to-book asset ratio, is defined as:
  $Q = \frac{\text{book values of long term and short term debt + market value of equity}}{\text{total assets}}$.

- **Market-to-book value of equity** is defined as $MB = \frac{\text{market value of equity}}{\text{book value of equity}}$, where market

therefore be different, depending on the availability of data for the variables used in the analysis.

value of equity is taken 5 trading days prior to the announcement. MB is a cleaner measure of stock misvaluation than Q, since Q contains information about leverage that may contaminate the measure for misvaluation. Therefore, MB is our primary proxy for stock misvaluation.

- **Stock returns at the announcement** of the security issue: $AR = AR^{i}_{-1,1}$, where $AR^{i}_{-1,1}$ is estimated using the standard market model with the total return on TSX 300 market index being a proxy for the market return.

- **Stock returns after the announcement** of the security issue: $SRA = AR^{i}_{2,60}$, where $AR^{i}_{2,60}$ is estimated using the standard market model with the total return on TSX 300 market index being a proxy for the market return.

We expect equity issuers to have significantly higher stock price run ups and higher market-to-book (MB) values than debt issuers or share repurchasers. Moreover, stock returns after the announcement of the issue are expected to be decreasing in market-to-book ratios, if managers time the market.

3.2.2 Pecking-order

Hypothesis 2 predicts that the probability of equity issuance is increasing in the degree of financial constraint, as companies issue equity as a last resort to finance profitable projects (after they have exhausted internal reserves and debt capacity). To test this we look into a number of firm characteristics that proxy for the amount of internally generated funds, debt capacity and financial constraints.

- **Leverage** is defined as: $LEV = \frac{\text{long term debt}}{\text{total assets}}$.

- **Cash flow** is defined relative to total assets as:
  $CFA = \frac{\text{net income+depreciation}}{\text{total assets}}$.

- **Payout** is defined as cash dividends relative to the assets: $DIVA = \frac{\text{cash dividends}}{\text{total assets}}$.

- **Slack** is defined as: $SLACK = \frac{\text{cash and equivalents}}{\text{total assets}}$.

- **Firm size** is defined as the logarithmic value of total assets, where we deflated the value of total assets with the consumer price index ($CPI_{1997} = 100$):
  LNTA=log(deflated total assets).

Firms with low internally generated funds (low free cash flow), a low debt capacity (high leverage) and high financial constraints (high payout, low slack) are supposed to be more likely to issue equity.
In addition, we employ a comprehensive measure of financial constraint, – the Kaplan-Zingales (1997) index. This index, from now on to be referred to as the KZ-index, is constructed based on the coefficients of the restricted ordered logit model. The original, five-variable version of the index has been used in past studies as a measure of financial constraint (e.g., Lamont, Polk and Saá-Requejo (2001)). In this paper, we follow Baker, Stein, and Wurgler (2003) and exclude the Tobin's Q-ratio from the index, as a high Q-ratio might indicate overvaluation and thus "contaminate" the index as a measure of financial constraint. We therefore construct the KZ-index as:

$$KZ_{it} = -1.002 \cdot \frac{CF_{it}}{TA_{it-1}} + 3.139 \cdot LEV_{it} - 39.368 \cdot \frac{DIV_{it}}{A_{it-1}} - 1.315 \cdot \frac{CASH_{it}}{A_{it-1}} \tag{1}$$

CF represents sum of the net income and depreciation, TA stands for total assets, LEV represents leverage as debt over the sum of debt and equity and CASH represents cash and short-term investments. The KZ-index is higher for firms which are more financially constrained, since such firms have exhausted their debt capacity (high leverage), have low cash flows from operations and / or need to pay higher dividends. *H2 implies that the probability of issuing equity should be increasing in the value of KZ – more financially constrained firms are forced to issue equity.*

3.2.3 Agreement between Insiders and Outsiders

We explore this implication by first computing the parameter of agreement between managers and outsiders. We follow Dittmar and Thakor and define the agreement parameter α as the relative difference between the actual (EPS_a) and the last forecasted EPS. Dittmar and Thakor argue that a higher α represents higher agreement, as outsiders are less likely to question the managerial decisions if the managers are able to deliver better earnings than expected. In addition, we measure the disagreement between insiders and outsiders by looking at the dispersion of analysts' earnings forecasts. Higher dispersion implies higher disagreement.

- **Agreement parameter** α is defined as a relative difference between actual (EPS_a) just prior to the announcement of the security issue and the last forecasted EPS (EPS_f): $\alpha = \frac{EPS_a - EPS_f}{EPS_f}$.

- **Dispersion of analysts' forecast** is defined as an absolute value of the coefficient of variation of forecasted earnings for t+1 year, where t is the year of the security issue: $DISP = \mid \frac{\text{standard deviation of earnings forecasts}}{\text{mean earnings forecast}} \mid$.

- **Volatility** is defined as the relative volatility of stock returns: $RVOL = \frac{\sigma_i}{\sigma_M}$, where σ_i is the volatility of stock price returns of company i and σ_M is volatility of the returns of the TSX 300 market index measure over the one year period (250 trading days) prior to the announcement of the security issue.

According to Hypothesis 3 a higher α implies a higher probability of equity issue regardless of equity valuation on the market. Similarly, low dispersion implies low disagreement (high agreement) and higher probability of equity issue.

3.2.4 Other Control Variables

Unrelated to a single hypothesis we define additional variables that provide some insight into characteristics of the issuers (repurchasers).

- **Capital expenditures** is defined as the capital expenditures over the prior fiscal year scaled by total assets: $CAPX = \frac{\text{capital expenditures}}{\text{total assets}}$.

- **Issue size** is defined as the value of the issued security or repurchased stock, where we deflated the value of the issue size with the consumer price index ($CPI_{1997} = 100$): ISS=deflated issue size.

- **Relative issue size** is defined as the nominal amount of funding raised with the issue relative to total assets: $RISS = \frac{\text{issue size}}{\text{total assets}}$.

4 Results of the Analysis

4.1 Sample Characteristics and Univariate Analysis

In Table 1 we present an overview of the yearly distributions of security issues and repurchases during the sample period 1998-2004. As can be seen in the table there is some variation in the number of different security issues over the sample period, in particular in the case of

share repurchases. Debt issues have also decreased towards the end of the sample period, while the number of equity issues remained somewhat more stable.

<Insert Table 1 here>

In Table 2 we present descriptive statistics and pairwise differences in means between different security types for selected characteristics that we use as proxies for market timing and the pecking-order theories of capital structure, as well as proxies for disagreement between insiders and outsiders.

<Insert Table 2 here>

In Panel A we first report characteristics and differences between different issuers related to market timing. Announcement period abnormal returns (AR) show that equity issuers on average experience 2.10 percentage points lower abnormal returns than debt issuers. Companies that announce share repurchase programs experience on average 3.37 percentage points higher abnormal returns than equity issuers. The results are consistent with previous literature on the wealth effects associated with the announcement of different security issues.[3] It appears from Figure 1 that companies choose to issue equity after a period of stock price run-up, which is then followed by a decline of equal magnitude. The opposite seems to be the case for share repurchases, where companies engage in them after a prolonged period of stock underperformance.

<Insert Figure 1 here>

When we look at the differences in market-to-book (MB) values, we observe companies that repurchase shares to have the lowest MB-values (1.8991), while equity issuers have the highest MB (mean MB of 4.8735). The difference in MB between equity issuers and debt issuers and between equity issuers and equity repurchasers is statistically significant. All this evidence is consistent with previous literature on market timing (see for example Baker and Wurgler, 2002) where equity issuers time the market and issue equity after a period of positive returns

[3]Seasoned equity offerings induce the strongest negative wealth effects (see for example Masulis and Korwar, 1986, Mikkelson and Partch, 1986, and Asquith and Mullins, 1986) of between -2.5 and -4.5 percent for the U.S. market, while straight debt issues induce only slightly negative wealth effects (see for example Dann and Mikkelson, 1984 and Eckbo, 1986).

and / or before a period of declining stock returns relative to the market. This result confirms Hypothesis 1. Fama and French (2005) argue that firms repurchase shares (retire equity) when leverage is low and / or investment opportunities lower the value of debt capacity (low Q). In our sample (see Table 2) we observe that companies that repurchase shares have the lowest Q ratio (mean value of 1.4251) and a low leverage (see Panel B of Table 2) comparable to equity issuers (mean value of 0.1798). These results are in line with the findings of Fama and French.

Next, we look at the variables related to the pecking-order explanation of capital structure (Panel B of Table 2). First, we observe that leverage significantly differs across different types of issuers. The significantly higher leverage for debt issuers (mean value of 0.2891) compared to equity issuers (mean value of 0.1716) is surprising and counterintuitive. We would expect that firms with higher leverage would not have sufficient debt capacity to issue debt. However, borrowing capacity is also determined by other company characteristics such as profitability and collateralibility of assets. Equity issuers have on average significantly lower (negative) cash flows (mean value of -2.80% of assets) compared to debt issuers (9.79%) and stock repurchasers (9.60%). On average equity issuers also pay less cash dividends (1.01% of total assets) than debt issuers (2.13%). Somewhat surprising is the finding that equity issuers on average tend to keep significantly more cash and equivalents on their balance sheets (mean value of 15.95% of total assets) than debt issuers (5.08%). These results are somewhat difficult to reconcile with the pecking-order theory of capital structure (and our Hypothesis 2) if looked upon individually. Financially constrained firms (potential equity issuers) are expected to have higher leverage, low cash flows, low dividend payments, and low balances of slack on their balance sheets. In order to assess the financial constraint better, we look into a comprehensive measure of financial constraint, the four-variable Kaplan-Zingales index (see equation 1). Contrary to our expectations, the results for the index itself (variable KZ) do not show equity issuers to be more financially constrained than debt issuers. The opposite is true since debt issuers seem to be marginally more financially constrained than equity issuers (difference in means of 0.1421). This evidence gives no support to the pecking-order explanation of the capital structure (Hypothesis 2), that is that firms issue equity when they are financially (equity) constrained. The only piece of evidence consistent with the pecking-order theory is the fact that equity issuers are significantly smaller firms compared to debt issuers (difference in log total assets of 3.5007) or firms that repurchase shares (difference of 1.1281).

We use several proxies to measure agreement between insiders and outsiders of the firm. The results for these proxies are shown in Panel C of Table 2. First, we assume that higher dispersion (absolute value of the coefficient of variation of forecasted earnings) implies higher asymmetry (disagreement) of information between investors (outsiders) and insiders. It is therefore not surprising to see that equity issuers seem to suffer more from this phenomenon (mean DISP of 0.4087) than debt issuers (mean DISP of 0.1178). Secondly, we look at the values of the α measure. According to Dittmar and Thakor (2007) high values of α show higher agreement between insiders and outsiders. Our results show no significant differences in α between issuers of different securities. We therefore find no support for the Dittmar and Thakor explanation (Hypothesis 3) that companies issue equity when agreement between insiders and outsiders is high (high alpha), regardless of firm valuation (market timing). In addition, we compute the measure of the volatility of the firm's stock returns relative to the market volatility (RVOL) and find that equity issuers have significantly higher volatility of stock returns (4.2744) than debt issuers (1.7419) and share repurchasers (3.0741). Overall the results indicate that there is more disagreement (higher dispersion of analysts' forecasts) in case of equity issuers compared to debt issuers. This is in contrast to Hypothesis 3.

In Panel D of Table 2 we present some additional characteristics of the issues and issuers. Our results show that the average issue size of the debt issue is around 154 million Canadian dollars (CAD), while the average equity issue is around a one-third of that (57 million CAD). The average size of the share repurchase is around 45 million CAD. The relative issue size of equity represents on average around 27% of the assets of the issuing company at the time of the issue, but only around 4% in the case of debt issuers. Given the costs of issuing securities and the significant difference in the sizes of different issuers, this is not surprising. Small equity issuers seem to issue larger shares of new equity compared to their size. Finally we find that equity issuers have more capital expenditures than both debt issuers and equity repurchasers.

4.2 Market Timing

In Figure 1 we observe that equity issuers experience a strong stock price run-up prior to the announcement of the issue compared to debt issuers and share repurchasers (leverage increasing security issuance actions). In addition, they also have significantly lower announcement date excess returns compared to debt issuers and share repurchasers. Both this result and the

significantly higher MB values for equity issuers provide evidence of market timing. Jung et al. (1996) find that announcement date excess returns are significantly lower for equity issuers with lower MB, which goes against the market timing hypothesis. Although we document the same finding based on market-adjusted announcement period returns, this result is not robust to using size-MB matched benchmark returns (described below). We further investigate post-announcement excess returns for equity issuers in order to study Hypothesis 1. In Table 3 we present results of announcement date excess returns and post-announcement excess returns for equity issuers sorted into MB quartiles.

<Insert Table 3 here>

In Panel A of Table 3 we present the results of a standard market model event study approach to calculate abnormal (excess) returns. First, we observe that excess returns in the period around the announcement of the issue are more negative for low MB-firms (mean $CAR_{(-1,1)}$ of -2.92%) than for high-MB firms (mean $CAR_{(-1,1)}$ of -0.36%). This result is consistent with the finding of Jung et al. (1996). However, when we look into post-announcement excess returns we observe the opposite. Cumulative post-announcement abnormal returns are significantly higher for low-MB firms (mean $CAR_{(2,60)}$ of 2.52%) than for high-MB firms (mean $CAR_{(2,60)}$ of -20.54%). We interpret this finding as a confirmation of Hypothesis 1A. Moreover, high-MB firms earn significantly higher pre-announcement cumulative abnormal returns (mean $CAR_{(-60,10)}$ of 20.92%) than low-MB firms (mean $CAR_{(-60,-10)}$ of 4.78%). In order to provide stronger support for this finding, we also perform a matching firm excess returns analysis. We use a size-MB matched firms approach to compute buy-and-hold abnormal returns (BHAR). For each calendar month we first sort all the firms listed on the Toronto Stock Exchange into deciles based on the MB values. Then we match the issuing firm's MB to a corresponding decile. Among the firms within the decile we find the one which is closest in size (size is defined as market value of equity). The difference in buy-and-hold returns for a given time period between the issuing and the matching firm is a buy-and-hold abnormal return (BHAR). We present the results for BHAR in Panel B of Table 3. For the most part the results are similar to those in Panel A. Firms with higher MB have significantly higher pre-announcement BHARs (a difference in $BHAR_{(-60,-10)}$ of around 32 percentage points between the highest and the lowest MB quartile). Contrary to the findings in Panel A, announcement date excess returns are higher for firms with lower MB

(the difference between the highest and the lowest MB quartile is only marginally significant though). This result suggests that the Jung et al. (1996) finding about announcement period returns is not robust to using a different return benchmark. However, post-announcement excess returns are again significantly larger for the lower-MB firms - i.e. $BHAR_{(2,60)}$ is 11 percentage points larger for the lowest MB quartile firms compared to the highest MB quartile firms. Overall, the results in Table 3 support the market timing hypothesis: while short-run returns give ambiguous conclusion regarding the relation between market performance and MB, the post-issue long-run returns over 3 months are consistently lower for equity issuers with high MB ratios, and this long-run return differential is an order of magnitude more significant than the differential in announcement period returns.

Finally, we perform a cross sectional multivariate regression analysis in order to provide a further test of the market timing hypothesis. We estimate a reduced form model based on the following full specification for **equity issuers only**[4]:

$$CAR_{(2,60),i} = \beta_0 + \beta_1 \cdot \Omega_i + \beta_2 \cdot LNMV_i + \beta_3 \cdot KZ_i + \beta_4 \cdot \Theta_i + \beta_5 \cdot \alpha_i + \beta_6 \cdot CAPX_i + \epsilon_i, \qquad (2)$$

where $CAR_{(2,60),i}$ denotes post-announcement excess returns, $LNMV_i$ represents the log of the market value of the company, Ω_i corresponds to the market timing proxies (market-to-book ratio and Q-ratio), KZ_i represents the raw KZ-index of financial constraint, Θ_i denotes KZ-index components, α_i denotes "agreement" proxy, $CAPX_i$ represents the capital expenditures over the total assets of the firm and ϵ_i denotes an error term. We include CAPX in the regression to see whether market performance of issuers is affected by capital expenditures, since CAPX has been found to be related to stock returns (e.g., Titman, Wei, and Xie, 2004; Polk and Sapienza, 2006). We present the regression results in Table 4.

<Insert Table 4 here>

In Panel A (Models 1-4) the dependent variable is post-announcement excess return based on the market model, while in Panel B (Models) 5-8 the dependent variable is size and market-to-book firm matched buy-and-hold post-announcement excess return. In all models the market timing proxies (MB and Q) significantly negatively affect post-announcement excess returns.

[4]We also explore this on the entire sample and the main results remain unchanged. Details are available from the authors on request.

Overall, the results show that firms that issue overvalued equity (high MB, high Q) seem to time the market, where managers take advantage of the overvaluation by issuing equity. The results support Hypothesis 1A and refute the findings of Jung et al. (1996), who do not find support for market timing, but rather propose the agency model of security issuance based on the announcement period returns.

4.3 Pecking-Order

Given the surprising result of the univariate analysis regarding the pecking-order hypothesis, in particular the values of the KZ-index, we continue to further explore differences within the subsample of equity issuers. We partition the subsample of equity issuers into size quartiles (based on the log of total assets) and compare different characteristics among them. We present the results in Table 5.

<Insert Table 5 here>

Differences between size quartiles in Table 5 show that the largest equity issuers are significantly more financially constrained than the smallest equity issuers (difference in KZ of 0.3086). Moreover, they have significantly higher leverage (difference in LEV of 0.2116), less slack (difference in SLACK of -0.2591) and pay more dividends (difference in DIVA of 0.0175). However, they also have significantly more cash flow (difference in CFA of 0.2864). The higher leverage, lower slack, and higher dividend payments have a prevailing effect to account for the higher mean value of the KZ-index. On the other hand, the smallest equity issuers have a significantly higher market-to-book value of equity (difference in MB of -6.6872), higher value of the Q-ratio (difference in Q of -4.7650), higher pre-announcement excess stock returns (difference of -0.1663), and more negative post-announcement excess returns (difference of 0.1288). Moreover, a Pearson correlation between the market-to-book ratio and the size (LNTA) for equity issuers is significantly negative (-0.4927) and a correlation between the KZ-index and size is significantly positive (0.1153).

These differences imply that smaller equity issuers seem to be issuing equity as the result of market timing (issuing overvalued equity), while the largest equity issuers seem to be issuing equity as the result of "pecking-order behavior" (issuing equity when being financially constrained).

4.3.1 Choice Model Analysis

Given that many firm characteristics depend on the size of the company, we turn to a multivariate choice model analysis. We estimate a multinomial probit model, where companies can simultaneously decide on two distinct securities: equity and debt. In addition companies can also repurchase stock, which is similar to increasing leverage. We use a multinomial probit as the issue under investigation fails to assure the so-called independence from irrelevant alternatives property of the multinomial logit model. This property is generally referred to as the IIA property. Clearly, if any of the security types is taken away as a possibility, the choice between the remaining two is not unaffected, as companies that considered issuing the withdrawn security type will not proportionally redistribute themselves among the remaining alternatives. If for example the choice set is narrowed down by removing the equity issue, we can expect more of the potential equity issuers to decide to issue debt than to repurchase stocks. Therefore, we use a multinomial probit, which does not require the IIA property.[5]

In Table 6 we present the results of the multinomial probit regression, where the dependent variable is a categorical variable denoting selected security type. As the base outcome we set equity issue and we confront the probability of issuing equity (leverage decreasing security decision) to the two leverage increasing security decisions – debt issue and share repurchase. All models include industry (at 1-digit SIC code) and year dummies.

<Insert Table 6 here>

Models 1-4 of Table 6 refer to a setup where we jointly test all the hypotheses using KZ-index as the proxy for financial constraint. The models differ in proxies that we use to test the hypothesis related to the market timing theory of capital structure (security issuance) and (dis)agreement proxy. In Model 1 we proxy for market timing by using the MB-ratio, while in Model 2 we use the Q-ratio. In Models 1 and 2 we use agreement parameter α as a proxy for the (dis)agreement, while in Models 3 and 4 we use dispersion of analysts' forecasts (DISP).

A somewhat surprising finding with regard to the market timing hypothesis is that the market-to-book (MB) ratio of equity does not affect the choice between debt and equity after firm size is controlled for. This result suggests that firm size has a dominant effect in the debt and

[5]We have formally tested whether the multinomial logit model assures the IIA and different tests show that the IIA property is often violated.

equity choice: large (small) firms tend to use debt (equity) financing. This finding is consistent with past studies (e.g., Jung et al., 1996). However, the results in Tables 1-3 suggest that market timing does play a significant role: equity issuers are more overvalued than debt issuers, and overvalued issuers tend to earn much lower returns in the long-run, even after controlling for size, capital expenditures, and other factors.

On the other hand, a comparison of equity issuers and share repurchasing firms shows that a higher MB-ratio increases the probability of issuing equity compared to repurchasing shares (coefficients in Model 1 of -0.1797 and -0.1512 in Model 3). Moreover, the same result holds when we use the Q-ratio as a proxy for overvaluation (coefficient in Model 2 of -0.4368 and -0.3783 in Model 4).

Next, we turn to the pecking-order hypothesis. We first test it by using the raw KZ-index variable (Models 1-4) as a comprehensive proxy for financial constraint. Contrary to the findings based on the univariate analysis in Table 2, we find support for the pecking-order theory of capital structure (*Hypothesis 2*). A financial constraint proxied by the KZ-index negatively affects the probability of issuing debt (coefficients for KZ between -0.3361 and -0.3858 in Models 1-4) versus issuing equity. Note that in all models we use firm size as the control variable. The results for firm size show that larger firms are more likely to issue debt or repurchase shares than issue equity. It therefore seems that, when controlling for the firm size in a multivariate setting, the degree of financial constraint has a significant effect on the security issuance decision, despite the fact that in a univariate analysis debt issuers are on average more financially constrained than equity issuers.[6]

In Models 5 and 6 we repeat the same analysis but use the individual components of the KZ-index as proxies for financial constraints of the company. The results for the market timing proxy (MB) remain virtually the same for both debt issuers and share repurchasers. However, different components of the KZ-index do have different effects on probabilities of issuing debt versus equity or repurchasing shares versus issuing equity. Firms with low internally generated funds (low cash flows), low debt capacity (high leverage) and high financial constraints (high payout, low slack) are predicted to be more likely to issue equity. Indeed, firms with higher leverage (coefficients for LEV between -2.8442 and -2.6789 in Models 5 and 6) are more likely to issue equity, while those with more slack are more likely to issue debt (coefficients for SLACK

[6]These results also hold for the subsample of equity and straight debt issuers only.

of 1.9619 and 1.5808 in Models 5 and 6).

The probability of issuing equity compared to retiring equity decreases in cash flows (coefficients for CFA between 7.2807 and 7.0037 in Models 5 and 6), but increases in the payout. Firms that pay more dividends are more likely to issue equity than repurchase shares (coefficients for DIVA between -8.4372 and -11.6000 in Models 5 and 6). Strong evidence on the negative effect of cash flows (opposed to issuing debt) and the positive effect of dividend payments on the probability of issuing equity (opposed to repurchasing shares) again gives support to the pecking-order theory of capital structure.

4.4 (Dis)agreement between the Insiders and the Outsiders

In Models 1, 2 and 5 of Table 6 we use a proxy for agreement (α) between insiders and outsiders to explore the agreement hypothesis in a multinomial choice setting. There is no significant effect of the agreement proxy on the probability of issuing equity (decrease in leverage) versus debt or share repurchase (increase in leverage). Moreover, we also did the analysis using dispersion of analysts' forecasts (DISP) as the agreement proxy in Models 3, 4, and 6 and there is again no significant effect on the probability of security issuance choice.

In Panel C of Table 2 we observed no significant differences in the value of α (agreement) between different security issues (stock repurchases). On the other hand, there were significant differences in the dispersion of analysts' earnings forecasts (disagreement). In order to better investigate the explanation for security issuance decision proposed by Dittmar and Thakor (2007) we need to relate the decision to issue equity to the valuation of the issuer and the agreement between insiders and outsiders of the issuing firm. Dittmar and Thakor propose that the decision to issue equity will be driven solely by the agreement between insiders and outsiders of the firm (low value of α), regardless of the valuation. Otherwise, market timing considerations have important effects on the security issuance decision. Therefore, we sort all the issuers into quartiles based on company valuation (book-to-market ratio) and agreement parameter α. We then construct a matrix of valuation (columns) and agreement quartiles (rows) and compute percentage of equity issuers for each matrix field. We present the results in Table 7.

<Insert Table 7 here>

In both panels of Table 7 the first number in each cell represents the fraction of equity issues (out of all equity, debt issuers and share repurchasers) and the second number represents the number of all issuers pertaining to that particular cell.

In Panel A we present the relationship between agreement between insider and outsiders and valuation. We observe that the decision to issue equity is mostly driven by high stock prices (valuation), as the highest proportions of equity issuers are in high valuation quartiles (market-to-book), irrespective of the agreement parameter α (the differences between the highest and the lowest α quartiles for a given market-to-book quartile are not significantly different from zero - see the bottom row). We observe that the proportion of equity issuers across agreement quartiles is almost the same, between 0.461 and 0.487 (the "Total" column). This is in contrast with the prediction of Dittmar and Thakor, where equity issuance is driven by the agreement parameter α. On the other hand, the proportion of equity issuers significantly increases in market-to-book ratios (MB) from 0.291 for the lowest MB quartile to 0.690 for the highest MB quartile (the "Total" row of Panel A).

In addition, we perform the same analysis using the disagreement parameter (coefficient of variation of analysts' earnings forecasts - DISP) and present the results in Panel B of Table 7. Contrary to the finding that there is no relation between the proportion of equity issues and the agreement parameter α that we demonstrate in Panel A, we observe that the proportion of equity issuers in Panel B is significantly increasing in disagreement. While 34.0% of all the issues are equity issues in the lowest DISP quartile, 61.9% of issues are equity issues in the highest DISP quartile (the "Total" column). This indicates that while the probability of equity issues is not increasing in the agreement, it is certainly increasing in disagreement and market-to-book value. Based on this we reject the "agreement" explanation of equity issuance (*Hypothesis 3*) and claim that firms time the market and issue equity when valuation is high, regardless of the level of agreement between insiders and outsiders.[7]

5 Conclusion

We study determinants of the security issuance decision in the Canadian market from 1998 to 2004, where we focus on external financing in the public market (equity and debt financing,

[7]We did the similar analysis where we replaced the α quartiles with the quartiles based on the relative volatility of returns. The results are similar to those in Panel B. Details are available from the authors on request.

and share repurchases). We use a comprehensive set of accounting and market variables to revisit three capital structure theories – market timing, pecking-order and agreement between insiders and outsiders.

Using the market-to-book equity ratio to measure valuation, we find that equity issuers are more overvalued than debt issuers and equity repurchasers. Furthermore, post-announcement 3-month excess returns are much lower for the high market-to-book equity issuers. These findings give support to the market timing theory of capital structure. The striking finding about market timing is that despite the less negative announcement period market-adjusted returns of equity issuers with high market-to-book ratios, the long-run performance of those issuers is much weaker than that of issuers with low market-to-book ratios. This is consistent with previous findings on market timing (e.g., Baker and Wurgler, 2002), but in contrast to Jung et al. (1996) who refute market timing based on the finding that the announcement excess returns are decreasing in the firms' market-to-book ratios.

Our results also provide support for the pecking-order explanation of security issue choice. Large firms tend to use more debt financing than small firms do. After controlling for this size effect, firms' choice between debt and equity issue is consistent with the pecking-order theory that less financially constrained firms prefer debt over equity.

Finally, we find no evidence that companies issue equity when the agreement between outside investors and insiders is high (Dittmar and Thakor, 2007). At the very least, this finding suggests that the conclusion that firms with low levels of information asymmetry or disagreement between insiders and outsiders prefer equity issue is not robust to different capital markets.

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Table 1: **Yearly Distribution of Security Issues and Repurchases**

The security issuance sample is from the Securities Data Company (SDC). The sample includes debt issues, equity issues, and share repurchases of Canadian non-financial companies with WorldScope and Datastream coverage from 1998 to 2004. Numbers in cells represent number of issues in a given year.

Year	1998	1999	2000	2001	2002	2003	2004	Total
Debt	26	26	27	28	14	14	7	142
Equity	75	110	119	92	107	104	75	682
Repurchases	117	103	116	91	70	32	46	575
Total	218	239	262	211	191	150	128	1399

Table 2: **Summary Statistics of Proxies for Market Timing, Pecking-Order, and Insiders-Outsides Agreement**

The sample includes debt and equity issues and share repurchases of Canadian companies from 1998 to 2004. Mean($\overline{x}$), median(c_{50}^{x}) and number of observations (n) are for market-adjusted stock price returns around the issue ($CAR_{(-1,1)}$), market-adjusted stock price returns after the issue ($CAR_{(2,60)}$), Tobin's Q ratio ($Q = \frac{\text{book values of long term and short term debt + market value of equity}}{\text{total assets}}$), market-to-book value of equity ($MB = \frac{\text{market value of equity}}{\text{book value of equity}}$), size (LNTA=log of deflated total assets; deflator 1998=100), leverage ($LEV = \frac{\text{long term debt}}{\text{total assets}}$), cash flow ($CFA = \frac{\text{net income+depreciation}}{\text{total assets}}$), payout ($DIVA = \frac{\text{cash dividends}}{\text{total assets}}$), slack ($SLACK = \frac{\text{cash and equivalents}}{\text{total assets}}$), KZ-index that measures a degree of financial constraint (see equation (1)), agreement proxy α ($\alpha = \frac{EPS_a - EPS_f}{EPS_f}$), dispersion of analysts' forecasts ($DISP = \mid \frac{\text{standard deviation of earnings forcasts}}{\text{mean earnings forecast}} \mid$), relative volatility ($RVOL = \frac{\sigma_i}{\sigma_M}$, where σ_i is annualized standard deviation of stock price returns of company i based on 250 trading days before the announcement of the issue and σ_M is annualized standard deviations of the returns of the TSX 300 market index based on 250 trading days before the announcement of the issue), issue size (ISS), relative issue size ($RISS = \frac{\text{issue size}}{\text{total assets}}$), and capital expenditures relative to total assets ($CAPX = \frac{\text{capital expenditures}}{\text{total assets}}$). Total assets always refer to the book value of the total assets. All variables except α, DISP, LNTA, RISS, ISS, and KZ are winsorized at 2.5% of top and bottom values. ***, ** and * denote significance at the level below 1, 5 and 10% respectively. Difference in means is equal to zero under the null hypothesis.

Panel A: Proxies for Market Timing

Security	Statistics	$CAR_{(-1,1)}$		$CAR_{(2,60)}$		Q		MB	
Debt	$\overline{x}$	0.0026		0.0005		1.5794		2.5267	
	c_x^{50}	0.0005		-0.0204		1.4454		2.1130	
	n	140		140		132		137	
Equity	$\overline{x}$	-0.0183		-0.0320		3.3262		4.8735	
	c_x^{50}	-0.0228		-0.0871		1.8924		2.8189	
	n	550		550		544		549	
Repurchase	$\overline{x}$	0.0154		0.0828		1.4251		1.8991	
	c_x^{50}	0.0054		0.0347		1.1596		1.3822	
	n	549		549		473		479	
Debt-Equity		0.0210	***	0.0326	*	-1.7468	***	-2.3468	***
Repurchase-Equity		0.0337	***	0.1148	***	-1.9011	***	-2.9744	***
Debt-Repurchase		-0.0128	***	-0.0823	***	0.1543	**	0.6275	***

Panel B: Proxies for Pecking-order

Security	Statistics	LNTA		LEV		CFA		DIVA		SLACK		KZ	
Debt	$\overline{x}$	15.2206		0.2891		0.0979		0.0213		0.0508		0.5413	
	c_x^{50}	15.2803		0.2480		0.0897		0.0153		0.0215		0.8751	
	n	141		141		138		141		141		133	
Equity	$\overline{x}$	11.7199		0.1716		-0.0280		0.0101		0.1595		0.3992	
	c_x^{50}	11.7882		0.1286		0.0525		0.0000		0.0620		0.5334	
	n	576		573		570		571		571		555	
Repurchase	$\overline{x}$	12.8480		0.1798		0.0960		0.0090		0.0957		0.4363	
	c_x^{50}	12.6672		0.1810		0.1027		0.0028		0.0371		0.5870	
	n	501		499		496		496		494		481	
Debt-Equity		3.5007	***	0.1175	***	0.1259	***	0.0112	***	-0.1087	***	0.1421	*
Repurchase-Equity		1.1281	***	0.0082		0.1240	***	-0.0011		-0.0638	***	0.0371	
Debt-Repurchase		2.3726	***	0.1093	***	0.0018		0.0123	***	-0.0449	***	0.1050	

Panel C: Proxies for Disagreement between Insiders and Outsiders

Security	Statistics	α	DISP		RVOL	
Debt	$\overline{x}$	-0.0010	0.1178		1.7419	
	c_x^{50}	0.0000	0.0448		1.5012	
	n	108	106		141	
Equity	$\overline{x}$	-0.0287	0.4087		4.2744	
	c_x^{50}	0.0000	0.1639		3.7853	
	n	446	353		565	
Repurchase	$\overline{x}$	-0.0312	0.3283		3.0741	
	c_x^{50}	0.0000	0.0962		2.5180	
	n	408	360		562	
Debt-Equity		0.0277	-0.2909	***	-2.5325	***
Repurchase-Equity		-0.0025	-0.0804		-1.2003	***
Debt-Repurchase		0.0302	-0.2105	***	-1.3322	***

Panel D: Other Characteristics

Security	Statistics	ISS		RISS		CAPX	
Debt	$\overline{x}$	153.9200		0.0450		0.1098	
	c_x^{50}	132.0423		0.0281		0.1005	
	n	142		141		141	
Equity	$\overline{x}$	56.8894		0.2663		0.1208	
	c_x^{50}	25.2630		0.1972		0.0725	
	n	685		576		571	
Repurchase	$\overline{x}$	45.3455		0.0430		0.0869	
	c_x^{50}	5.0736		0.0248		0.0587	
	n	571		498		495	
Debt-Equity		97.0306	***	-0.2214	***	-0.0111	*
Repurchase-Equity		-11.5440	**	-0.2233	***	-0.0339	***
Debt-Repurchase		108.5746	***	0.0020		0.0228	***

Table 3: **Market Timing and Excess Returns**

Cumulative Average Abnormal Returns (Panel A) and Buy-and-hold Abnormal Returns (Panel B) for equity issues by Canadian companies from 1998 to 2004. Pre-announcement market-adjusted stock returns $CAR_{(-60,-10)}$, announcement date market-adjusted stock returns $CAR_{(-1,1)}$ and post-announcement market-adjusted stock returns $CAR_{(2,60)}$ for equity issuers are sorted according to market-to-book quartiles. The CARs in Panel A are computed using the standard market model, where the market return is represented as a total return on the TSX 300 index. Buy-and-hold abnormal returns (BHAR) in Panel B represent size-MB matched firm abnormal returns. $\bar{x}$ represents mean excess return, c_x^{50} corresponds to median excess return and n to number of observations. ***, ** and * denote significance at the level below 1, 5 and 10% respectively. Difference in means is equal to zero under the null hypothesis. Under the null hypothesis excess returns are equal to zero. Tests of significance of the excess returns are performed for the total sample of equity issuers only.

Panel A: Cumulative Average Abnormal Returns (Market Model)

MB quartile	Statistics	$CAR_{(-60,-10)}$		$CAR_{(-1,1)}$		$CAR_{(2,60)}$	
1	$\bar{x}$	0.0478		-0.0292		0.0252	
	c_x^{50}	0.0422		-0.0261		0.0271	
	n	129		129		129	
2	$\bar{x}$	0.0341		-0.0239		-0.0375	
	c_x^{50}	0.0216		-0.0221		-0.0384	
	n	131		131		131	
3	$\bar{x}$	0.0658		-0.0161		-0.0742	
	c_x^{50}	0.0454		-0.0127		-0.0869	
	n	130		130		130	
4	$\bar{x}$	0.2092		-0.0036		-0.2054	
	c_x^{50}	0.1109		-0.0244		-0.1834	
	n	123		123		123	
Total	$\bar{x}$	0.0875	***	-0.0173	***	-0.0713	***
	c_x^{50}	0.0433		-0.0227		-0.0517	
	n	513		513		513	
Difference in means (Q4-Q1)		0.1614	***	0.0255	**	-0.2306	***
t-statistics		-3.40		-1.73		4.71	

Panel B: Buy-and-hold Abnormal Returns (size-MB matched firms)

MB quartile	Statistics	$BHAR_{(-60,-10)}$		$BHAR_{(-1,1)}$		$BHAR_{(2,60)}$	
1	$\bar{x}$	0.0112		0.0161		0.0247	
	c_x^{50}	-0.0086		0.0088		0.0147	
	n	129		129		129	
2	$\bar{x}$	0.0233		0.0092		-0.0203	
	c_x^{50}	0.0234		0.0040		-0.0148	
	n	131		131		131	
3	$\bar{x}$	0.1400		0.0095		-0.0363	
	c_x^{50}	0.0835		-0.0046		-0.0170	
	n	130		130		130	
4	$\bar{x}$	0.3353		-0.0047		-0.0862	
	c_x^{50}	0.2809		-0.0084		-0.0939	
	n	123		123		123	
Total	$\bar{x}$	0.1286	***	0.0075	**	-0.0296	*
	c_x^{50}	0.0741		-0.0012		-0.0171	
	n	513		513		513	
Difference in means (Q4-Q1)		0.3241	***	-0.0207	*	-0.1110	***
t-statistics		-5.43		1.40		1.93	

Table 4: **Post-announcement Excess Returns and Company Characteristics**

Estimation results for the OLS regression model (see Equation 2). The dependent variable is either the post-announcement market-adjusted stock return $CAR_{2,60}$ in Panel A or size-MB matched buy-and-hold excess stock return ($BHAR_{2,60}$) in Panel B. Explanatory variables are equity market-to-book ratio ($MB = \frac{\text{market value of equity}}{\text{book value of equity}}$), Tobin's Q ratio ($Q = \frac{\text{book values of long term and short term debt + market value of equity}}{\text{total assets}}$), size of the company (LNMV=log value of the market value of the company measured 5 days prior to the announcement of the issue), KZ-index that relates to financial constraint (see equation 1), leverage ($LEV = \frac{\text{long term debt}}{\text{total assets}}$), cash flow over assets ($CFA = \frac{\text{net income+depreciation}}{\text{total assets}}$), payout ($DIVA = \frac{\text{cash dividends}}{\text{total assets}}$), slack ($SLCK = \frac{\text{cash and equivalents}}{\text{total assets}}$), agreement parameter α ($\frac{EPS_a - EPS_f}{EPS_f}$), and capital expenditures relative to total assets ($CAPX = \frac{\text{capital expenditures}}{\text{total assets}}$). Total assets always refer to the book value of the total assets. All variables except α, and KZ are winsorized at 2.5% of top and bottom values. Standard errors in the regressions are White heteroskedasticity corrected. ***, ** and * denote significance at the level below 1, 5 and 10% respectively. Under the null hypothesis b_j is equal to zero.

Panel A: Dependent Variable is the Post-announcement Market-adjusted Stock Return ($CAR_{2,60}$)

Model	1			2			3			4		
Variable	b_j	$t-stat$		b_j	$t-stat$		b_j	$t-stat$		b_j	$t-stat$	
MB	-0.0245	-6.25	***				-0.0261	-6.35	***			
Q				-0.0408	-5.94	***				-0.0486	-6.53	***
LNMV	-0.0076	-1.44		-0.0111	-2.13	**	-0.0059	-1.13		-0.0064	-1.27	
KZ	0.0041	0.51		-0.0053	-0.64							
LEV							-0.0191	-0.26		-0.1172	-1.70	*
CFA							0.0595	0.55		0.0087	0.08	
DIVA							-0.3356	-0.98		-0.4094	-1.20	
SLACK							0.1223	1.41		0.1750	1.95	*
α	0.0100	0.69		0.0107	0.76		0.0106	0.73		0.0113	0.81	
CAPX	0.0083	0.07		0.0141	0.12		0.0415	0.34		0.0735	0.61	
intercept	0.1246	1.97	**	0.1533	2.45	**	0.1803	2.82	***	0.2050	3.24	***
n	835			835			835			835		
adj. R^2	0.109			0.112			0.111			0.122		
Industry dummies	YES			YES			YES			YES		
Year dummies	YES			YES			YES			YES		

Panel B: Dependent Variable is the Post-announcement Buy-and-Hold Abnormal Return ($BHAR_{2,60}$)

Model	1			2			3			4		
Variable	b_j	$t-stat$		b_j	$t-stat$		b_j	$t-stat$		b_j	$t-stat$	
MB	-0.0132	-3.04	***				-0.0147	-3.43	***			
Q				-0.0168	-2.11	**				-0.0194	-2.27	**
LNMV	-0.0001	-0.01		-0.0025	-0.39		0.0007	0.10		-0.0015	-0.22	
KZ	-0.0027	-0.29		-0.0067	-0.71							
LEV							0.0117	0.12		-0.0363	-0.36	
CFA							-0.0389	-0.35		-0.0240	-0.21	
DIVA							0.0128	0.03		-0.0050	-0.01	
SLACK							0.0908	0.93		0.0818	0.81	
α	-0.0195	-0.72		-0.0183	-0.67		-0.0198	-0.73		-0.0184	-0.67	
CAPX	-0.2006	-1.45		-0.2045	-1.47		-0.1445	-1.05		-0.1438	-1.02	
intercept	-0.0134	-0.17		-0.0093	-0.12		-0.0367	-0.45		-0.0298	-0.36	
n	835			835			835			835		
adj. R^2	0.013			0.004			0.009			0.000		
Industry dummies	YES			YES			YES			YES		
Year dummies	YES			YES			YES			YES		

Table 5: **Characteristics of Equity Issuers by Size Quartiles**

Characteristics of issuers of equity in the Canadian market from 1998 to 2004. Variables are: size of the company (log value of total assets), equity market-to-book ratio ($MB = \frac{\text{market value of equity}}{\text{book value of equity}}$), excess stock price returns prior to the announcement of the issue ($CAR_{(-60,-10)}$), Tobin's Q ratio ($Q = \frac{\text{book values of long term and short term debt + market value of equity}}{\text{total assets}}$), excess stock price returns after the announcement of the issue ($CAR_{(2,60)}$), KZ-index that relates to financial constraint (see equation 1), leverage ($LEV = \frac{\text{long term debt}}{\text{total assets}}$), cash flow over assets ($CFA = \frac{\text{net income+depreciation}}{\text{total assets}}$), payout ($DIVA = \frac{\text{cash dividends}}{\text{total assets}}$), slack ($SLACK = \frac{\text{cash and equivalents}}{\text{total assets}}$), and capital expenditures relative to total assets ($CAPX = \frac{\text{capital expenditures}}{\text{total assets}}$). Total assets always refer to the book value of the total assets. All variables except KZ are winsorized at 2.5% of top and bottom values. ***, ** and * denote significance at the level below 1, 5 and 10% respectively. Under the null hypothesis difference between quartiles is equal to zero.

Size Quart.	Statistics	LNTA	MB	$CAR_{(-60,-10)}$	Q	$CAR_{(2,60)}$
1	$\bar{x}$	9.4716	9.1599	0.2017	6.3272	-0.1388
	c_x^{50}	9.6517	6.7070	0.1167	5.2108	-0.1365
	n	115	115	115	115	115
2	$\bar{x}$	11.0821	4.5383	0.0560	3.2534	-0.1104
	c_x^{50}	11.0392	3.2191	0.0280	2.2069	-0.1151
	n	134	134	134	133	134
3	$\bar{x}$	12.3557	3.2566	0.0714	2.1436	-0.0336
	c_x^{50}	12.3262	2.1881	0.0549	1.6557	-0.0541
	n	135	135	135	132	135
4	$\bar{x}$	14.0023	2.4727	0.0353	1.5623	-0.0100
	c_x^{50}	13.7928	1.8137	0.0285	1.2775	-0.0133
	n	129	129	129	128	129
Total	$\bar{x}$	11.7906	4.7176	0.0875	3.2348	-0.0713
	c_x^{50}	11.8158	2.7598	0.0433	1.8801	-0.0517
	n	513	513	513	508	513
Diff. in means (Q4-Q1)		4.5307 ***	-6.6872 ***	-0.1663 ***	-4.7650 ***	0.1288 ***
t-statistics		43.43	-9.22	-3.46	-11.33	2.79

Table 5 continued

Size Quart.	Statistics	KZ	LEV	CFA	DIVA	SLACK	CAPX
1	$\bar{x}$	0.2672	0.0737	-0.2056	0.0007	0.3091	0.1139
	c_x^{50}	-0.0048	0.0047	-0.1496	0.0000	0.2573	0.0550
	n	107	115	114	114	114	115
2	$\bar{x}$	0.3400	0.1308	-0.0256	0.0053	0.1887	0.1416
	c_x^{50}	0.2769	0.0290	0.0310	0.0000	0.0788	0.0849
	n	131	134	134	134	133	134
3	$\bar{x}$	0.4136	0.2014	0.0302	0.0161	0.0880	0.1361
	c_x^{50}	0.8297	0.1896	0.0630	0.0000	0.0354	0.0877
	n	132	132	132	132	132	132
4	$\bar{x}$	0.5758	0.2853	0.0807	0.0183	0.0500	0.0930
	c_x^{50}	0.9635	0.2978	0.0775	0.0061	0.0108	0.0594
	n	128	129	129	129	129	129
Total	$\bar{x}$	0.4045	0.1753	-0.0245	0.0104	0.1543	0.1216
	c_x^{50}	0.5434	0.1386	0.0525	0.0000	0.0569	0.0763
	n	498	510	509	509	508	510
Diff. in means (Q4-Q1)		0.3086 **	0.2116 ***	0.2864 ***	0.0175 ***	-0.2591 ***	-0.0209 *
t-statistics		2.23	11.49	11.09	6.00	-10.99	-1.45

Table 6: **Multinomial Probit Regressions for the Determinants of Security Issuance Choice**

The sample includes Canadian debt and equity issues and share repurchases from 1998 to 2004. Dependant variable takes value of 0 for equity issues and value 1 for straight debt issues in *Panel A* and share repurchases in *Panel B*. In all models the base security choice is equity issue. Standard errors are heteroscedasticity consistent. Explanatory variables are size of the company (log value of total assets), equity market-to-book ratio ($MB = \frac{\text{market value of equity}}{\text{book value of equity}}$), Tobin's Q ratio ($Q = \frac{\text{book values of long term and short term debt + market value of equity}}{\text{total assets}}$), KZ-index that relates to financial constraint (see equation 1), agreement parameter α ($\frac{EPS_a - EPS_f}{EPS_f}$), DISP is defined as an absolute value of the coefficient of variation of forecasted earnings for t+1 year, where t is the year of the security issue ($DISP = \left| \frac{\text{standard deviation of earnings forecasts}}{\text{mean earnings forecast}} \right|$), leverage ($LEV = \frac{\text{long term debt}}{\text{total assets}}$), cash flow over assets ($CFA = \frac{\text{net income+depreciation}}{\text{total assets}}$), payout ($DIVA = \frac{\text{cash dividends}}{\text{total assets}}$), and slack ($SLACK = \frac{\text{cash and equivalents}}{\text{total assets}}$). Total assets always refer to the book value of the total assets. All variables except α, and KZ are winsorized at 2.5% of top and bottom values. Standard errors in the regressions are White heteroskedasticity corrected. ***, ** and * denote significance at the level below 1, 5 and 10% respectively. Under the null hypothesis b_j is equal to zero.

Model	1			2			3			4			5			6		
Variables	b_j	t-stat		b_j	t-stat		b_j	t-stat		b_j	t-stat		b_j	t-stat		b_j	t-stat	
Panel A: Debt (1) versus Equity (0)																		
LNTA	0.9884	9.62	***	0.9827	9.86	***	1.0301	10.55	***	1.0241	10.79	***	1.0021	11.02	***	0.9946	11.12	***
MB	-0.0077	-0.26					0.0097	0.32					-0.0244	-0.84		-0.0025	-0.09	
Q				0.0190	0.29					0.0331	0.51							
KZ	-0.3361	-3.51	***	-0.3391	-3.44	***	-0.3815	-3.53	***	-0.3858	-3.50	***						
α	-0.0087	-0.06		-0.0146	-0.10								0.0215	0.16				
DISP							0.0009	0.00		-0.0133	-0.04					-0.0352	-0.13	
LEV													-2.8442	-2.93	***	-2.6789	-2.62	***
CFA													1.6766	0.77		2.2236	0.91	
DIVA													2.8721	0.80		4.8398	1.22	
SLACK													1.9619	2.18	**	1.5808	1.66	*
intercept	-13.8486	-8.72	***	-16.2075	-9.80	***	-15.6689	-9.46	***	-14.7351	-9.63	***	-14.1335	-9.48	***	-15.4973	-10.98	***
Panel B: Share Repurchases (1) versus Equity (0)																		
LNTA	0.2489	5.30	***	0.1941	4.01	***	0.2661	5.23	***	0.2188	4.20	***	0.2112	4.16	***	0.2471	4.45	***
MB	-0.1797	-4.33	***				-0.1512	-3.95	***				-0.1778	-3.13	***	-0.1430	-2.74	***
Q				-0.4368	-5.26	***				-0.3783	-4.76	***						
KZ	-0.1239	-1.97	**	-0.1880	-2.98	***	-0.0238	-0.32		-0.0903	-1.22							
α	0.0722	0.85		0.0505	0.56								0.0555	0.62				
DISP							-0.0881	-0.73		-0.0843	-0.71					0.0492	0.43	
LEV													-1.1553	-1.89	***	-0.7153	-1.08	
CFA													7.2807	7.55	***	7.0037	6.75	***
DIVA													-8.4372	-2.97	***	-11.6000	-3.21	***
SLACK													0.7167	1.15		0.2429	0.37	
intercept	-1.1126	-1.42		-1.5176	-1.99	**	-2.1780	-2.58	**	-0.4417	-0.50		-1.0370	-1.29		-2.6703	-3.08	***
Industry dummies	YES			YES			YES			YES			YES			YES		
Year dummies	YES			YES			YES			YES			YES			YES		
Obs	873			873			757			757			873			757		

Table 7: **Security Issuance and (Dis)agremeent**

Relationship between market-to-book values and "agreement" proxies of Canadian firms from 1998 to 2004. Tables represent quartiles matrix of market-to-book values (columns) and agreement parameter α (rows) (*Panel A*) and quartiles matrix of market-to-book values (columns) and disagreement parameter (coefficient of variation of analysts' earnings forecast - DISP) in rows (*Panel B*). The first value in cells represents proportion of equity issuers for a given cell, the second value represents number of equity issuers. α is defined as a relative difference between actual (EPS_a) just prior to the announcement of the security issue and the last forecasted EPS (EPS_f): $\alpha = \frac{EPS_a - EPS_f}{EPS_f}$. DISP is defined as an absolute value of the coefficient of variation of forecasted earnings for t+1 year, where t is the year of the security issue: $DISP = \mid \frac{\text{standard deviation of earnings forecasts}}{\text{mean earnings forecast}} \mid$.

Panel A: Agreement between Insiders and Outsiders and Valuation

		market-to-book quartile							
		1	2	3	4	Total	Diff. Q4-Q1		t-stat
α quartile	1	0.284	0.423	0.513	0.795	0.461	0.511	***	6.08
		74	52	39	39	204			
	2	0.299	0.418	0.538	0.625	0.487	0.326	***	4.98
		87	98	106	128	419			
	3	0.250	0.500	0.429	0.636	0.479	0.386	**	2.31
		12	16	21	22	71			
	4	0.300	0.383	0.426	0.814	0.462	0.514	***	5.79
		50	60	68	43	221			
	Total	0.291	0.416	0.491	0.690	0.474	0.399	***	9.24
		223	226	234	232	915			
Diff. Q4-Q1		0.016	-0.040	-0.086	0.019	0.001			
t-stat		0.19	-0.42	-0.85	0.21	-0.02			

Panel B: Disagreement between Insiders and Outsiders and Valuation

		market-to-book quartile											
		1		2		3		4		Total	Diff. Q4-Q1		t-stat
DISP quartile	1	0.077		0.368		0.362		0.410		0.340	0.333	***	4.02
		26		38		69		61		194			
	2	0.200		0.286		0.300		0.587		0.342	0.387	***	3.97
		40		63		50		46		199			
	3	0.283		0.418		0.460		0.763		0.459	0.480	***	5.12
		53		55		50		38		196			
	4	0.446		0.512		0.722		0.889		0.619	0.443	***	5.67
		65		43		36		45		189			
	Total	0.293		0.387		0.434		0.637		0.438	0.344	***	7.07
		184		199		205		190		778			
Diff. Q4-Q1		0.369	***	0.144	*	0.360	***	0.479	***	0.279	***		
t-stat		4.51		1.29		3.77		6.05		5.67			

Figure 1: **Cumulative Average Abnormal Returns**

Cumulative average abnormal returns around the announcements of security issues (share repurchases). Date 0 represents the announcement date of the security issue (share repurchase).