What Drives Security Issuance Decisions: Market Timing, Pecking Order, or Both?*

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Abstract

We study the interaction between market timing and pecking order in the financing decision of firms. Using a sample of debt and equity issues and share repurchases of Canadian firms during 1998-2007, we find that only when firms are not financially constrained, they are more likely to issue (repurchase) equity when their shares are overvalued (undervalued), and post-announcement long-run returns are lower for overvalued firms. These findings are more consistent with the market timing theory than rational financing theories. We also find support for the pecking order theory which predicts that firms prefer debt to equity financing unless they are financially constrained, but this result only holds for firms are that not overvalued. These findings highlight an interaction between the effects of market timing and pecking order: firms time the market in issuing or repurchasing equity only when they are not financially constrained, and pecking order is most likely to hold among undervalued firms.

JEL codes: G30, G32

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1 Introduction

Two important theories on security issuance are the market timing theory (see, e.g., Stein, 1996) and the pecking order theory (e.g., Donaldson, 1961).[6] According to the market timing theory, managers are able to time the market and issue equity when the stock of the firm is overvalued and repurchase equity when it is undervalued. The pecking order theory argues that due to the higher costs of equity issuance, firms will prefer debt to equity financing, and firms will issue equity only when they are financially constrained.[7] These theories have received mixed support from the prior literature, but to the best of our knowledge there are no papers that have tested for interactions between these theories. Our paper aims to fill this gap by examining the interaction between market timing and financial constraints.

The idea whether companies time the market in their financing policy remains controversial in the literature. For example, Jung, Kim, and Stulz (1996) find evidence inconsistent with market timing, DeAngelo, DeAngelo, and Stulz (2010) show only a limited effect of market timing on equity issuance, while other papers show that firms time the market with public equity issues (e.g., Baker and Wurgler, 2002; Gomes and Phillips, 2007). Even though most papers find that overvaluation (typically measured by the market-to-book ratio) negatively predicts post-issue stock performance, the result is also potentially consistent with an

[6] Other important theories include the information asymmetry model of Myers and Majluf (1984) and the static trade-off theory. Myers and Majluf (1984) argue that external financing is costly because of information asymmetry between the management and outside investors. Since equity involves a greater level of information asymmetry than debt, firms should prefer debt to equity. The static trade-off theory argues that firms trade off the advantages of debt, such as the deductability of interest costs from corporate taxes, against the advantages of equity, such as lower expected bankruptcy costs. This paper only focuses on the pecking order and market timing theories.

[7] In some parts of the finance literature the theory of Myers and Majluf (1984) is included as part of the pecking order theory because the information asymmetry theory of Myers and Majluf implies the same financing hierarchy. In this paper we limit the “pecking order” theory to the following specific version: due do the higher financing costs of equity issuance, firms prefer debt to equity issuance, and equity is used only when firms are so financially constrained that they cannot take up additional debt (see, e.g., Shyam-Sunder and Myers, 1999).

investment-based “rational” theory in which firms exercise growth options through equity issuance, and the lower post-issue stock returns reflect a decrease in firm risk as risky growth options are converted into less risky assets in place (e.g., Carlson, Fisher, and Giammarino, 2006; Li, Livdan, and Zhang, 2008). Similarly, the evidence on the pecking order is rather mixed (e.g., Shyam-Sunder and Myers, 1999; Frank and Goyal, 2003; Fama and French, 2005; Lemmon and Zender, 2010; see Section 2 for a more detailed review of the theories).

In this paper, we take a different approach and investigate the effects of market timing and pecking order simultaneously. There are several reasons for examining the interaction between market timing and financial constraints. First, the effect of market timing on security issuance should be conditional on the degree of financial constraints. Companies that intend to issue (repurchase) equity when their shares are overvalued (undervalued) may not be able to do so if they do not have the financial flexibility. In other words, market timing is only feasible when firms are less financially constrained. Consequently, according to the market timing theory, equity valuation should negatively predict the post-announcement stock performance especially for financially unconstrained issuers. Second, the effect of pecking order may be conditional on equity valuation. If the shares of the firm are overvalued, the incentive to issue overvalued equity may dominate any effect suggested by the pecking order. Put differently, a financially unconstrained firm is expected to use debt financing according to the pecking order, but if the firm is overvalued, it may choose to issue equity instead. Third, uncovering such an interaction should help rule out “rational” theory interpretations as opposed to market timing, because rational theories do not have an implication on the interaction between abnormal stock performance and financial constraints. For example, rational theories do not predict the post-announcement abnormal stock returns would be different for firms with different levels of financial constraints.

Our empirical tests are conducted on a sample of security issues by Canadian firms. Most of the empirical evidence for market timing and pecking order is based on US studies, and a study of the Canadian market will provide a useful clue as to how general these theories really are. While the Canadian and US capital markets are substantially integrated, there are also important differences. For example, Canadian companies are usually closely held, whereas ownership of US companies tends to be more widely dispersed. In fact, most stock markets, including the large markets in continental Europe, tend to have shares that are closely held. In such markets there may be different levels of stock misvaluation compared to the US. Therefore, empirical evidence based on the Canadian capital market may provide an out-of-sample test for these theories.

We study the security issuance decisions using a sample of Canadian firms that issued equity or debt, or repurchased shares between 1998 and 2007. To test for the interaction between market timing and financial constraints, we use the market-to-book equity ratio (MB) to measure stock valuation, and employ a measure of financial constraints (the KZ-index) developed by Kaplan and Zingales (1997) and used by other authors (e.g., Baker, Stein, and Wurgler, 2003; Chang, Tam, Tan, and Wong, 2007). After confirming the finding in prior literature that equity issuers have higher MB ratios than debt issuers or repurchasers, we focus on the key relation between pre-announcement MB and post-announcement stock returns and how this relation depends on the KZ-index.

We examine both the announcement period (3-day) 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. Indeed, we find that short-run announcement period returns do not lead to a robust conclusion regarding the relation between market performance and market-to-book. However, an analysis of the longer-run post-announcement stock price performance reveals a stark contrast between the issuers: equity issuers perform the worst, followed by debt issuers, with equity repurchasers outperforming the market. For equity issuers, the mean market-adjusted return in the period of 2 to 60 days after an equity issue announcement is 0.95% for firms with a low MB ratio and is -14.66% for firms with high a MB ratio. The difference between these two sub-samples is statistically significant at the 1% level. These results are consistent with the market timing hypothesis, but also admit the rational theory interpretation that issuers should earn lower post-announcement returns when high-risk growth options are converted into low-risk assets in place.

We further distinguish the hypothesis by splitting the sample into high and low KZ firms (a high KZ-index indicates more financial constraints). We sort our sample into 16 (4 × 4) MB-KZ portfolios based on pre-announcement MB and KZ values, and examine the post-announcement size-MB style-adjusted buy-and-hold returns. We find that the effect of MB on long-run abnormal returns is primarily among low-KZ issuers. For example, consider the zero-investment hedge strategy that goes long on the low-MB portfolio and short on the high-MB portfolio. This hedge strategy has a mean 3-month style-adjusted return of 12.1% (statistically significant at the 5% level) among low-KZ firms, compared to a statistically insignificant 4.3% among high-KZ firms. Moreover, in multivariate regressions, we confirm the finding that that high MB predicts lower style-adjusted long-run returns only among low-KZ issuers. These results give stronger support for the market timing theory.

We also examine the effect of misvaluation and financial constraints on security issuance choice decision. We assess whether MB and KZ affect the choice between equity and debt issuance and the choice between equity issuance and equity repurchase, in multinomial probit regressions that control for factors including firm size and information asymmetry. We find that MB increases the probability of issuing equity versus issuing debt, but this relation is robust only when the interaction between KZ and MB is controlled for; overvalued firms (with high MB) are more likely to issue equity only when they are not financially constrained. Similarly, undervalued firms (with low MB) are more likely to repurchase equity only when they are not financially constrained. With respect to the pecking order theory, we find that KZ increases the probability of equity issuance versus debt issuance, but only when MB is low. This result indicates that a high degree of financial constraints makes firms more likely to issue equity compared to debt – consistent with the pecking order prediction, but only when firms are not overvalued.

In sum, we find that the issuing firm's valuation negatively predicts post-announcement abnormal returns only when the firm is financially unconstrained, which gives support for the market timing theory rather than the investment-based rational theory. Moreover, when firms are not financially constrained, they are more likely to issue (repurchase) equity when they are overvalued (undervalued), and the pecking order prediction that a lower degree of financial constraints increases the probability of debt financing is more likely to be observed among undervalued firms. These results highlight the importance to account for the interaction between market timing and pecking order when we assess the validity of these theories in security issuance. To our knowledge, such an interaction effect on security issuance has not been documented in prior literature.

The remainder of the paper is organized as follows. In Section 2 we discuss related research and develop hypotheses. Section 3 describes our sample and construction of proxies. Section 4 presents empirical results with respect to the interaction between the market timing and pecking order effects on security issuance. Section 5 concludes.

2 Literature Review and Hypotheses

2.1 Previous Research on Security Issuance

There is a vast literature on security issuance. In this section we provide a brief review of the papers most directly related to our hypotheses. 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, Opler, and Titman, 2001). Baker and Wurgler (2002) show that past market valuations have a strong and persistent effect on capital structure; 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. Gomes and Phillips (2007) 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. Elliott, Koëter-Kant, and Warr (2008) use an earnings-based valuation model to test the market timing theory, and find that equity market mispricing plays an important role in the security choice decision. There is also evidence that managers repurchase equity when they believe their shares are undervalued (e.g., Ikenberry, Lakonishok, and Vermaelen, 1995). International evidence on market timing is quite limited. Henderson, Jegadeesh, and Weisbach (2006) find evidence of market timing with respect to equity and debt issuances in most of the countries in their sample. Bruinshoofd and De Haan (2007) test this theory for a sample of 45,000 observations on US, UK, and

Continental European firms. They find that there are only a few market timing effects on the capital structure of European firms and that they are specific to information and communication technology (ICT) firms and the ICT boom episode.

Other papers find little or no evidence of market timing. Jung et al. (1996) test whether market timing is of first order importance in the security decision process in a sample of firms during 1977 to 1984. They find that although equity issuers have higher market-to-book ratios and experience higher stock price run-ups prior to the announcement than debt issuers, the results are not consistent with the market timing explanation of capital structure. The announcement date excess returns are more negative for firms that have lower market-to-book ratios or that are less overvalued, and there is no evidence that equity issues with higher market-to-book ratios have low post-issuance long-run returns. DeAngelo, DeAngelo, and Stulz (2010) find that while equity issuers have a higher valuation as measured by market-to-book ratio or post-issue long-run return, overvaluation only has marginal effect on the probability to issue equity compared to the near-term cash need of the firm. Furthermore, even though most papers find that market-to-book negatively predicts post-issue long-run stock returns, the interpretation is controversial. For example, Carlson et al. (2006) and Li et al. (2008) both suggest an investment-based "rational" theory. They argue that the pre-issue stock price run-up reflects high growth opportunities. Managers issue equity to invest in those opportunities, and the lower post-issue abnormal stock returns reflect a decrease in firm risk level as risky growth options are converted into less risky assets in place.

According to the pecking order theory (Donaldson, 1961; Myers, 1984; Shyam-Sunder and Myers, 1999) different financing options bear different financing costs and firms will prefer the least costly means of financing. Firms will only issue the "costliest" security (equity) when forced to – i.e., when firms are financially constrained. Previous research, conducted for the US and the UK markets (see for example Hovakimian et al., 2001), mostly finds that equity is preferred to debt by smaller and riskier companies, those with better growth opportunities and lower leverage, and less profitable firms. These results are generally consistent with pecking order. Shyam-Sunder and Myers (1999) also demonstrate support for the pecking order theory, based on a sample of mature firms. De Jong, Verbeek, and Verwijmeren (2010) extend the Shyam-Sunder and Myers (1999) model by separating the effects of financing surpluses, normal deficits, and large deficits. They find some evidence for a pecking order among large firms, but they also find that the model does not hold for small firms, which have the highest potential for asymmetric information. They also find that the model has lost explanatory power over time. Other studies cast doubt on the pecking order theory. For example, Helwege and Liang (1996) find little evidence of a pecking order from a sample of IPO firms. Frank and Goyal (2003) find some evidence that large firms exhibit pecking order behavior, but their overall evidence goes against it, while Fama and French (2005) show that equity issues are very frequent and are typically not a result of a "duress" as a last resort as predicted by the pecking order model. Lemmon and Zender (2010) find that debt appears to be preferred to equity financing in the absence of debt capacity concerns.

The above empirical evidence is based on the standard (non-survey) literature. Overall, this literature documents a mixed support for market timing. The evidence about the pecking order theory is also rather controversial. More recently, new work has been conducted to use surveys or interviews to ask financial executives about theories of capital structure. Surveys among financial managers generally find that equity valuation is an important determinant in the decision to issue equity. In a well-known study, Graham and Harvey (2001) find this to be the case for 67% of the US CFOs that they survey. Bancel and Mittoo (2004) conclude that

53% of European CFOs share this view and Brounen, De Jong, and Koedijk (2006) find this for 52% of the UK managers in their study.[8]

With respect to the pecking order theory the survey paper of Graham and Harvey (2001) finds that firms avoid equity when they perceive that it is undervalued. This view is consistent with the pecking order theory. However, they also find that the importance of stock valuation on equity issuance is not related to information asymmetry. These results are confirmed in the European survey of Brounen et al. (2006). They also find that the results are in line with the predictions of the pecking order theory, but the information asymmetries do not drive pecking order.

2.2 Hypotheses

In this paper we examine two possible explanations for the security issuance decisions – market timing and pecking order. We highlight the interaction between the two effects in the development of the hypotheses.

2.2.1 Market Timing

The market timing theory implies that companies issue equity when it is overvalued and repurchase equity when they are undervalued. Therefore, equity issuers should be 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, Hirshleifer, Richardson, and Teoh (2006), MB and related variables (such as pre-issue stock returns) may also indicate growth opportunities,

[8] Brounen et al. (2006) find lower numbers for CFOs from the Netherlands (39%), Germany (42%), and France (33%). They argue that the difference with the US and the UK is caused by the importance of public capital markets in the Anglo-Saxon countries.

managerial skills, etc. To distinguish market timing from alternative interpretations, we further examine stock performance around and after the announcement of financing decisions. According to market timing, overvalued (undervalued) firms should issue (repurchase) shares when their shares are overvalued (undervalued). As the market corrects the pre-announcement misvaluation after the issuance announcement, the post-announcement stock returns should be lower (higher) for high-MB (low-MB) firms.

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-announcement 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 could reverse initial returns, such as during the "bubble period" of the late 1990s (e.g., 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 investigate the relation between stock returns and MB ratio.

The effect of market timing on security issuance should be conditional on the degree of financial constraints. Firms that intend to issue (repurchase) equity when their shares are overvalued (undervalued) may only be capable of doing so if they have sufficient financial flexibility. This means that market timing is only possible when firms are less financially constrained. Therefore, if the market timing theory holds, equity valuation should negatively predict the post-announcement stock performance especially for financially unconstrained issuers. Similarly, for a financially constrained firm, it may not be able to take more debt even if its stock is undervalued. This reasoning leads to the following two hypotheses about how the effects of market timing are conditional on financial constraints:

Hypothesis 1: Post-announcement excess returns should be decreasing in the market-to-book ratio for security issuers, especially when firms are not financially constrained.

Hypothesis 2: Firms are more likely to issue (repurchase) equity when their stock is overvalued (undervalued), especially when they are not financially constrained.

Hypothesis 1, if confirmed, should help rule out "rational" theory interpretations as opposed to market timing.[9] According to investment-based "rational" theories (e.g., Carlson et al, 2006; Li et al, 2008), firms exercise growth options through equity issuance, and the post-issue stock returns should be lower because of a decrease in firm risk as risky growth options are converted into less risky assets in place. However, these rational theories do not have an implication on the interaction between abnormal stock performance and financial constraints. Hypothesis 2 offers a further empirical prediction about the interaction between market timing and financial constraints.

2.2.2 Pecking Order

According to the pecking order hypothesis (Donaldson, 1961; Myers, 1984; Shyam-Sunder and Myers, 1999), different ways of raising capital are associated with different levels of financing costs. As a result, there is a financing hierarchy that firms will follow, where

[9] Hypothesis 1 should apply to both the full sample of security issuers/repurchasers and equity issuers only. In the empirical tests described below, we perform tests on both the full sample and equity issuers and find consistent evidence.

internal 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. Furthermore, the effect of pecking order may be conditional on equity valuation. If the firm's shares are overvalued, the incentive to issue overvalued equity may dominate any effect suggested by the pecking order. Put differently, a financially unconstrained firm is expected to use debt financing according to the pecking order, but if the firm is overvalued, it may choose to issue equity instead. This implies:

Hypothesis 3: A higher degree of financial constraints increases the probability of issuing equity, especially when firms are undervalued.

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 2007: 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 and matched with the WorldScope accounting data, as well as stock price and market value of equity data from Datastream.[10] After we have eliminated issues or repurchases with incomplete information as well as all financial firms (SIC 6000-6999), we are left with 227 corporate debt issues (made by 64 different companies), 1,271 corporate equity issues (made by 664 different companies), and 1,071 intended share repurchases (made by 447 different companies). We gather data on analysts' forecasts from the I/B/E/S database available through Wharton Research Data Services (WRDS).

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

3.2 Variable Definitions

We organize variables according to the hypotheses we develop in Section 2.2. Specifically, we define groups of variables to test hypotheses regarding (1) market timing and (2) pecking order.

3.2.1 Market Timing

To test the market timing theory, we need measures of equity valuation (market-to-book ratio, Q-ratio), as well as stock price performance measures as defined below:

- **Market-to-book value of equity** is defined as $MB = \frac{\text{market value of equity}}{\text{book value of equity}}$, where the market value of equity is taken 5 trading days prior to the announcement. MB is a cleaner measure of stock misvaluation than Q (defined below), since Q contains information about leverage that may contaminate the measure for misvaluation. Therefore, MB is our primary proxy for stock misvaluation.
- **Tobin's 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:

$$Q = \frac{\text{book value of long term and short term debt} + \text{market value of equity}}{\text{total assets}}$$

- **Stock returns before the announcement of the security issue** $CAR_{(-60,-2)}$ 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 at the announcement of the security issue** $CAR_{(-1,1)}$ is estimated using the standard market model with the total return on the TSX 300 market index being a proxy for the market return.

- **Stock returns after the announcement of the security issue** $CAR_{(2,60)}$ is estimated using the standard market model with the total return on the TSX 300 market index being a proxy for the market return.[11]

For all the market-model cumulative abnormal returns, the estimation window for the model parameters is (-200, -60) relative to the announcement date. In addition to the market-model abnormal returns, we also use size and MB adjusted returns over the three event windows to examine market timing (see Section 4.2). We expect equity issuers to have significantly higher MB-ratios 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

In testing all of our hypotheses, we employ a comprehensive measure of financial constraints – the Kaplan-Zingales (1997) index. 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 constraints (e.g., Lamont, Polk, and Sa'á-Requejo, 2001). Following Baker et al. (2003), we 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 constraints. We therefore construct the KZ-index as:

$$KZ_{it} = -1.002 \cdot \frac{CF_{it}}{TA_{it-1}} + 3.319 \cdot LEV_{it} - 39.368 \cdot \frac{DIV_{it}}{TA_{it-1}} - 1.315 \cdot \frac{CASH_{it}}{TA_{it-1}} \qquad (1)$$

[11] We use a (2,60) window to measure long-run returns in order to minimize the influence of non-issuance events, to reduce the effect of using alternative benchmark long-run returns, and to preserve sample size.

CF represents sum of the net income and depreciation, TA stands for total assets, LEV represents leverage as long-term debt over lagged total assets, and CASH represents cash and short-term investments. The KZ-index is higher for firms that are more financially constrained, since such firms have exhausted their debt capacity (high leverage), have low cash balance or cash flows from operations, and pay low or no dividends. Hypothesis 3 implies that the probability of issuing equity should be increasing in the value of KZ – more financially constrained firms are forced to issue equity, especially when firms have low MB.

We also present statistics of the component variables of the KZ-index, along with firm size:

- **Leverage** is defined as: $LEV = \frac{long\ term\ debt}{total\ assets}$.
- **Cash flow** is defined relative to total assets as: $CFA = \frac{net\ income + depreciation}{total\ assets}$.
- **Payout** is defined as cash dividends relative to the assets: $DIVA = \frac{cash\ dividends}{total\ assets}$.
- **Slack** is defined as: $SLACK = \frac{cash\ and\ equivalents}{total\ assets}$.
- **Firm size** is defined as the logarithmic value of total assets, where we deflated the value of total assets with the consumer price index ($CPI_{1997} = 100$):

  $LNTA = \log(deflated\ total\ assets)$. In some tests we also use the logarithm of the market value of equity to measure size.

Firms with low internally generated funds (low free cash flow), a low debt capacity (high leverage), and high financial constraints (low payout, low slack) are supposed to be more likely to issue equity.

3.2.3 Other variables

Even though we don't explicitly test for the information asymmetry model in our paper, we find it important to control for variables that measure information asymmetry. We first compute the parameter of agreement between managers and investors. This parameter was used by Dittmar and Thakor (2007) in their investor-manager agreement theory. This theory, which is closely related to the information asymmetry theory of Myers and Majluf (1984), states that firms issue equity when there is a high level of agreement between managers and investors. Dittmar and Thakor (2007) define the agreement parameter α as the difference between the actual (EPS_a) and the last forecasted EPS (EPS_f) divided by the actual EPS. They argue that a higher α represents higher agreement, as investors are less likely to question the managerial decisions if the managers are able to deliver better earnings than expected. In our view this variable does not really measure "agreement", but rather measures trust or confidence. For this reason, we use the absolute version of alpha as our main "disagreement" variable. A higher value of absolute alpha represents *less* agreement, since the actual EPS will be further from the forecasted EPS. In addition, we measure information asymmetry or disagreement between management and investors by the dispersion of analysts' earnings forecasts. Higher dispersion implies higher information asymmetry or disagreement.

- **Information asymmetry or disagreement parameter absolute alpha** ($|\alpha|$) is defined as the absolute value of the relative difference between actual (EPS_a) and the forecasted earnings per share (EPS_f) just prior to the announcement of the security issue: $|\alpha| = \left|\frac{EPS_a - EPS_f}{EPS_a}\right|$.

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

A low $|\alpha|$ implies a low degree of information asymmetry or manager-investor disagreement, and a low value of DISP implies low disagreement (high agreement).

We also define additional variables that provide information about the characteristics of the issuers (repurchasers):

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

- **Relative issue size** is defined as the nominal amount of funding raised with the issue relative to total assets: $RISS = \frac{issue\ size}{total\ assets}$. 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 ($CPI_{1997} = 100$).

4 Empirical Results

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 1998-2007. There is some variation in the number of different security issues and share repurchases over the sample period. Financing activities are relatively strong in the first half of the sample period, followed by a drop in activity, especially equity issuance, around 2004, which is shortly after the end of the bear stock market of 2000-2002. There is a sharp pickup in equity issuance toward the end of the sample period, so that the total issues reach a maximum of 339 in 2007 of which 218 are equity issues.

<**Insert Table 1 here**>

In Table 2 we present for the full sample descriptive statistics and pair-wise 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 management and investors.

<**Insert Table 2 here**>

In Panel A we first report characteristics and differences between different issuers related to market timing. Looking at the differences in market-to-book (MB) ratios, we observe that share repurchasers have the lowest MB (2.041), while equity issuers have the highest MB (mean MB of 5.300). The difference in MB between equity issuers and debt issuers and between equity issuers and equity repurchasers is statistically significant.

Figure 1 depicts the stock price performance for the issuers before and after the announcement. The sharp price run-up (run-down) leading up to equity issuance (repurchase) announcement, along with the price reversal after the announcement, is highly suggestive of the market timing behavior of the firms.

<**Insert Figure 1 here**>

The pre-announcement abnormal returns ($CAR_{(-60,-2)}$) for equity issuers are on average 8.2%, while for debt issuers the abnormal returns are about zero. Equity repurchasers experience a -5.7% abnormal pre-announcement return. Announcement period abnormal returns ($CAR_{(-1,1)}$) for equity issuers and debt issuers are on average about zero. Companies that announce share repurchase programs experience on average 1.8% higher announcement period abnormal returns than equity issuers. These results are mostly in line with previous literature on the wealth effects associated with the announcement of different security issues.[12] Note that the post-announcement abnormal returns for equity issuers are on average -6.2%, while that for repurchasers are 1.7%. We will provide multivariate tests about the relation between post-announcement returns and the MB ratios in the next subsection.

The evidence is consistent with previous literature on market timing (e.g., Baker and Wurgler, 2002) where equity issuers time the market and issue equity when their shares are overvalued.[13]

Next, we look at the variables related to the pecking order (Panel B of Table 2). First, we note that our comprehensive measure of financial constraints, the KZ-index, is actually higher for debt issuers than for equity issuers and repurchasers. For example, the mean KZ is 0.405 for debt issuers and 0.098 for equity issuers. This evidence gives no support to the pecking order

[12] 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% for the US market, while debt issues induce only slightly negative wealth effects (see for example Dann and Mikkelson, 1984, and Eckbo, 1986).

[13] Fama and French (2005) argue that firms repurchase shares when leverage is low and / or when 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 1.505) and a relatively low leverage (see Panel B of Table 2) with a mean value of 0.291. These results are in line with the findings of Fama and French.

that firms should prefer debt to equity financing unless they are financially constrained. However, firm size is a determinant of the KZ-index and the MB ratio (e.g., LNTA has a correlation of 0.101 with KZ and a correlation of -0.292 with MB in our sample). Therefore, a test of pecking order and / or market timing needs to control for the effect of size.

Looking at the KZ components, we find that compared to equity issuers, debt issuers tend to have higher leverage (LEV) and lower financial slack (SLACK). These both indicate higher levels of financial constraints for debt issuers. The pieces of evidence consistent with the pecking order theory are the fact that equity issuers are significantly smaller than debt issuers or firms that repurchase shares – to the extent that small firms tend to be more financially constrained, and that cash flows (CFA) and dividend payments (DIVA) are stronger for debt issuers than for equity issuers. However, as will be shown in Section 4.3, the debt-equity choice of companies is consistent with the pecking order theory if we control for firm size in the analysis.

We use two proxies to measure information asymmetry between insiders and outsiders of the firm. The results for these proxies are shown in Panel C of Table 2. We find that equity issuers have an average absolute alpha ($|\alpha|$) value of 0.576, higher than the average value of 0.182 for debt issuers. This result is inconsistent with the information asymmetry theory. Using the other proxy for information asymmetry (dispersion of analysts' forecasts) leads to the same conclusion. In Panel C of Table 2 we also present some other additional characteristics of the issues and issuers. Our results show that the average issue size of the debt issue is around 181 million Canadian dollars (CAD), while the average equity issue is around a one-third of that (60 million CAD). The average size of the share repurchase is around 69 million CAD. The relative issue size of equity represents on average around 39%

of the assets of the issuing company at the time of the issue, but only around 6% 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 a larger amount of new equity compared to their capital. 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). Both this result and the significantly higher MB values for equity issuers provide preliminary 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. In contrast, we find very small announcement date abnormal returns for equity issuers. Since MB and associated misvaluation proxies may contain information about the firm’s growth prospects, we further investigate post-announcement excess returns for equity issuers. From Figure 1 it appears that equity issuers experience strong negative post-announcement returns. In Table 3 we present results of pre-, post- and announcement date 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 before the announcement of the issue are more positive for high-MB firms (mean of 19.81%) than for low-MB firms (mean of 2.84%). This result is consistent with prior literature. 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 0.95%) than for high-MB firms (mean $CAR_{(2,60)}$ of -14.66%). Since the announcement-period CAR does not show a significant difference between high and low-MB equity issuers, it seems that investors do not react to the announcement adequately during the announcement window.

In order to confirm that our results are not driven by risk as measured by size and MB, 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).[14] For each calendar month we first sort all the firms listed on the Toronto Stock Exchange into deciles based on the MB ratios. Then we match the issuing firm's MB to a corresponding decile. Among the firms within the decile we find 20 firms which are 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 $BHAR_{(-60,-2)}$ of around 31% between the highest and the lowest MB quartile). In line with the findings in Panel A, announcement date excess returns are higher for firms with higher MB. However, again the difference between the highest and the lowest MB quartile is not significant. Post-announcement excess returns are again larger for the lower-MB firms: $BHAR_{(2,60)}$ is 4.71% larger for the lowest-MB quartile firms than for the highest-MB quartile firms. This difference is significant at the 10% level. Overall, the results in Table 3 show that while short-run returns are inconclusive regarding the relation between market

[14] See for example Lyon, Barber, and Tsai (1999).

performance and MB, the post-issue long-run returns over 3 months are consistently lower for equity issuers with high MB ratios.

The results in Table 3 are consistent with the market timing hypothesis, but as discussed in Section 2, the results are also potentially consistent with an investment-based rational theory. To test Hypothesis 1 and further distinguish theories, in Table 4 we study whether the relation between the MB ratio and the post-announcement abnormal returns depends on the KZ-index for equity issuers.

<Insert Table 4 here>

The most interesting result from Panel A of Table 4 is that the least financially constrained firms (lowest KZ quartile) have the most negative post-announcement abnormal returns. These returns are calculated using the market model. The difference between the highest and the lowest MB-quartiles is a statistically significant -30.17% for the least constrained quartile. Moreover, the equity issuers that are both in the lowest KZ quartile and in the highest MB-quartile have the lowest post-announcement abnormal return of all companies (-26.22%). Panel B shows that this pattern is even more clear-cut when using buy-and-hold abnormal returns rather than abnormal returns from the market model. Again, the least financially constrained firms that have the highest MB ratio show the most negative abnormal return (-12.42%). Within this quartile the difference between the highest and the lowest MB ratio is -12.11%, significantly different from zero. These results based on portfolio sorts provide preliminary support for Hypothesis 1.

Next, we perform a cross-sectional multivariate regression analysis in order to provide a more robust test of the market timing hypothesis. We estimate the following model for the full sample of debt and equity issuers and share repurchasers: [15]

$$R_{(2,60),i} = \beta_0 + \beta_1 \cdot MB_i + \beta_2 \cdot LNMV_i + \beta_3 \cdot KZ_i + \beta_4 \cdot KZ_i \cdot MB_i + \beta_5 \cdot |\alpha_i| + \beta_6 \cdot CAPX_i + \epsilon_i, \quad (2)$$

where $R_{(2,60),i}$ denotes post-announcement excess returns from day 2 to day 60 after the announcement[16], MB_i is the market-to-book ratio of equity, $LNMV_i$ represents the log of the market value of the company, KZ_i is the KZ-index of financial constraints, $KZ_i \cdot MB_i$ denotes the interaction term between market-to-book ratio of equity and the KZ-index, $|\alpha_i|$ denotes the absolute value of the "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 the 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, 2009). We present the regression results in Table 5.

<Insert Table 5 here>

In Panel A the dependent variable is the post-announcement excess return based on the market model ($CAR_{(2,60),i}$) while in Panel B the dependent variable is the size and market-to-book matched buy-and-hold post-announcement excess return ($BHAR_{(2,60),i}$). The two models differ in that Model 2 includes an interaction variable between KZ and MB. In both models in Panel A the overvaluation proxy MB significantly negatively affects post-announcement excess returns. More importantly, in Model 2, the interactive variable between KZ and MB is positive and significant at the 5% level. The net effect of MB on the market-

[15] The number of observations in these regressions is lower than the full sample size because of the requirement of control variables such as information asymmetry proxies. We also run the regressions for the subsample of equity issuers, or for the sample excluding debt issuers, and the main results remain unchanged. Details are available from the authors on request.

[16] Post-announcement excess return is based both on the market model ($CAR_{(2,60)}$) and on the size and market-to-book matched buy-and-hold post-announcement excess return ($BHAR_{(2,60)}$).

model excess return is MB (-0.0154 + 0.0080 KZ), which is negative only when KZ is lower than 1.93. This result indicates that the MB effect on long-run returns is stronger when KZ is lower. Putting it differently, firms are more likely to time equity or debt issuance when they are least financially constrained, consistent with Hypothesis 1.

In Panel B where the dependent variable is the style-adjusted long-run return, the MB ratio is significant only when the interaction between KZ and MB is included. In other words, using style-adjusted returns to measure market timing, firms time their issuance only when they are financially unconstrained. Also, the finding that CAPX does not explain the poor post-announcement performance of equity issuers is consistent with the conclusion of Hertzel and Li (2010). Since we measure post-announcement performance over a relatively short window of 3 months, it is unlikely that our results are influenced by the choice of return benchmarks or non-issuance related events. Table 5 shows that firms that issue overvalued equity (high-MB) seem to time the market, where managers take advantage of the overvaluation by issuing equity. The results support Hypothesis 1, and provide a challenge for the investment-based rational theory.

In order to provide a further confirmation that market timing is stronger among financially unconstrained firms, we separate the sample into two subsamples based on the KZ-index, and run long-run return regressions separately. Table 6 reports the regression results for the low-KZ (unconstrained) and high-KZ (constrained) subsample.

<**Insert Table 6 here**>

Consistent with the findings from Table 5, MB is negative and significant at the 1% level for both the market-model abnormal returns (Panel A) and the style-adjusted abnormal returns

(Panel B). These results show that among low-KZ (unconstrained) firms, post-announcement returns are lower for high-MB issuers. In contrast, MB is not significant for the high-KZ subsample in both panels. These findings corroborate the conclusion that financial flexibility enables firms to select when to raise financing and which security to issue.

Our last piece of evidence on market timing (regarding Hypothesis 2), and the evidence regarding the pecking order (Hypothesis 3), come from multinomial choice analysis, which is discussed below in Section 4.3.

4.3 Choice Model Analysis and Pecking Order

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 (IIA) property of the multinomial logit model. 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.[17]

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

In Table 7 we present the results of the multinomial probit regression, where the dependent variable is a categorical variable denoting selected security type. We set equity issue as the base outcome, and we confront the probability of issuing equity (leverage decreasing security decision) to the two leverage increasing security decisions – debt issue and share repurchase. We include proxies for market timing (MB) and pecking order (KZ) together in the regressions. All models include industry (at 1-digit SIC code) and year dummies.

<Insert Table 7 here>

Models 1-4 of Table 7 refer to a setup where we jointly test the hypotheses using the KZ-index as the proxy for financial constraints. In Models 1 and 2 we use agreement parameter absolute $|\alpha|$ as to control for information asymmetry or (dis)agreement, while in Models 3 and 4 we use dispersion of analysts' forecasts (DISP). Models 2 and 4 include an interaction variable between KZ and MB.

Looking over both panels, we first note that firm size is solidly significant in affecting security choice: large firms are more likely to issue debt versus equity (Panel A) and repurchase shares (Panel B). With respect to market timing, the overvaluation proxy MB is generally significant, suggesting that firms tend to issue (repurchase) equity when their shares are overvalued (undervalued). Furthermore, when the interaction between KZ and MB is included as in Models 2 and 4, MB is always significant at the 5% level or above. Noticing that the sign of MB is negative and that of KZ·MB is positive for both panels, this result is similar to that found in the long-run return test of Table 5 that the effect of MB on security issuance is stronger among low-KZ firms. These findings are supportive of Hypothesis 2. Taken together, there is consistent evidence that the effect of market timing is conditional on financial constraints, and firms are more likely to time the market both in issuing and repurchasing equity when they are financially unconstrained.

Next, we turn to the pecking order hypothesis, which expects financially unconstrained firms (low KZ) to more likely use debt financing. Put differently, the pecking order predicts a negative sign on KZ. We note that in Panel A, KZ is significant at best at the 5% level in Models 1 and 3 which do not include the interaction between KZ and MB. In Models 2 and 4, which include the interaction, the significance level of KZ becomes stronger and is significant at the 1% level. In addition, the interaction term between KZ and MB is also significantly positive. Keeping in mind that the expected pecking order effect of KZ on the probably of debt issuance is negative, this result suggests that the effect of KZ in accordance to pecking order is more significant when MB is low, or when the firm is undervalued.[18] This gives support for Hypothesis 3.

In Panel B of Table 7, KZ also negatively predicts the probability of equity repurchasing, consistent with the interpretation that repurchasing is feasible among unconstrained firms and equity issuance is more likely when firms are constrained. Also, the significantly positive coefficient of the interaction term KZ·MB indicates that the effect of KZ on repurchase/issuance is stronger when firms have low MB and are undervalued. This result offers evidence of an interaction between market timing and financial constraints in the equity repurchase decision.

[18] Our test results are not overly sensitive to how the KZ-index is defined. In unreported tests, we calculate KZ using equal-weighted components so that each component variable contributes equally to the variation in KZ, following Baker et al. (2003) and Chang et al. (2007). Our multinomial probit test yields the same conclusions as Table 7.

5 Conclusion

We test the market timing and pecking order theories in a sample of Canadian firms from 1998 to 2007. Our most novel finding is that the effects of market timing and pecking order interact. Firms are more likely to time their equity issues and repurchases when they are least financially constrained, and financial flexibility and stock misvaluation appear to jointly drive firms' practices to gear the market with respect to financing. We find that pre-announcement equity valuation negatively predicts post-announcement abnormal stock performance only among financially unconstrained firms, which gives stronger support for the market timing theory but is difficult to explain by an investment-based rational theory. On the other hand, the pecking order of financing is more likely to be observed among undervalued firms, consistent with the interpretation that when firms are overvalued, the incentive for them to exploit market overvaluation may distort the pecking order prediction that firms prefer debt to equity. Future research that incorporates the interaction between market timing and financial constraints may yield more insights into firms' financing policy.

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Figure 1: Cumulative Abnormal Returns

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

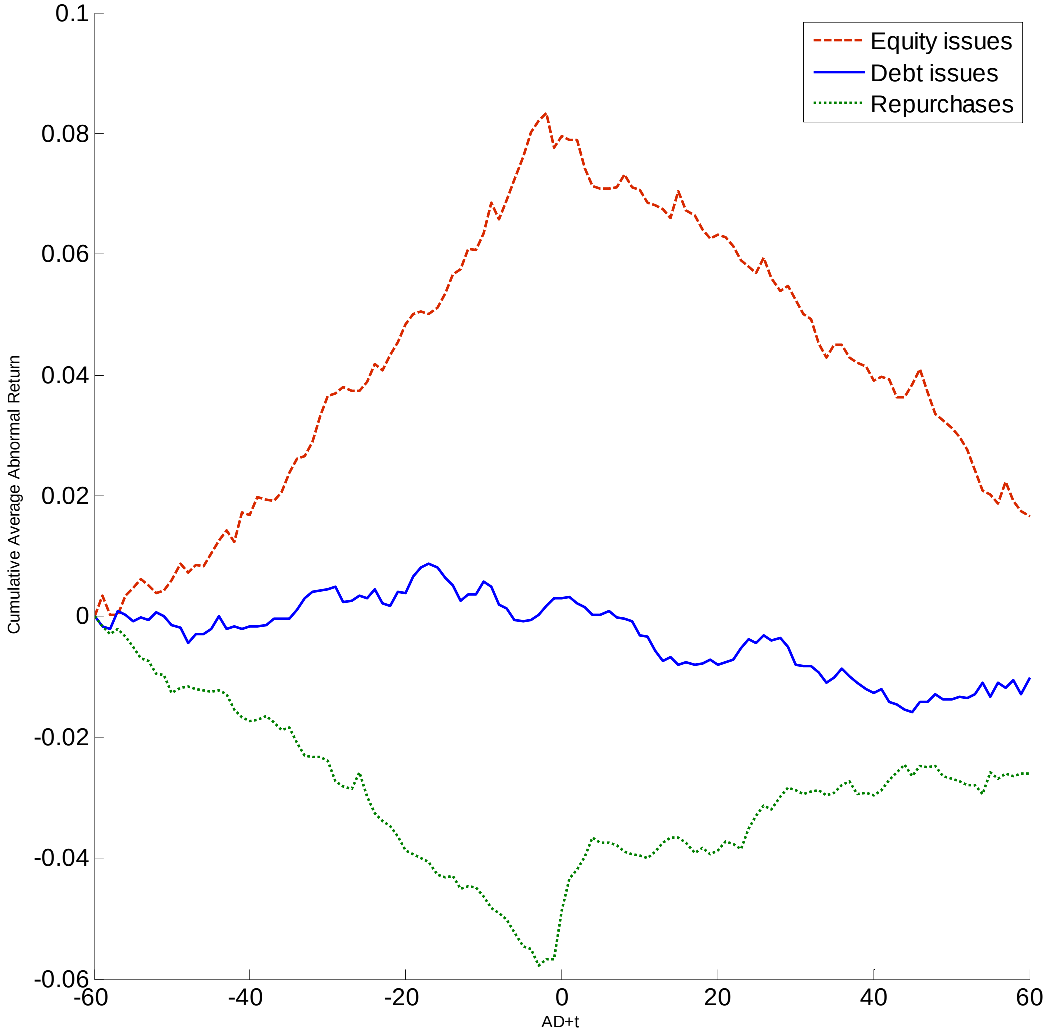

Table 1: Yearly Distribution of Security Issues and Repurchases

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 2007. Numbers in cells represent the number of issues in a given year.

	Year										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Debt	34	34	33	32	20	19	10	19	15	14	227
Equity	90	116	121	102	112	115	86	116	195	218	1,271
Repurchase	147	138	175	128	103	39	68	80	83	110	1,071
Total	271	288	329	262	235	173	164	215	293	339	2,569

Table 2: Summary Statistics of Proxies for Market Timing, Pecking Order, and Control Variables

The sample includes debt and equity issues and share repurchases of Canadian non-financial companies from 1998 to 2007. Mean, median and number of observations (N) are for market-adjusted stock price returns prior to the announcement ($CAR_{(-60,-2)}$), market-adjusted stock returns around the announcement ($CAR_{(-1,1)}$), market-adjusted stock price returns after the announcement ($CAR_{(2,60)}$), Tobin's Q-ratio (Q), market-to-book ratio of equity (MB), size (LNTA=log of deflated total assets; deflator 1998=100), leverage (LEV), cash flow (CFA), payout (DIVA), slack (SLACK), KZ-index that measures the degree of financial constraints (see Equation (1)), dispersion of analysts' forecasts (DISP), the absolute value of the disagreement proxy $|\alpha|$, issue size (PRINC), relative issue size (RISS), and capital expenditures scaled by totals assets (CAPX). Total assets always refer to the book value of assets. All variables except LNTA and RISS are winsorized at 2.5% of top and bottom values. ***, ** and * denote significance at the 1, 5 and 10% level, respectively.

Panel A: Proxies for Market Timing

Security		$CAR_{(-60,-2)}$	$CAR_{(-1,1)}$	$CAR_{(2,60)}$	Q	MB
Debt	Mean	0.002	0.001	-0.013	1.541	2.599
	Median	-0.003	0.000	0.000	1.458	2.123
	N	224	224	224	210	216
Equity	Mean	0.082***	-0.005	-0.062***	4.267	5.300
	Median	0.045***	-0.013***	-0.054***	2.124	2.795
	N	1,125	1,125	1,125	1,069	1,080
Repurchase	Mean	-0.057***	0.013***	0.017**	1.505	2.041
	Median	-0.061***	0.006***	0.010*	1.247	1.493
	N	1,033	1,033	1,033	931	941
Difference	Debt-Equity	-0.081***	0.006*	0.049***	-2.726***	-2.701***
	Repurchase-Equity	-0.139***	0.018***	0.079***	-2.763***	-3.259***
	Debt-Repurchase	0.059***	-0.012***	-0.030**	0.037	0.557***

Panel B: Proxies for Pecking Order

Security		LNTA	LEV	CFA	DIVA	SLACK	KZ
Debt	Mean	15.161	0.438	0.100	0.022	0.061	0.405
	Median	15.225	0.451	0.096	0.015	0.026	0.713
	N	219	210	216	219	219	210
Equity	Mean	11.267	0.236	-0.091	0.014	0.195	0.098
	Median	11.189	0.183	0.028	0.000	0.089	0.221
	N	1,127	1,061	1,075	1,056	1,092	986
Repurchase	Mean	12.604	0.291	0.101	0.010	0.127	0.285
	Median	12.404	0.296	0.106	0.000	0.044	0.447
	N	963	936	941	934	935	904
Difference	Debt-Equity	3.893***	0.201***	0.191***	0.008***	-0.134***	0.307***
	Repurchase-Equity	1.336***	0.055***	0.192***	-0.004**	-0.068***	0.187***
	Debt-Repurchase	2.557***	0.146***	0.000	0.011***	-0.066***	0.120*

Panel C: Other Characteristics

Security		DISP	|α|	PRINC	RISS	CAPX
Debt	Mean	0.098	0.182	180.756	0.056	0.100
	Median	0.040	0.071	150.000	0.028	0.088
	N	148	153	227	219	219
Equity	Mean	0.342	0.576	59.605	0.388	0.152
	Median	0.182	0.304	22.113	0.211	0.084
	N	499	618	1,271	1,127	1,116
Repurchase	Mean	0.174	0.454	68.781	0.052	0.097
	Median	0.083	0.171	5.669	0.031	0.061
	N	547	643	1,067	960	960
Difference	Debt-Equity	-0.244***	-0.393***	121.151***	-0.332***	-0.052***
	Repurchase-Equity	-0.168***	-0.122***	9.176	-0.335***	-0.055***
	Debt-Repurchase	-0.076***	-0.271***	111.975***	0.003	0.002

Table 3: Market Timing and Excess Returns

Cumulative Abnormal Returns (Panel A) and Buy-and-hold Abnormal Returns (Panel B) for equity issuers by Canadian non-financial companies from 1998 to 2007. Pre-announcement market-adjusted stock returns ($CAR_{(-60,-2)}$), announcement-period 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 (BHARs) in Panel B represent size-MB matched firm abnormal returns. ***, ** and * denote significance at the 1, 5 and 10% level, respectively. Tests of significance of the excess returns are performed for the difference in means only.

Panel A: Cumulative Abnormal Returns (Market Model)

MB Quartile		$CAR_{(-60,-2)}$	$CAR_{(-1,1)}$	$CAR_{(2,60)}$
	Mean	0.0284	0.0014	0.0095
1	Median	0.0173	-0.0080	-0.0021
	N	263	263	263
	Mean	0.0291	-0.0063	-0.0331
2	Median	0.0059	-0.0097	-0.0263
	N	261	261	261
	Mean	0.0854	-0.0103	-0.0757
3	Median	0.0828	-0.0153	-0.0761
	N	261	261	261
	Mean	0.1981	-0.0001	-0.1466
4	Median	0.1026	-0.0195	-0.1659
	N	259	259	259
Total	Mean	0.0849	-0.0038	-0.0612
	Median	0.0517	-0.0127	-0.0566
	N	1,044	1,044	1,044
Difference in means (Q4-Q1)		0.1697***	-0.0015	-0.1561***
t-stat		3.83	-0.14	-4.32

Panel B: Buy-and-hold Abnormal Returns (Size-MB Adjusted Returns)

MB Quartile		$BHAR_{(-60,-2)}$	$BHAR_{(-1,1)}$	$BHAR_{(2,60)}$
	Mean	-0.0028	-0.0028	0.0248
1	Median	0.0016	-0.0127	-0.0039
	N	240	240	240
	Mean	0.0324	-0.0054	-0.0085
2	Median	0.0058	-0.0142	-0.0091
	N	269	269	269
	Mean	0.1056	-0.0090	-0.0207
3	Median	0.0660	-0.0145	-0.0102
	N	269	269	269
	Mean	0.3084	0.0044	-0.0233
4	Median	0.1965	-0.0128	-0.0627
	N	266	266	266
Total	Mean	0.1135	-0.0032	-0.0075
	Median	0.0632	-0.0133	-0.0176
	N	1,044	1,044	1,044
Difference in means (Q4-Q1)		0.3113***	0.0072	-0.0471*
t-stat		8.31	0.70	-1.60

Table 4: Financial constraints, (over)valuation and post-announcement excess returns

Cumulative Abnormal Returns (Panel A) and Buy-and-hold Abnormal Returns (Panel B) for equity issuers by Canadian companies from 1998 to 2007. Post-announcement market-adjusted stock returns ($CAR_{(2,60)}$) for equity issuers are tabulated according to market-to-book quartiles and financial constraint quartiles as measured with KZ-index (see equation (1)). 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. ***, ** and * denote significance at the 1, 5 and 10% level, respectively.

Panel A: Cumulative Abnormal Returns (Market Model)

MB Quartiles		KZ quartiles 1	2	3	4	Total	Q4-Q1	t-stat
1	Mean	0.0395	-0.1308	0.0663	0.0504	0.0204	0.0109	0.18
	N	50	42	71	71	234		
2	Mean	-0.0103	-0.0216	0.0043	-0.1049	-0.0274	-0.0946	-1.90**
	N	65	62	61	44	232		
3	Mean	-0.0750	-0.0868	-0.0570	-0.0581	-0.0695	0.0170	0.31
	N	52	68	49	75	244		
4	Mean	-0.2622	-0.0953	-0.0533	-0.0806	-0.1304	0.1816	2.57***
	N	63	62	53	41	219		
Total	Mean	-0.0831	-0.0797	-0.0028	-0.0376	-0.0507	0.0455	1.47*
	N	230	234	234	231	929		
Q4-Q1		-0.3017***	0.0355	-0.1196	-0.1310**	-0.1508***		
t-stat		-4.49	0.53	-1.28	-2.04	-3.94		

Panel B: Buy-and-hold Abnormal Returns (Size-MB Matched Returns)

MB Quartiles		KZ quartiles 1	2	3	4	Total	Q4-Q1	t-stat
1	Mean	-0.0121	-0.0895	0.0919	0.0797	0.0297	0.0918	2.14**
	N	50	44	68	62	224		
2	Mean	-0.0094	0.0024	-0.0106	-0.0353	-0.0115	-0.0259	-0.64
	N	66	63	62	45	236		
3	Mean	-0.0490	-0.0248	-0.0128	0.0024	-0.0192	0.0514	1.21
	N	53	69	50	76	248		
4	Mean	-0.1242	0.0009	0.0431	0.0370	-0.0186	0.1612	2.58***
	N	66	63	56	41	226		
Total	Mean	-0.0512	-0.0228	0.0312	0.0226	-0.0054	0.0737	3.06***
	N	235	239	236	224	934		
Q4-Q1		-0.1121**	0.0905*	-0.0488	-0.0427	-0.0483*		
t-stat		-2.18	1.48	-0.64	-0.77	-1.53		

Table 5: Post-announcement Excess Returns and Company Characteristics

Estimation results for the OLS regression model (see Equation (2)) for Canadian non-financial companies in the sample of debt and equity issuers and share repurchasers. 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), size of the company (LNMV=logarithm of the market value of equity measured 5 days prior to the announcement of the issue), KZ-index of financial constraints (see Equation (1)), the interaction term between equity market-to-book ratio and KZ-index, the absolute value of the agreement parameter ($|\alpha|$), and capital expenditures scaled by total assets (CAPX). All variables except LNMV are winsorized at 2.5% of top and bottom values. Standard errors in the regressions are White heteroskedasticity corrected. ***, ** and * denote significance at the 1, 5 and 10% level, respectively.

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

	Model 1		Model 2	
	Coef.	t-stat	Coef.	t-stat
MB	-0.0112	-2.77***	-0.0154	-3.41***
LNMV	-0.0111	-2.34**	-0.0104	-2.25**
KZ	0.0098	1.76*	-0.0087	-1.02
KZ·MB			0.0080	2.32**
$\|\alpha\|$	-0.0207	-1.53	-0.0225	-1.67*
CAPX	0.0470	0.67	0.0461	0.65
Intercept	0.1111	1.83*	0.1173	1.99**
N	1,266		1,266	
Adj. R^2	0.039		0.056	
Industry dummies	YES		YES	
Time dummies	YES		YES	

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

	Model 1		Model 2	
	Coef.	t-stat	Coef.	t-stat
MB	-0.0050	-1.56	-0.0087	-2.28**
LNMV	-0.0104	-2.74***	-0.0097	-2.62***
KZ	0.0196	4.17***	0.0033	0.49
KZ·MB			0.0067	2.44**
$\|\alpha\|$	-0.0266	-2.28**	-0.0273	-2.35**
CAPX	-0.0410	-0.72	-0.0428	-0.75
Intercept	0.0440	0.97	0.0482	1.10
N	1,273		1,273	
Adj. R^2	0.017		0.034	
Industry dummies	YES		YES	
Time dummies	YES		YES	

Table 6: Post-announcement Excess Returns and Company Characteristics for the Low and High Financially Constrained Subsample

Estimation results for the OLS regression model (see Equation (2)) for Canadian non-financial companies in the sample of debt and equity issuers and share repurchasers. 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), size of the company (LNMV=logarithm of the market value of equity measured 5 days prior to the announcement of the issue), KZ-index of financial constraints (see Equation (1)), the interaction term between equity market-to-book ratio and KZ-index, the absolute value of the disagreement parameter ($|\alpha|$), and capital expenditures scaled by total assets (CAPX). All variables except LNMV are winsorized at 2.5% of top and bottom values. Standard errors in the regressions are White heteroskedasticity corrected. ***, ** and * denote significance at the 1, 5 and 10% level, respectively.

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

	Low KZ		High KZ	
	Coef.	t-stat	Coef.	t-stat
MB	-0.0211	-3.64***	-0.0026	-0.60
LNMV	-0.0057	-0.89	-0.0184	-2.68**
KZ	0.0054	0.71	-0.0356	-1.22
$\lvert\alpha\rvert$	-0.0379	-1.93*	-0.0091	-0.49
CAPX	0.2781	2.64**	-0.1814	-1.95*
Intercept	0.0481	0.79	0.2097	1.99**
N	642		624	
Adj. R^2	0.106		0.013	
Industry dummies	YES		YES	
Time dummies	YES		YES	

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

	Low KZ		High KZ	
	Coef.	t-stat	Coef.	t-stat
MB	-0.0136	-2.92***	0.0021	0.58
LNMV	-0.0010	-0.18	-0.0190	-3.56***
KZ	0.0093	1.41	-0.0206	-0.74
$\lvert\alpha\rvert$	-0.0348	-2.08**	-0.0205	-1.31
CAPX	0.0653	0.75	-0.1740	-2.22**
Intercept	0.0759	1.45	0.1663	2.04**
N	650		623	
Adj. R^2	0.053		0.007	
Industry dummies	YES		YES	
Time dummies	YES		YES	

Table 7: Multinomial Probit Regressions for the Determinants of Security Issuance Choice

The sample includes Canadian debt and equity issues and share repurchases from 1998 to 2007 made by non-financial companies. The dependent 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 the models the base security choice is equity issue. Standard errors are heteroscedasticity consistent. Explanatory variables are size of the company (LNTA - logarithm of total assets), equity market-to-book ratio (MB), KZ-index of financial constraints (see Equation (1)), the interaction term between equity market-to-book ratio and KZ-index, dispersion of analysts' forecasts (DISP) and the absolute value of the disagreement parameter ($|\alpha|$). All variables except LNTA are winsorized at 2.5% of top and bottom values. ***, ** and * denote significance at the 1, 5 and 10% level, respectively.

	Model 1		Model 2		Model 3		Model 4	
	Coef.	z-stat	Coef.	z-stat	Coef.	z-stat	Coef.	z-stat
Panel A: Debt (1) versus Equity (0)								
LNTA	0.7088	10.80***	0.7123	10.93***	0.7028	10.38***	0.7062	10.46***
MB	-0.0157	-1.90*	-0.0603	-3.22***	-0.0110	-1.47	-0.0567	-2.90***
KZ	-0.1262	-1.93*	-0.3039	-3.29***	-0.1404	-2.02**	-0.3160	-3.22***
KZ·MB			0.0653	2.75***			0.0665	2.54**
$\lvert\alpha\rvert$	-0.4181	-1.91*	-0.4358	-2.00**				
DISP					-0.9643	-1.70*	-0.9915	-1.72*
Intercept	-11.1383	-9.40***	-11.486	-9.48***	-11.0092	-8.98***	-11.0354	-9.06***
Panel B: Repurchase (1) versus Equity (0)								
LNTA	0.2663	7.90***	0.2660	7.84***	0.2446	6.32***	0.2439	6.26***
MB	-0.0379	-1.71*	-0.0648	-2.19**	-0.0299	-1.56	-0.0567	-2.11**
KZ	-0.0251	-0.52	-0.1414	-2.16**	0.0315	0.58	-0.0842	-1.11
KZ·MB			0.0391	2.71***			0.0396	2.19**
$\lvert\alpha\rvert$	-0.0642	-0.75	-0.0740	-0.85				
DISP					-0.8015	-3.90***	-0.7964	-3.87***
Intercept	-1.4035	-2.53**	-1.3788	-2.44**	-1.0138	-1.59	-1.0116	-1.57
N	1,283		1,283		1,093		1,093	
Industry dummies	YES		YES		YES		YES	
Time dummies	YES		YES		YES		YES	
Pseudo R^2	0.230		0.234		0.230		0.233	