EQUITY MISPRICING, FINANCIAL CONSTRAINTS, MARKET TIMING AND TARGETING BEHAVIOR OF COMPANIES

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Abstract

We test the market timing theory of capital structure using UK data by estimating intrinsic value of equities and find that the effect is statistically and economically significant. Managers increase debt (equity) issues during periods of undervaluation (overvaluation). We show that repurchasing behavior is equally influenced by equity mispricing. Financial constraints do affect timing behavior: Constrained firms are more sensitive to equity mispricing and the effect is evident particularly in repurchasing activities. Managers, thus, seem to time issues strategically out of necessity rather than being able to do so. Both timing of issues and repurchasing are influenced by reaching target leverage. The evidence suggests that managers are clearly aware of the cost of being off-target and weigh this against benefit gained from timing the market.

Keywords: Market timing, equity mispricing, financial constraints, targeting behavior, repurchasing, UK firms, capital structure.

Acknowledgements: We are grateful for feedback, comments and suggestions from Aydogan Alti, Harry DeAngelo, Vidhan K. Goyal, Ozde Oztekin, Jay Ritter, Semih Tattaroglu and Richard S. Warr.

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INTRODUCTION

We focus on the equity market timing behavior of firms in the UK. According to the market timing theory of capital structure, firms increase equity issues when the equity market is favorable and reduce equity issues during periods of unfavorable market conditions. If managers are able to successfully time the market and lower the overall cost of capital, they would be adding to shareholder value. Given this motivation, managers would also be retiring debt and repurchasing equity to deliver further value subject to whether the market value of equity has deviated from fundamental value of the firm.

We make four contributions to the existing literature. Elliot, Koeter-Kant and Warr (2007) find that the effect of market timing is statistically and economically significant while Hovakimian (2006) shows that although firms time equity issues, the effects are economically small and short-lived, which contrasts with the findings of Baker and Wurgler (2002). As there is no consensus in the literature, we examine firstly the presence of equity market timing for firms in the UK. We investigate into this presence by testing whether deviation from intrinsic value causes managers to adjust their issuing behavior. If the market timing theory holds, we expect to document a significant increase (decrease) in debt to fund the deficit during periods of undervaluation (overvaluation). In doing so, as emphasized in Hasan, Kobeissi and Wang (2011), among others, we consider both the economic and statistical significance of timing as implied in the regression results. Our study also uses Rogers' (1993) standard errors as discussed in detail in Peterson (2009). Therefore the conclusions are robust and indicative.

The second contribution is provided by scrutinizing how financial constraints influences timing behavior: Korajczyk and Levy (2003) find that financially flexible firms time their issues and less flexible firms do not have the luxury of timing their issues. DeAngelo, DeAngelo and Stulz (2010), on the other hand, find that short term cash needs is the main driver behind timing of equity issues in the SEO market. As our paper is based on a sample for UK firms, the notion of

financial constraints affecting timing behavior would be more plausible relative to the US context. Guariglia (2008) argues that the lack of corporate bond and commercial papers, thinner and more heavily regulated banking and equity market and the smaller amount of venture capital financing would lead to financial constraints playing a far more important role in firm behavior in the European context than that in the US. We aim to examine whether having the financial capacity to adjust security issues affects managerial timing decisions. The focus of our paper is different as we directly use firm-level measures of flexibility and mispricing while the others have generally focused on market-wide measures.

The third contribution encompasses looking at the repurchasing of securities: Rau and Vermaelan (2002) suggest that the majority of repurchase activity in the UK is tax driven. Their findings reveal that share repurchases in the UK are influenced by differences in the way repurchases are taxed and regulated. This differs from the US where studies such as Ikenberry, Lakanishok and Vermaelen (1995) find that underpricing plays a key role in share buybacks. Oswald and Young (2004), contrastingly, find that as share prices fall, managers appear to respond by buying more shares, thus giving support for the market timing framework as a valid explanation for share buybacks. We separate firms that are in a financial surplus as opposed to those in financial deficits. Given that managers pro-actively time security issues, we expect that repurchasing behavior to be also heavily influenced by mispricing.

The last contribution we make is by examining issuing and repurchasing activities in coherent with targeting behavior. This contribution stems from Hovakimian (2004) who concludes that even firms that have a target leverage can engage in timing behavior. In addition, Warr *et al*. (2011) find that firms above their target leverage together with overvalued shares adjust faster to target leverage. This suggests that managers have a larger motive to issue equities during periods of overvaluation and over-leverage. Building on their work, we examine whether deviation from target leverage would affect timing behavior. However, we also consider directly

the influence of financial deficit (or surplus) as well as equity mispricing simultaneously with distance from target leverage on issuing behavior. We question in this paper that managers may be reluctant to time the market if this action causes them to drift further from their target leverage levels and that these decisions would also be driven by whether they are in a deficit or surplus.

We draw several main findings and conclusions from this study. Firstly, firms time the equity market by increasing equity issues during periods of overvaluation to finance their deficit. Managers are able to spot deviations from fundamental value and adjust their issues accordingly. This effect is economically and statistically significant. Consistent with the literature, our findings hold after testing for robustness. Secondly, we find that financial constraints play an important role in timing behavior. Constrained firms issue more debt during periods of undervaluation and retire more debt during periods of overvaluation relative to unconstrained firms. One can contend that since constrained firms would benefit most from timing opportunities they behave more strategically than unconstrained firms. Thus, it is clear that there is a significant difference between timing behavior of constrained and unconstrained firms.

The third and fourth findings have to be interpreted closely together as the implications drawn from the analysis are closely tied in. If we assume that firms do not have target leverage or we believe that firms do not deviate from their targets, we find that issuing and repurchasing behaviors are influenced by equity mispricing. Once financial constraints are considered, we find that issuing behavior is not restricted by financial flexibility. Repurchasing behavior is, however, severely limited to the firm's financial capacity as evidenced in the findings. Once we relax the initial assumption we find that mispricing is able to account for repurchasing and issuing activities given that these actions do not cause firms to deviate further from their targets. Thus, market timing attempts are more obvious and significant when they are parallel with targeting behavior. We are also able to infer from these results that the cost of being off target significantly

outweighs the benefit gained from timing the market. Therefore, managers are reluctant to time the market if timing attempts cause leverage to drift further away from pre-determined levels.

We next review the relevant literature. Then we provide the data description, variable definitions, describe how equity mispricing is valued and quantify the basic model used throughout the paper. In what follows, we empirically test how mispricing affects issuance activities and then consider the impact of constraints and repurchasing. This study also explores how targeting and deviation from targets influence timing behavior. Finally, we conclude the main findings and their implications.

LITERATURE REVIEW

Market timing theory of capital structure is fast becoming a very important aspect and widely researched in the literature of corporate finance. This section reviews the literature from several different aspects. Firstly, it looks at how firms finance their external deficit. Baker and Wurgler (2002) show that capital structure is the aggregate outcome of firms' historical attempts to time the market. This approach would dictate that managers should be able to identify opportunities to raise capital at a lower cost and make adjustments to financing the deficit accordingly. The authors find strong support for these hypotheses. However, empirical studies thus far show that during different periods, debt issues and equity issues track the financing deficit differently.

Secondly, this section looks at repurchasing and financial constraints pertaining to market timing and equity mispricing. Hovakimian (2006) found that firms time equity issues to periods of high market-to-book ratios but the effects are economically small and short-lived. This study also proves that the effect of timing of equity repurchases on leverage ratios is even weaker. More interestingly, the author found that debt issues have a significant long-lasting effect on capital structure, but their timing is unlikely to induce a negative relation between market-to-book and leverage. Debt redemptions also have a significant effect on leverage ratios.

Lastly, although market conditions may be attractive, managers may be reluctant to make adjustments to their issuance activities due to targeting behavior. In this sense, market timing would be attractive only when the adjustment would be parallel to their goal of reaching a pre-determined target level. Hovakimian (2004) finds that firms that have target debt ratios can engage in market timing activities. Alti (2006) documents that although attractive market conditions may cause firms to deviate from their original leverage ratios, the effect tends to be reversed and firms tend to rebalance their capital structure sooner or later. Thus, the dynamics of a firm would indicate that firms may in fact have target leverage levels and still attempt to time the market when managers find equity markets to be favorable.

Financing the deficit and mispricing

Financing patterns are first explored in Shyam-Sunder and Myers (1999) who test the relationship between net changes in leverage and financing deficit. In theory, if the pecking order holds, a one-to-one relationship would be observed. They find strong evidence for this notion. In their study, the deficit coefficient is able to better explain net debt issues and also change in leverage ratios than the target adjustment coefficient.[1] The results hold even after considering actual and anticipated deficits via the use of instruments. However, Frank and Goyal (2003) find that net equity issued tracks the financing deficit more closely. Their results show that debt financing is not the main source of financing opted for by managers as the magnitude of equity financing is greater than debt financing. Huang and Ritter (2009) test the change in leverage and financing deficit and show that the pecking order coefficient is either highly significant or not significant at all. They argue that the pecking order is not able to explain their results because in some years the pecking order slope is insignificant. Butler *et al*. (2011) find that although the level of net financing is an important factor in explaining future stock returns the composition constituted by debt or equity is irrelevant.

[1] In their study, the deficit coefficient ranges from 0.69 to 0.85 and the target adjustment coefficient ranges from 0.10 to 0.41.

Bayless and Chaplinsky (1996) examine the windows of opportunity for seasoned equity offerings (SEOs). They directly link the decision to issue equity to the cost of issuing. Hovakimian, Opler and Titman (2001) found that US SEOs were also highly correlated with stock prices. In the UK, Marsh (1982) documented a similar pattern where firms tend to issue equity when prices are high. Baker and Wurgler (2002) propose that managers would reduce reliance on debt and opt for equity when they perceive the equity market to be more favorable. They test this notion by interacting the market-to-book ratio with the amount of capital raised (i.e., financing deficit) and show that there is a strong link between external finance weighted average market-to-book ratio and net change in leverage. Further evidence on managers' attempts to time the market is provided by the survey evidence of Graham and Harvey (2001).

There have been contrasting findings in the literature that raise further questions over the theoretical implications of market timing. Alti (2006) finds that although firms do attempt to time the market, the effect is temporary in nature. The author finds that firms tend to rebalance their capital structure within two years after timing the market. Flannery and Rangan (2006) further test the market timing theory and find that more than half of the observed changes in leverage levels are brought about by targeting behavior. In their study, less than 10% of changes can be explained by market timing and pecking order considerations. Further contention is highlighted in Hovakimian (2006) where the negative correlation between the market-to-book and leverage is not driven by market timing attempts but instead by growth opportunities. Mahajan and Tartaroglu (2008) show that the negative relationship between the leverage ratio and the historical market-to-book ratio is not attributed to market timing. Their findings significantly support the dynamic trade-off view of capital structure. Another recent study (Liu, 2009) found the impact of time varying targets and adjustment costs to reveal that the historical market-to-book ratio has a significant impact on leverage even when firms are not timing the

market. Liu uses alternative proxies of market timing and show they have no effect on leverage. The author concludes that the evidence is largely consistent with partial adjustment models.

On the other hand, there are some studies that provide strong support for the theory. Welch (2004) found that equity price shocks also have a long-lasting effect on capital structure. Welch iterates that firms do not rebalance their capital structure in response to shocks in market value in spite of active net issuing activity. Thus, it can be said that stock returns are the primary driver of capital structure changes. Kayhan and Titman (2007) look at stock prices and financing deficits and find that these two elements have strong influences on capital structure changes. They conclude that the financing deficit affects firms differently depending on their valuation levels. Indirect evidence is provided by Jenter (2005) where perceived mispricing by managers is an important determinant in their decision making. The empirical evidence suggests that managers attempt to actively time the market in both their own private trades and also in firm-level decisions. Elliot *et al.* (2007) make a further significant contribution when they find that overvalued firms are more likely to issue equity to fund the financing deficit. The effect is also economically significant as a deviation of 10% from intrinsic value causes an 8% change in the amount of equity issued. Hertzel and Li (2010) decompose the market-to-book ratio into two separate components, namely the growth and mispricing components. Their findings show that firms with higher element of mispricing decrease long-term debt and have a lower level of post-issue earnings. These results are consistent with the timing aspect of issuance activities.

Financial constraints and repurchasing

Evidence from several survey results suggest that managers are mostly concerned about financial constraints when they consider how to finance their deficit.[2] However, only the pecking order theory proposed by Myers and Majluf (1984) incorporates the significance of constraints in financing choices by managers. Fama and French (2005) find that the pecking order is unable to

[2] Refer to Graham and Harvey (2001), Bancel and Mittoo (2004) and Brounen, De Jong and Koedijk (2004).

explain leverage levels given that equity issues are a commonplace occurrence instead of a last resort of financing choice as proposed by the pecking order. The trade-off theory, on the other hand, has its pitfalls as the theory fails to explain why many profitable firms remain 'under-levered' and not capitalize on the benefit of increasing their reliance on debt financing. Furthermore, empirical studies seldom detect rebalancing activities when firms are over-levered. DeAngelo and DeAngelo (2007) propose that the shortcomings of these theories can be compensated if financial flexibility, capital structure and dividend policies are considered together. Further implications of financial flexibility is shown by Byoun (2011) who finds evidence to support the hypothesis that financial flexibility is the main driver behind capital structure decisions.

Korajczyk and Levy (2003) further expand the scope of argument by looking at how financial constraints and macroeconomic conditions affect capital structure choices. The authors suggest that these two factors can induce time-series and cross-sectional heterogeneity in firm behavior. Firms' target capital structures are modeled as a function of macroeconomic conditions and firm-specific variables while the sample is split into financially constrained and unconstrained firms. The findings show that target leverage is counter-cyclical for the relatively unconstrained sample but pro-cyclical for constrained sample. Macroeconomic conditions are found to be significant for issuance decision for unconstrained firms but less so for constrained firms. Thus, the authors argue that unconstrained firms are able to time their issues to periods when the relative pricing of assets are favorable, constrained firms cannot time the market and settle for whatever option available to them. This provides support for the notion that unconstrained firms time their issue choice to coincide with periods of favorable macroeconomic conditions while constrained firms are unable to do so. Further evidence is provided by Faulkender *et al*. (2007) who investigate the role played by adjustment costs in firms correcting

back towards their target leverage ratios and find faster adjustment speeds among those firms with better excess to external capital.

There are studies that find contrasting results from the above mentioned. Baker, Stein and Wurgler (2003) show that investments by constrained firms are strongly dependent on stock price movements, suggesting that market timing plays an important role for these firms. DeAngelo *et al.* (2010) find that market timing opportunities play a significant role on the probability of firms conducting SEOs. In their study, a majority of issuers would run out of cash without the proceeds from the issues a year after the SEO. Thus, the short term need for cash is the primary motive for firms conducting SEOs with market timing opportunities and life-cycle stage playing secondary roles. Bolton, Chen and Wang (2011) investigate how firms should optimally time the equity market. The authors show that only firms with low cash-to-asset ratios should time the equity market and issue during favorable equity market conditions. Cook and Tang (2010), on the other hand, show that firms adjust faster towards their target leverage in good macroeconomic conditions as opposed to bad states regardless of financial constraints. Thus, the implications of financial constraints on timing behavior remain an open debate.

Wansley, Lane and Sarkar (1989) identify five main motives behind share repurchases: reaching a target leverage level, eliminating free cash flow, anti-takeover motive, signaling of undervaluation and wealth transfer due to timing. In this paper, we focus on the timing motive. In order to be able to transfer wealth (as an alternative policy to dividend payouts), managers will adjust their repurchasing to reflect mispricing in the equity market.[3] Barclay and Smith (1988) find that there are higher costs associated with repurchases and these costs are not incurred for dividends payouts. Therefore, managers prefer dividends to repurchases for making distributions to shareholders. Contrastingly, Grullon and Michealy (2002) show that firms finance their

[3] See Brockman and Chung (2001) and Chan, Ikenberry and Lee (2007) for empirical evidence on substantial managerial ability to time repurchases. Ginglinger and Hamon (2007) find contrary evidence where repurchases are not based on managerial timing ability.

repurchases with funds that would otherwise have been used to increase dividends. The authors' findings indicate that firms have gradually substituted repurchases for dividends.[4]

Ikenberry, Lakonishok and Vermaelen (2000) further examine repurchasing activities and find that there is a strong link between repurchasing and price movements. Cook, Krigman and Leach (2004) document that managers repurchase following price drops and prices stabilize following repurchase trades. Oswald and Young (2004) find that in the UK, despite the prevailing regulatory environment, under-pricing represents an important determinant of repurchase activities. Zhang (2005) finds that repurchasing occurs following price drops suggesting that managers are attempting to time the market. The market, however, responds positively only to small and value firms making repurchases. Thus, the author argues that at least managers are able to deliver value to long-term shareholders for high market-to-book value firms in repurchases. These studies also suggest that managers are attempting to signal undervaluation. Dittmar and Dittmar (2008) provide contention for these findings by showing that misvaluations are not the driving force behind financing (including repurchasing) activities. Economic expansion leads to additional equity issues and also repurchases.

Market timing and target leverage

Survey evidence by Graham and Harvey (2001) indicates that 81% of managers admit to having some form of target leverage in mind. These managers also admit that they issue equity when it is perceived as being overvalued. Recent studies have documented that target leverage plays an important role in issuance activities and firms move towards a target leverage.[5] These studies indicate that firms frequently deviate from their targets. Faulkender *et al*. (2007) suggest that one of the reasons for this occurrence would be that firms may have a target capital structure but also

[4] Dittmar and Dittmar (2002) further document that repurchases accounted for 44.2% of total payout in the US in 2000 compared to 11.82% in 1971.

[5] See Hovakimian *et al.* (2001), Fama and French (2002), Frank and Goyal (2004), Gaud *et al.* (2005), Kayhan and Titman (2007), Lemmon, Roberts and Zender (2008), Antoniou, Guney and Paudyal (2008) and Huang and Ritter (2009).

have a band around it within which they engage in the timing of security issues and repurchases. Hovakimian (2004) studies the role of target leverage in issuance and repurchasing activities and finds that equity issues and repurchases have no significant lasting effect on capital structure but debt issues and repurchases do. Furthermore, the results indicate that firms are able to pursue market-timing strategies because deviations and costs associated with deviating from target leverage induced by equity transactions are small and transitory. Thus, the author concludes that firms that have target debt ratios can engage in timing the equity market.

Elsas, Flannery and Garfinkel (2006) show that large investments are mainly financed by externally obtained funds. There is evidence to support market timing but they are transitory in nature and only affect leverage ratios temporarily. In the long-run, firms move toward target leverage. Alti (2006) also finds that firms time the market in the short-run but revert to target leverage eventually. Further insight is provided by Warr *et al*. (2011) where firms that are over-levered would adjust faster to target leverage given that the present value of bankruptcy costs would be higher. More interestingly, over-levered firms would adjust faster to target leverage in the presence of overvaluation. Byoun (2008) documents that most of the adjustment to target leverage occurs if firms have a financing surplus (deficit) and are over-levered (under-levered).

Furthermore, Chang, Dasgupta and Hilary (2006) examine the role of analyst coverage on financing decisions and find that firms that receive less coverage issue equity less frequently. Hence, these firms are inclined to time the market and issue larger amounts of equity when conditions in the equity market are more favorable. Theoretically, firms that receive less coverage would have higher levels of information asymmetry leading to more frequent misevaluation. During periods of undervaluation, firms may resort to debt financing and therefore move away from their target leverage. When market conditions improve, these firms will have a stronger incentive to make a larger equity issue to move closer to their target levels. The authors further iterate that even if higher valuations move them automatically closer to a target market

value-to-leverage, they may still be inclined to issue equity more extensively due to anticipated future difficulties in issuing. Hence, managers are trading off the temporary cost of being under-levered against the benefit arising from reduction in the future possibility of being over-levered and financial flexibility. Binsbergen, Graham and Yang (2010) further document that the cost of being over-levered is higher than that of being under-levered, which implies that equity market timing should be more attractive for managers whose firms are above their target leverage.

DATA

Data description and descriptive statistics

Our initial sample comprises all U.K. firms available on Datastream during the period of 1984-2008.[6] The choice of the sample period is guided by availability of data and based on the objective of measuring mis-valuations in the study. Following the literature, we exclude financial firms from the sample and define the variables as follows. Book leverage, (BL), is defined as book debt divided by total assets. The net debt issues, (Δdbl), is the net change in book debt over total assets. The net equity issues, (Δe), is the change in book equity less the change in retained earnings divided by total assets. SIZE is the natural logarithm of net sales in millions of 1984 pounds. Tangibility of assets, TANG, is defined as net plant, property and equipment over total assets. R&D and CAPEX are proxies for growth options defined as research and development expenses scaled by total assets, and capital expenditure divided by total assets, respectively. Profitability (PROF) is the earnings before interest, taxes and depreciation over total assets.

To control for the influence of outliers, values for BL, Δdbl and Δe that exceed 100% in absolute value are also dropped from the sample. Missing firm-year observations are also excluded from the data set. The final sample comprises of 11,201 firm-year observations. The summary statistics of firm specific characteristics and financing activities are summarized in

[6] We include dead firms to avoid potential survivorship and selection bias.

Panel A of Table 1. Panel B shows the correlation matrix of all the variables used in the regressions. We find that book leverage of firms in the UK is about 18% (17.81). The correlation matrix indicates that none of the independent variables have a high level of correlation. The variance inflation factor (VIF) values are far less than 10, revealing the absence of the multicollinearity problem. Although some of the correlations exceed 80%, these are not among the explanatory variables.

[Place Table 1 about here]

Measuring the financing deficit

Similar to Elliot *et al.* (2007), we expand the model used by Shyam-Sunder and Myers (1999) and include a measure of valuation to proxy for timing. The model used regresses the net debt issued on the financing deficit and is defined as DEF_{it} for firm *i* in year *t* as follows:

$$\boldsymbol{DEF_{it} = DIV_{it} + I_{it} + \Delta W_{it} - C_{it} \equiv \Delta d_{it} + \Delta e_{it}} \quad (1)$$

where DIV_{it} is cash dividends, I_{it} is net investments, ΔW_{it} is net working capital, C_{it} is cash flow after interest and taxes. The sum is identical to net debt issued (Δd_{it}) and net equity issued (Δe_{it}). Similar to Kayhan and Titman (2007), we define a positive deficit when a firm invests more than it internally generates. A negative deficit (surplus) occurs when a firm generates more cash than it invests. Thus, when $\Delta d + \Delta e$ is less than zero, firms are repurchasing (in a surplus) and when this measure is greater than zero, firms are raising capital (in a deficit).

Equity Mispricing

We measure mispricing with the ratio of intrinsic value (IV) to current market price (MP).[7] Intrinsic value is measured as follows:[8]

$$\boldsymbol{V_{equity} = \sum_{t=1}^{\infty} \frac{FCFE_t}{(1+r_e)^t}} \quad (2)$$

$$\boldsymbol{V_{equity} = \sum_{t=1}^{\infty} \frac{FCFE_t}{(1+r_e)^t} = \sum_{t=1}^{N} \frac{FCFE_t}{1+r_e{}^t} + \frac{Terminal\ Value}{(1+r_e)^N}} \quad (3)$$

Terminal value is calculated as:

[7] We utilize an approach similar to Elliot *et al.* (2007).
[8] This is based on Benninga (2011).

$$\boldsymbol{Terminal\ Value} = \frac{\boldsymbol{FCFE_N(1+g)}}{\boldsymbol{(r_e - g)}} \quad (4)$$

where g is the long-term FCFE growth. Given that FCFE occurs throughout the year we make adjustments as follows:

$$\boldsymbol{V_{equity}} = \left[\sum_{\boldsymbol{t=1}}^{\boldsymbol{N}} \frac{\boldsymbol{FCFE_t}}{\boldsymbol{(1+r_e)^t}}\right](\mathbf{1} + \boldsymbol{r_e})^{\mathbf{0.5}}$$

$$= \left[\frac{\boldsymbol{FCFE(1+g)}}{\mathbf{1}+\boldsymbol{r_e}^{\boldsymbol{t}}}\right](\mathbf{1} + \boldsymbol{r_e})^{\mathbf{0.5}} \quad (5)$$

$FCFE_t$ is free cash flow to equity at time *t* and r_e is the cost of equity. FCFE is the sum of net income plus depreciation minus change in non cash working capital minus capital expenditure minus principal repayments of debt capital plus new debt issued. A firm's cost of equity is calculated as below:

$$\boldsymbol{r_E = r_{rf} + \beta_i(r_m - r_{rf})} \quad (6)$$

where short-term treasury bills are used as a proxy for the risk free rate (r_{rf}), and r_m is the total market return (see Elliot *et al.*,2007). β_i is measured as:

$$\boldsymbol{\beta_i} = \frac{\boldsymbol{Cov_i market}}{\boldsymbol{\sigma^2 market}} \quad (7)$$

where FTSE All Share Index is used as a proxy for market.[9] Similar to Elliot *et al. (*2007), our purpose is to measure deviation from fundamental value. This is measured as:

$$\boldsymbol{Misvaluation} = \frac{\boldsymbol{IV_{it}}}{\boldsymbol{MP_{it}}} \quad (8)$$

where IV_{it} is intrinsic value and MP_{it} is market value of equity. In our study we use a dummy variable, UNDVD, which takes the value of 1 if the firm is undervalued (indicating that misvaluation is greater than one).[10] In the spirit of Elliot *et al.* (2007), we interact UNDVD with the financing deficit variable.[11] Our basic model is shown as:

$$\boldsymbol{\Delta dbl_{it} = \alpha + \beta_1 DEF_{it} + \varepsilon_{it}} \quad (9)$$

[9] We estimate beta using a 36 month rolling approach. Our results are similar when using a 60 month approach.
[10] The overall misvaluation measure in our sample has an average of 1.07. Throughout the sample the average varies overtime from 0.36 to 3.38.
[11] All interaction variables used are robust to multicollinearity problem.

$$\Delta dbl_{it} = \alpha + \beta_1 DEF_{it} + \beta_2 UNDVD_{it} + \beta_3 (UNDVD \times DEF)_{it} + \varepsilon_{it} \quad (10)$$

We expect the coefficient for the deficit measure to be positive. If firms time debt issues to coincide with equity undervaluation we expect the coefficient β_2 to be positive. Furthermore, if firms increase debt issues to finance their deficit during periods of undervaluation, we expect β_3 to be positive as well.

DOES EQUITY MISPRICING INFLUENCE ISSUANCE ACTIVITIES?

Mispricing and timing attempts

The results for estimating the models expressed in equation (9) and (10) are reported in Table 2.[12] The first column reports the regressions results without the interaction variable. The deficit coefficient is 0.4038 indicating that about 40% of the deficit is financed by debt. Figure 1 plots the financing deficit, net debt issued and net equity issued for firms in our sample. It shows that the proportion of debt and equity issued to finance the deficit varies over time. The second column in Table 2 includes the interaction variable. For overvalued firms, on average, firms retire about 3.70% of debt as a percentage of assets.[13] Undervalued firms, on the other hand, issue about 3.90% of debt as a percentage of assets.[14] This indicates an average swing of 200%. Thus, the effect of equity mispricing is economically and statistically significant.

[Place Table 2 about here]
[Place Figure 1 about here]

Robustness of Results

The last three columns in Table 2 further present the results of estimating the model specified in equation (10) for three sub-periods in our sample. Each sub-period has an economically significant coefficient and statistically significant. The interaction term for the first sub-period is marginally significant but the dummy variable remains significant both economically and

[12] All our regressions control for firm fixed effects, using year dummies and makes corrections for within group correlation (see Peterson, 2009). All results report the coefficients and Rogers standard errors (see Rogers, 1993). Our results are robust to using White standard errors (White, 1980), although White standard errors are generally smaller. In other words, our results regarding the significance level of estimated coefficients are conservative.
[13] This is done by plugging the average deficit value of 0.0497 into the model -0.0539+(0.0497x0.3409).
[14] This is calculated as -0.0539+(0.0497x0.3409) + (0.0695x1)+(1x0.1278x0.0497).

statistically. In addition to the cross-sectional time-series regressions reported in Table 2, we utilize Fama and Macbeth (1973) framework and estimate the model annually. The results are presented graphically in Figure 2. The deficit coefficient for undervalued firms is always larger than the deficit coefficient for overvalued firms. The difference is, however, more obvious in certain years than others. This suggests that not only the individual stock prices but the overall situation of the equity market could play a role in issuance decisions. To further test for robustness of the results thus far, we further include other known determinants of capital structure as documented in prior studies.[15] The expanded models are as follows:

$$\Delta dbl_{it} = \alpha + \beta_1 DEF_{it} + \beta_2 UNDVD_{it} + \beta_3 (UNDVD \times DEF)_{it} + \beta_4 \Delta SIZE_{it} + \beta_5 \Delta TANG_{it} + \beta_6 \Delta RD_{it} + \beta_7 \Delta PROF_{it} + \beta_8 \Delta CAPEX_{it} + \varepsilon_{it} \quad (11)$$

We expect a positive coefficient for tangibility as tangible assets serve as collateral to debt. Size is also expected to have a positive coefficient given that larger firms can afford more debt and also face a smaller degree of information asymmetry. The correlation with profitability is ambiguous as a higher level of profitability reduces dependence on debt as firms are able to meet financing demands via internally generated funds but managers may also attempt to lower effective tax rates via the tax deductibility of interest payments. Growth opportunities are captured via the use of research and development expenses and also capital expenditures.

[Place Figure 2 about here]

The results for regressing equation (11) are reported in Table 3. The result in the first column indicates that firm size, asset tangibility, research and development expenses and also capital expenditure have a positive and statistically significant effect on debt issues. Profitability has a negative and significant effect on debt issues. More importantly, undervalued firms issue on average about 3.70% of debt as a percentage of total assets.[16] Overvalued firms, on the other

[15] See Rajan and Zingales (1995), Frank and Goyal (2003), Hovakimian (2006) and Flannery and Rangan (2006).

[16] This is calculated as -0.0552+(0.0497*0.3398)+(0.0681)+(0.0497*0.1235)+(0.0952*0.0145)+(0.0937*-0.0041)+(0.0003*0.0828)+(-0.0121*-0.0054)+(0.0378*-0.0039).

hand, retire about 3.70% of debt as a percentage of total assets.[17] This further validates that notion that equity mispricing plays a significant role in financing choices indicating an increase of 200 percentage points. We further test the robustness of our results thus far by splitting the sample based on size, growth (using market to book ratio) and profitability to address the endogeneity concerns of the independent variables. The results are reported in column two to seven of Table 3. Our findings are robust for each sub-sample.

[Place Table 3 about here]

CONSTRAINTS AND REPURCHASING

The previous section showed that equity mispricing influences firms' decision making with regard to financing the deficit. Consistent with the market timing theory, we find that debt issues are lower during periods of overvaluation. This section examines the impact of financial constraints on such timing attempts and further dissects the impact with regards to financial constraints and repurchasing behavior.

Financial constraints

During periods of overvaluation, managers issue more equity to finance their deficit, resulting in lower levels of leverage ratios. Theoretical implications and empirical evidence propose that financial flexibility plays a critical role in capital structure decisions. However, the studies discussed in the literature review section find contrasting results as to how market timing is influenced by such constraints. In this section, we examine timing behavior by employing constrained and unconstrained dummy variables. The first method used to classify financial constraints is based on real assets at the beginning of the year. Firms are ranked based on this criterion and the ones in the top (bottom) three deciles are classified as unconstrained (constrained). Therefore, we include a constrained (or unconstrained) dummy variable, CD (or UCD), in the model and interact it with undervaluation dummy and financing deficit:

[17] This is calculated as -0.0552+(0.0497*0.3398)+(0.0952*0.0145)+(0.0937*-0.0041)+(0.0003*0.0828)+(-0.0121*-0.0054)+(0.0378*-0.0039).

$$\Delta dbl_{it} = \alpha + \beta_1 DEF_{it} + \beta_2 UNDVD_{it} + \beta_3 (UNDVD \times DEF)_{it} + \beta_4 CD/UCD_{it} +$$
$$\beta_5 (CD/UCD \times DEF)_{it} + \beta_6 (UNDVD \times CD/UCD)_{it} + \beta_7 (UNDVD \times CD/UCD \times DEF)_{it} +$$
$$\beta_8 \Delta SIZE_{it} + \beta_9 \Delta TANG_{it} + \beta_{10} \Delta RD_{it} + \beta_{11} \Delta PROF_{it} + \beta_{12} \Delta CAPEX_{it} + \varepsilon_{it} \quad (12)$$

Regression results for the expression in (12) are reported in Table 4. The first column shows that the interaction between the constrained dummy, the undervaluation dummy and the deficit measure has a positive and significant coefficient. This indicates that the constrained firms would be inclined to issue more debt during periods of undervaluation and vice versa. We further illustrate this by using the average values from table 1 and plugging it into the model based on the coefficient results where during periods of overvaluation; constrained firms retired more debt than unconstrained firms (4.32% vs. 2.91%). In the presence of undervaluation (when equity markets are less favorable), constrained firms issued more debt than unconstrained firms (4.86% vs 3.42%.). The second column looks at segregating unconstrained firms from the sample by including the unconstrained dummy instead. The interaction between the unconstrained dummy, the undervaluation dummy and the deficit measure has a negative and significant coefficient. Thus, we get similar results indicating that constrained firms react more strongly to equity mispricing. This illustrates that managers of constrained firms are more concerned with overvaluation (favorable market conditions) and time their equity issues during these periods. These managers reduce their reliance on debt as a source of financing during these periods. During periods of undervaluation, constrained firms issue more debt to reduce the cost of capital suggesting that timing behavior during overvaluation maybe motivated by building financial slack for future financing needs.

[Place Table 4 about here]

This section further considers financial constraints and equity mispricing using alternative proxies for constraints. Following Guariglia (2008), we utilize firm age, coverage ratio and cash flows. The definitions of these measures also mirror Guariglia's study of UK firms. We rank

firms based on these three different criteria as a measure of robustness. Firms in the top (bottom) three deciles are considered financially unconstrained (constrained). The earlier regressions are repeated using this criterion and are reported in the next six columns of Table 4. Similarly, we find that constrained firms retire more debt during periods of overvaluation relative to unconstrained firms. During periods of undervaluation, all firms reduce their reliance on equity and resort to debt financing. This swing is larger for constrained firms. Therefore, it can be concluded that constrained firms are more likely to issue equity during periods of overvaluation (i.e. when the cost of equity is lower) to finance their deficit.[18] In the presence of undervaluation constrained firms issue more debt to lower their overall cost of capital. Therefore, the findings shed more light on the ongoing debate in the literature. They suggest that financial constraints play an important role in market timing and constrained firms time the market more significantly.

Repurchasing activities

In this section, the effect of financial surplus on market timing is examined. The sample is split into firms that are in surplus (repurchasing)[19] and firms that are in deficit (issuing).[20] Given prior studies, we expect net repurchasing and issuance to be equally influenced by mispricing. The regressions from the model in equation (11) are done for firms that are in surplus and firms that are in deficit. The results for these regressions are reported in the first column of tables 5 and 6. We first analyze firms in deficit and find that equity mispricing plays a significant role in financing behavior. During periods of undervaluation firms issue more debt than during periods of overvaluation (7.48% vs -0.66%). Looking at firms in a financial surplus, we find that repurchasing behavior is also significantly influenced by equity mispricing. When equity is undervalued, managers retire less debt relative to periods of overvaluation (-0.96% vs -6.27%).

[18] We assume that the cost of debt is constant during periods of overvaluation or undervaluation.
[19] Repurchasing firms are identified when $\Delta e+\Delta d < 0$.
[20] Issuing firms are identified when $\Delta e+\Delta d > 0$.

Therefore, managers rely more on debt financing during periods of undervaluation and retire more debt during periods of overvaluation.

[Place Table 5 about here]

To control for financial capacity influencing issuing and repurchasing behavior, firms are further analyzed using financial constraints criterion as discussed above. The results for the regressions are reported in columns 2 to 9 of tables 5 and 6. The results reported in the second column indicates that the interaction between the constrained dummy, the undervaluation dummy and the deficit variable is negative but insignificant, suggesting that financial constraints do not play a significant role in issuing activities for firms in a financial deficit. The results of the interaction in the third column which interacts the unconstrained dummy instead of the constrained dummy with the undervaluation dummy and deficit is also insignificant. The alternative proxies used in the regressions in columns 4 to 9 also indicate a similar pattern. The second and third columns of Table 6 report the results regarding the impact of financial constraints on financing behavior for firms in a surplus. Examining the results in the second column, we find the interaction between the constrained dummy, the undervaluation dummy and deficit has a negative coefficient and is significant. Thus, constrained firms are retiring more debt in period of overvaluation compared to unconstrained firms. The third column records an opposite positive coefficient that is also significant when the unconstrained dummy is used instead. Therefore, constrained firms clearly time the repurchases.

[Place Table 6 about here]

The regressions are repeated for constraints based on age, cash flows and coverage ratios and the results are reported in six columns in Table 6. The results indicate a similar pattern and provide a similar conclusion. Firms do significantly alter the composition of their issuing and repurchasing activities to reflect mispricing in equities. Financially flexibility plays an important role in timing ability of firms. Constrained firms are more sensitive to equity mispricing as seen

from the results. This is especially evident in repurchasing activities. However, the analysis is done assuming that firms do not differ in their leverage levels at the beginning of the year. We have not thus far discriminated firms based on deviation from their target leverage levels.[21]

MARKET TIMING AND TARGET LEVERAGE

Do firms that have target leverage engage in market timing?

This section examines whether timing attempts are centered on and around a target level of leverage. During periods of favorable equity market conditions, managers would issue equities and temporarily deviate from their target capital structure and be under-levered. Under this view, firms would trade off the cost of being off target with the benefit gained from timing the market. On the other hand, if equity market conditions were unfavorable, managers would increase debt issues and temporarily be over-levered. Given that Binsbergen *et al.* (2010) document that the cost of being over-levered is higher than that of being under-levered we hypothesize that managers may be reluctant to increase leverage levels during periods of undervaluation if they were over-levered. Hence, they would be more inclined to increase equity issues during periods of overvaluation if they are over-levered.[22]

To estimate a proxy for target leverage (D*), we use fitted values from the following model:

$$D^*_{it} = \alpha + \beta_1 SIZE_{it-1} + \beta_2 TANG_{it-1} + \beta_3 RD_{it-1} + \beta_4 PROF_{it-1} + \beta_5 CAPEX_{it-1} + \varepsilon_{it} \quad (13)$$

Similar to Hovakimian *et al.* (2001), the dependent variable is censored both by below (0) and above (1) values. Consistent estimates are obtained by estimating the model as a Tobit regression with double censoring. The regressions are done on a yearly basis with industry dummies. In order to test our hypothesis, we introduce a new dummy into the model (UNDLVD), which is one if book leverage at the beginning of the year is less than D*; zero, otherwise.

[21] This assumption will be relaxed and tested in later sections.
[22] Lemmon and Zender (2010) show that when debt capacity is reached firms no longer follow the pecking order as they put their preference for equity issues. Thus, over-levered firms may opt for equity even during periods of undervaluation.

To examine whether being over-levered or under-levered influences timing behavior, we interact the undervaluation dummy with the financing deficit measure and the under-levered dummy. Hence, the model from (11) will be expanded and is as follows:

$$\Delta dbl_{it} = \alpha + \beta_1 DEF_{it} + \beta_2 UNDVD_{it} + \beta_3 (UNDVD \times DEF)_{it} + \beta_4 UNDLVD_{it} +$$

$$\beta_5 (UNDLVD \times DEF)_{it} + \beta_6 (UNDVD \times UNDLVD)_{it} + \beta_7 \begin{pmatrix} UNDVD \times UNDLVD \times \\ DEF \end{pmatrix}_{it}$$

$$+\beta_8 \Delta SIZE_{it} + \beta_9 \Delta TANG_{it} + \beta_{10} \Delta RD_{it} + \beta_{11} \Delta PROF_{it} + \beta_{12} \Delta CAPEX_{it} + \varepsilon_{it} \quad (14)$$

We find that the interaction between the under-levered dummy, the undervaluation dummy and the deficit dummy to have a positive coefficient that is economically and statistically significant. It is clear that target leverage plays a crucial role in timing strategy. Examining the results in column 1 of Table 7 closer indicates two significantly different effects on mispricing and net debt issued. Looking at periods of equity overvaluation, firms that were over their target leverage levels retired about 6.51% of debt as a percentage of assets compared to 2.10% for firms below their target leverage. There is a significant economic difference as overvaluation allows firms to retire debt at a cheaper rate by relying on equity issues and would thus be able to reach an optimal target. As expected, during periods of undervaluation over-levered firms issued less debt than firms below their target (2.15% vs. 3.84%). This signifies an increase of 1.69 percentage points or a jump of 79%. Thus, managers seem to time issues to coincide with their target levels.

[Place Table 7 about here]

We test our hypothesis by running separate regressions for firms that are above and under their target leverage. The results are reported in the second and third columns of Table 7. The findings further validate our findings above. Under-levered firms significantly increase their net debt issues to finance the deficit, whereas for firms that are above their target leverage the coefficient is not significantly different from zero. The additional variable included in the regressions, DEV, is the absolute difference between leverage at the beginning of the year and

D*.[23] This variable has also a large and significant coefficient explaining the large overall difference detected above between under- and over-levered firms. It further validates the assumption that firms do adopt optimal leverage levels. The regressions are then repeated using industry median as a proxy for target leverage. The results are reported in the last three columns of Table 7. We find further support for our hypothesis as the results are qualitatively similar. This shows that our results are insensitive to either proxy for target leverage.

[Place Table 8 about here]

We further test our results using proxies for target market leverage. We report the results in tables 8 and 9. The regressions in Table 8 utilize fitted market leverage levels in columns 1 to 3 and industry market leverage median in columns 4 to 6 as a proxy for target debt. To provide additional robustness checks, the regressions in Table 9 utilize net market debt issued with fitted market leverage as a proxy for target leverage in column 1 to 3 and industry median as a proxy for market leverage. The results further consolidate our findings that managers are inclined to time issues to coincide with targeting behavior.

[Place Table 9 about here]

Considering financial deficit and distance from target leverage

In the previous sections, we have found that mispricing is a significant determinant of firms' repurchasing and issuing behavior. Our analysis has so far assumed that firms do not deviate from their target financing mix and timing behavior is not influenced by such deviations. In this section, we relax this assumption and test how mispricing plays a role in issuance and repurchasing if managers are also moving towards a target capital structure. As our earlier results indicate that managers react to equity mispricing differently if they are over-levered or under-levered, we further consider the effect of financial surplus and deficit.

[23] We use a similar method to Hovakimian *et al.* (2001) and use the absolute measure of deviation from target leverage, $|D_{it}^{*} - D_{it-1}|$ to capture target adjustment behaviour.

In this section, to investigate the strength of our findings in the previous sections, we replace the deficit measure with a deficit dummy (DD) that takes the value of 1 if the firm is in a financial deficit and 0 if in a financial surplus.[24] We also interact the undervaluation dummy with the deficit dummy as well as with the distance (DIST) variable.[25] The further firms deviate from their target, the larger the above effect is expected. The model is as follows:

$$\Delta dbl_{it} = \alpha + \beta_1 DD_{it} + \beta_2 UNDVD_{it} + +\beta_3 DIST_{it} + \beta_4 (UNDVD \times DD)_{it}$$
$$\beta_5 (DIST \times DD)_{it} + \beta_6 (UNDVD \times DIST)_{it} + \beta_7 (UNDVD \times DIST \times DD)_{it} +$$
$$\beta_8 \Delta SIZE_{it} + \beta_9 \Delta TANG_{it} + \beta_{10} \Delta RD_{it} + \beta_{11} \Delta PROF_{it} + \beta_{12} \Delta CAPEX_{it} + \varepsilon_{it} \quad (15)$$

The results in the first column of Table 10 based on equation (15) show that the distance variable has a positive and significant coefficient indicating, as expected, managers issue debt to reach a target. The deficit dummy is also positive and significant. The interaction between the undervaluation dummy with the deficit dummy and the distance measure is also positive and significant, indicating that financial deficit (or surplus) and distance from target leverage plays a significant role in timing of issues and repurchases. Firms that are in a financial deficit will issue more debt in the presence of undervaluation to reach their targets based on how far they are from their targets. Firms that are in a financial surplus will retire more debt in the presence of overvaluation to move closer to their target levels. The further the distance from the target, the larger this effect. We further test the robustness of our findings using book industry median as a proxy for target leverage in column 2, fitted market debt in column 3 and industry market median in column 4. The results are similar and indicate a similar conclusion where distance from target leverage moderates timing behavior. Columns 5 and 6 measures net market debt issued and uses fitted market leverage and industry median of market leverage as a proxy for

[24] We replace deficit measure with the deficit dummy to allow an easier analysis and interpretation of the interaction results while simultaneously examining the effect of distance from target leverage. It also helps avoid splitting the sample.

[25] DIST = D* less leverage at the beginning of the year. The distance variable is estimated from the regression in equation (13) and thus is measured with error and its coefficient will be biased downwards. We correct the variance-covariance matrix of the coefficient estimates to account as the distance variable is estimated with errors. Our corrections procedure follows the recommendations by Murphy and Topel (1985).

target leverage. The results do not differ and hence our conclusions are robust to different measures of net debt issued and proxies of market leverage. Our results imply that managers consider all three aspects above when deciding on issuing behavior.

[Place Table 10 about here]

CONCLUSION

The literature documents that equity market timing plays an important role in capital structure decisions. Managers attempt to time the market by issuing equity when they perceive conditions are favorable, as studied in this paper for the UK firms. Our results reveal how managers time the market and its impact on firms' capital structure as we study market timing from four different angles. Firstly, we examine whether managers increase debt issues during periods of undervaluation, i.e. when market conditions are unfavorable. This is done by estimating intrinsic value of the firms' equity. The second angle covered in this paper is how financial constraints influence timing behavior. If managers are able to identify windows of opportunity, does the financial capacity of the firm influence timing attempts? This issue remains an ongoing debate in the literature.

The third angle examined in this study attempts to account for repurchasing activity. In the presence of overvaluation, managers may be tempted to issue equity and repurchases debt and vice versa. Hence, we test this aspect of market timing by examining firms that are purely purchasing (firms in surplus) and firms that are purely raising capital (firms in deficit). The last angle looks at how targeting behavior influences timing attempts. The literature provides ample support that managers do have some form of target leverage in mind and will make adjustments to leverage levels to reach this target. We differentiate firms based on the deviation from target capital structure and test timing behavior for firms that are above and under their target levels.

Looking at these four aspects, findings from the analysis are as follows. Based on the first section, we find that firms whose share prices are undervalued increase reliance on debt

issues to finance their deficit. This effect is economically and statistically significant. The results are robust to different time periods and after controlling for known determinants of capital structure. Consistent with the literature, we find that the impact of mispricing varies over time. Examining market timing from the second angle reveals intriguing results and allows us draw interesting conclusions. We find that constrained firms are more concerned with timing issues. During periods of overvaluation they retire significantly more debt and during periods of undervaluation they significantly issue more debt to finance their deficit. Clearly, financial constraints play a critical role in the ability of firms to time the market.

Findings from the third and fourth angle need to be interpreted closely together as the results are tied in. If we assume that firms do not have a target capital structure and there is no deviation from this said target, we find that mispricing heavily influences repurchasing activity. However, if we relax this assumption and account for targeting behavior, we find that repurchasing and issuance activities are influenced by equity mispricing if these actions are in line with the goal of reaching a pre-determined target. Furthermore, we find that the distance from target leverage and demand for external financing also heavily influences timing behavior. We are also able to infer that the cost of being off target is greater than any benefit gained from timing the equity market. Thus, firms that are below (above) their target leverage tend to increase (decrease) debt issues further during periods of undervaluation (overvaluation).

Therefore, we are able to conclude that firms do time equity issues to periods of overvaluation. This behavior is, however, significantly distinct for constrained firms versus unconstrained firms. Repurchasing behavior, considered independently from targeting behavior, does appear to be influenced by equity mispricing and is robust to financial constraints. Targeting behavior also plays a significant role in determining willingness of managers to issue equity during periods of overvaluation, indicating that managers will only time the market if it suits their aim of reaching a pre-determined target. After taking into account deviation from

target capital structure and financial surplus, managers do time repurchases to coincide with targeting behavior. Overall, these considerations are critical in determining the impact of market timing on capital structure decisions.

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Figure 1. Financing the deficit

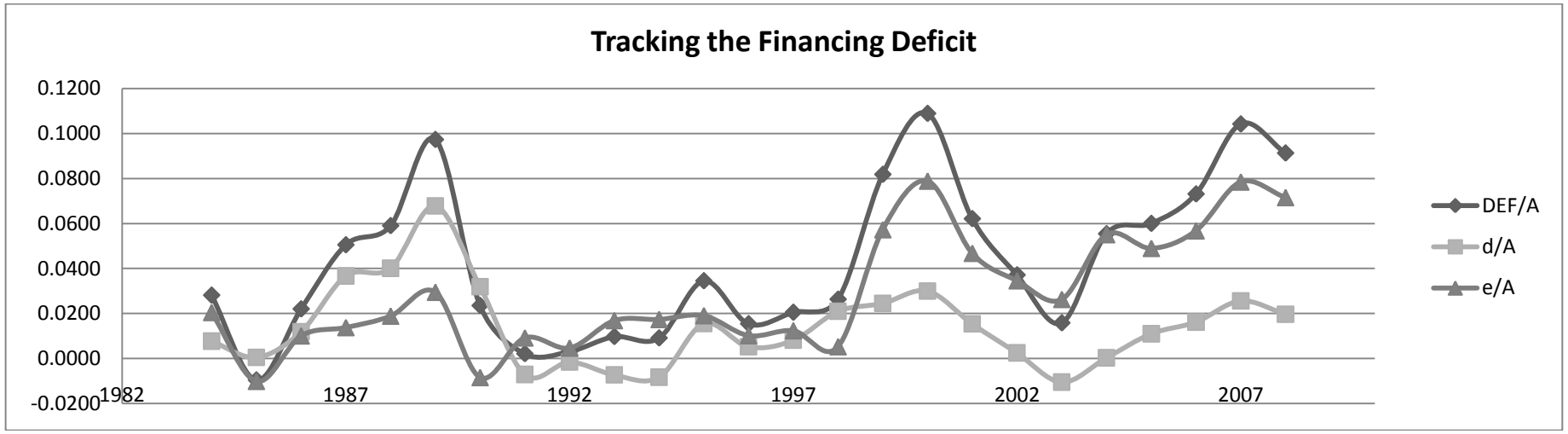

Figure 2. Annual deficit coefficient: undervalued vs. overvalued firms

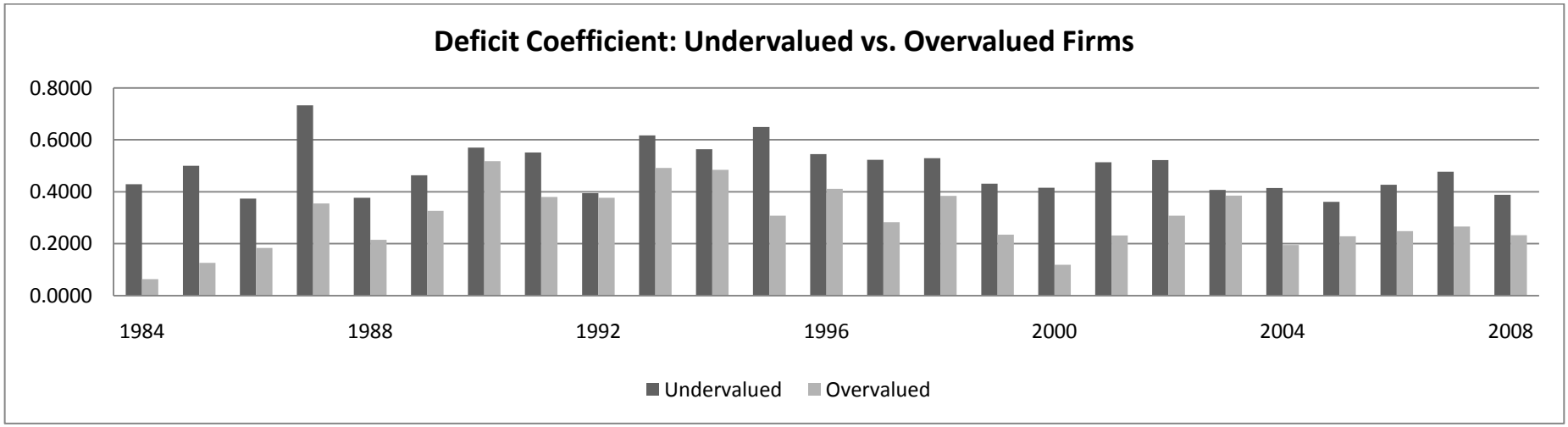

Table 1. Summary statistics and correlation matrix of firm specific characteristics and financing activities of firms in the sample

Panel A: Descriptive Statistics															
	BL	**ML**	**Δdbl/A**	**Δdml/A**	**e/A**	**DEF**	**ΔSIZE**	**ΔPPE**	**ΔRD**	**ΔPROF**	**ΔCAPEX**	**DEVBL**	**DEVML**	**DISTBL**	**DISTML**
Mean	0.1781	0.2011	0.0122	0.0052	0.0376	0.0497	0.0952	-0.0041	0.0003	-0.0054	-0.0039	0.1554	0.1379	0.0470	0.0190
Median	0.1524	0.1489	0.0000	0.0000	0.0012	0.0118	0.0561	-0.0028	0.0000	-0.0009	-0.0009	0.1187	0.1171	0.0473	0.0630
Std Dev	0.1619	0.2003	0.1133	0.1689	0.1538	0.1895	0.4730	0.0714	0.0414	0.2636	0.0588	0.1552	0.1091	0.2145	0.1748
Minimum	0.0000	0.0000	-0.9883	-9.0255	-0.8996	-1.1903	-7.7432	-0.8107	-1.1663	-3.6518	-0.9611	0.0000	0.0000	-0.9399	-0.8437
Maximum	0.9960	0.9970	0.9751	0.9271	0.9940	1.7772	8.0296	0.9483	0.9102	3.4097	0.7976	1.0000	0.8437	1.0000	0.6667
Panel B: Correlation Matrix															
	BL	**ML**	**Δdbl**	**Δdml**	**Δe**	**DEF**	**ΔSize**	**ΔPPE**	**ΔRD**	**ΔPROF**	**ΔCAPEX**	**DEVBL**	**DEVML**	**DISTBL**	
ML	0.760**														
Δdbl	0.279**	0.154**													
Δdml	0.183**	0.122**	0.722**												
Δe	-0.075**	-0.067**	-0.0164	-0.0109											
DEF	0.106**	0.038**	0.587**	0.423**	0.802**										
ΔSIZE	-0.019*	-0.039**	0.228**	0.183**	0.153**	0.260**									
ΔPPE	0.021*	0.024*	0.082**	0.059**	-0.084**	-0.019*	0.045**								
ΔRD	-0.000	-0.006	-0.025**	-0.018	-0.106**	-0.101**	-0.017	0.087**							
ΔPROF	-0.037**	-0.012	-0.024*	-0.033**	0.028**	0.008	0.144**	-0.093**	-0.220**						
ΔCAPEX	-0.043**	-0.043**	0.020*	0.026**	-0.050**	-0.029**	0.016	0.264**	0.028**	-0.071**					
DEVBL	0.123**	0.027*	-0.046**	-0.042**	0.086**	0.042**	0.001	-0.025**	-0.028**	0.103**	-0.026**				
DEVML	0.146**	0.335**	-0.101**	-0.133**	-0.022*	-0.078**	-0.036**	-0.025**	0.016	0.026**	-0.017	0.197**			
DISTBL	-0.511**	-0.379**	0.097**	0.065**	0.045**	0.095**	0.021*	0.029**	0.001	0.073**	0.011	0.401**	-0.073**		
DISML	-0.541**	-0.718**	0.197**	0.200**	-0.026**	0.097**	0.038**	-0.004	0.016	-0.016	0.040**	-0.037**	-0.407**	0.438**	

This table records summary statistics of the firms in the sample. Panel A reports the summary statistics. Panel B reports the correlation matrix with Pearson's significance levels (*p<0.01, and **p<0.01). Book leverage, BL, is the ratio of total book debt to total assets. Market Leverage, ML, is the ratio of book value of debt to market value of equity plus book value of total debt. Net debt issued, Δdbl is the net change in book debt. Δdml is the net change in market debt. Net equity issued, Δe is the change in book equity minus the change in retained earnings. DEF is the financing deficit which is the sum of dividends, investments and change in working capital minus the cash flow after interest and taxes scaled by assets. ΔSIZE is the change in natural log of sales. ΔPPE is the change in tangible assets divided by total assets. ΔRD is the change in research and development expenses divided by total assets. ΔPROF is the change in operating income divided by total assets. ΔCAPEX is the change in capital expenditure divided by total assets. All the variables except size are scaled by total assets. DEV, the absolute deviation from target capital structure is the difference between target leverage (D*) and the beginning of the year book value of debt$|D_{it}^{*} - D_{it-1}|$. DIST is the difference between target capital structure (D*) and the beginning of the year book value.

Table 2. Equity mispricing and market timing

	All Firms		1984-1992	1993-2000	2001-2008
	1	2	3	4	5
CONS	-0.0185	-0.0539***	-0.0554***	-0.0572***	-0.0403***
	(0.0138)	(0.0129)	(0.0118)	(0.0046)	(0.0039)
DEF	0.4038***	0.3409***	0.4231***	0.3616***	0.3279***
	(0.0053)	(0.0058)	(0.0183)	(0.0124)	(0.0077)
UNDVD	-	0.0695***	0.0847***	0.0819***	0.0608***
	-	(0.0020)	(0.0046)	(0.0040)	(0.0031)
UNDVD*DEF	-	0.1278***	0.0458*	0.1456***	0.1295***
	-	(0.0156)	(0.0267)	(0.0201)	(0.0148)
R^2	0.4852	0.5602	0.6148	0.6371	0.5895
Adjusted R^2	0.3992	0.4866	0.5106	0.5319	0.4793
Wald(p-values)	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	11201	2059	3102	5873
Period	1984-2008	1984-2008	1984-1992	1993-2000	2001-2008

The dependent variable is net debt issued divided by total assets. Columns 1 and 2 represent the entire sample. Columns 3 – 5 represent sub period regressions (1984 – 1992, 1993 – 2000 and 2001 – 2008)/ Regressions control for firm fixed effects and include unreported year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 3. Robustness of results related to equity mispricing and market timing

	All Firms	Size < Median	Size > Median	MTB<Median	MTB > Median	Prof < Median	Prof > Median
	1	2	3	4	5	6	7
CONS	-0.0552***	0.0799	-0.0495***	-0.0493***	-0.0586*	-0.0674	-0.0492***
	(0.0127)	(0.0640)	(0.0105)	(0.0134)	(0.0332)	(0.0543)	(0.0104)
DEF	0.3398***	0.2968***	0.4940***	0.4046***	0.3043***	0.2921***	0.4984***
	(0.0059)	(0.0078)	(0.0100)	(0.0087)	(0.0089)	(0.0083)	(0.0107)
UNDVD	0.0681***	0.0817***	0.0601***	0.0603***	0.0743***	0.0718***	0.0624***
	(0.0020)	(0.0038)	(0.0022)	(0.0027)	(0.0032)	(0.0039)	(0.0023)
UNDVD*DEF	0.1235***	0.1152***	0.0316**	0.0679***	0.1694***	0.1467***	0.1083***
	(0.0102)	(0.0160)	(0.0192)	(0.0148)	(0.0153)	(0.0025)	(0.0150)
ΔSIZE	0.0145***	-	-	0.0091***	0.0189***	0.0115***	0.0101**
	(0.0019)	-	-	(0.0026)	(0.0033)	(0.0025)	(0.0039)
ΔTANG	0.0937***	0.1071***	0.0743***	0.0670***	0.1555***	0.0973***	0.0931***
	(0.0121)	(0.0165)	(0.0192)	(0.0153)	(0.0209)	(0.0178)	(0.0177)
ΔRD	0.0828***	0.0656***	0.1546**	0.0328	0.0839***	0.1061***	-0.1382**
	(0.0208)	(0.0245)	(0.0771)	(0.0561)	(0.0250)	(0.0253)	(0.0602)
ΔPROF	-0.0121***	-0.0037	-0.0105	-0.1641***	-0.0068	-	-
	(0.0032)	(0.0038)	(0.0077)	(0.0052)	(0.0045)	-	-
ΔCAPEX	0.0378***	0.0368**	0.0552**	0.0462**	0.0063	0.0423**	0.0574***
	(0.0142)	(0.0187)	(0.0248)	(0.0189)	(0.0230)	(0.0214)	(0.0183)
R^2	0.5690	0.5365	0.6515	0.6449	0.5660	0.5719	0.6635
Adjusted R^2	0.4967	0.4337	0.5954	0.5634	0.4608	0.4515	0.5932
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	5534	5541	5361	5394	5419	5390
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net debt issued divided by total assets. Column 1 represents the entire sample. Columns 2 – 7 represent sub sample regressions (size < median, size > median, growth < median, growth > median, profitability < median and profitability > median). Regressions control for firm fixed effects and include unreported industry and year dummies. Roger (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 4. Financial constraints and market timing

	CD SIZE	UCD SIZE	CD AGE	UCD AGE	CD COV	UCD COV	CO CF	UCD CF
	1	2	3	4	7	8	5	6
CONS	-0.0529***	-0.0564***	-0.0576***	-0.0561***	-0.0459***	-0.0558***	-0.0462***	-0.0555***
	(0.0127)	(0.0126)	(0.0129)	(0.128)	(0.0127)	(0.0127)	(0.0128)	(0.0127)
DEF	0.4588***	0.3016***	0.3877***	0.3214***	0.3771***	0.3247***	0.3452***	0.3228***
	(0.0087)	(0.0063)	(0.0023)	(0.0066)	(0.0089)	(0.0062)	(0.0087)	(0.0062)
UNDVD	0.0614***	0.0732***	0.0652***	0.0706***	0.0602***	0.0738***	0.0608***	0.0773***
	(0.0022)	(0.0025)	(0.0023)	(0.0025)	(0.0023)	(0.0025)	(0.0023)	(0.0025)
CD/UCD	-0.0041	0.0063	0.0028	0.0049	-0.0180***	0.0151***	-0.0176***	0.0194***
	(0.0038)	(0.0044)	(0.0036)	(0.0044)	(0.0028)	(0.0033)	(0.0028)	(0.0036)
UNDVD*DEF	0.0387***	0.1266***	0.0839***	0.1353***	0.1009***	0.1236***	0.1340***	0.1085***
	(0.0133)	(0.0116)	(0.0127)	(0.0116)	(0.0136)	(0.0117)	(0.0130)	(0.0120)
(CD/UCD)*DEF	-0.2004***	0.2463***	-0.1085***	0.0940***	-0.0634***	0.1226***	-0.0092	0.1525***
	(0.0113)	(0.0155)	(0.0114)	(0.0144)	(0.0114)	(0.0172)	(0.0111)	(0.0178)
(CD/UNCD)*UNDVD	0.0244***	-0.0183***	0.0089**	-0.0090**	0.0295***	-0.0175***	0.0290***	-0.0270***
	(0.0047)	(0.0040)	(0.0044)	(0.0041)	(0.0044)	(0.0040)	(0.0046)	(0.0040)
UNDVD*DEF*(CD/UCD)	0.0820***	-0.1355***	0.0799***	-0.0738***	0.0086	-0.0790***	-0.0593***	-0.0700***
	(0.0212)	(0.0241)	(0.0209)	(0.0243)	(0.0210)	(0.0250)	(0.0219)	(0.0252)
ΔSIZE	0.0153***	0.0150***	0.0144***	0.0145***	0.0147***	0.0146***	0.0144***	0.0148***
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
ΔTANG	0.1022***	0.0957***	0.0910***	0.0925***	0.0936***	0.0970***	0.0954***	0.0968***
	(0.0119)	(0.0119)	(0.0120)	(0.0121)	(0.0120)	(0.0121)	(0.0121)	(0.0120)
ΔR&D	0.0691***	0.0691***	0.0796***	0.0772***	0.0763***	0.0800***	0.0832***	0.0821***
	(0.0204)	(0.0205)	(0.0207)	(0.0208)	(0.0208)	(0.0207)	(0.0208)	(0.0207)
ΔPROF	-0.0076**	-0.0095***	-0.0098***	-0.0116***	-0.0090***	-0.0103***	-0.0098***	-0.0104***
	(0.0031)	(0.0031)	(0.0032)	(0.0032)	(0.0032)	(0.0032)	(0.0032)	(0.0031)
ΔCAPEX	0.0356**	0.0401***	0.0393***	0.0380***	0.0369***	0.0363**	0.0364**	0.0365**
	(0.0139)	(0.0140)	(0.0141)	(0.0141)	(0.0141)	(0.0141)	(0.0141)	(0.0141)
R^2	0.5856	0.5819	0.5736	0.5711	0.5736	0.5727	0.5717	0.5750
Adj R2	0.5159	0.5115	0.5018	0.4989	0.5018	0.5007	0.4996	0.5034
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	11201	11201	11201	11201	11201	11201	11201
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net debt issued divided by total assets. Regressions in column 1 and 2 represent constrained and unconstrained dummy based on asset size. Regressions in column 3 and 4 represent constrained and unconstrained firms based on firm age. Regressions in column 5 and 6 represent constrained and unconstrained firms based on cash flow. Regressions in column 7 and 8 represent constrained and unconstrained based on coverage ratio. Regressions control for firm fixed effects and include year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 5. The effect of financial constraints on issuing behavior

	Firms in Deficit								
	ALL FIRMS	CD SIZE	UCD SIZE	CD AGE	UCD AGE	CD COV	UCD COV	CD CF	UCD CF
	1	2	3	4	5	6	7	8	9
CONS	-0.0273	-0.0308*	0.0252	-0.0318*	-0.0245	-0.0249	-0.0273	-0.0207	-0.0274
	(0.0170)	(0.0174)	(0.0171)	(0.0173)	(0.0172)	(0.0172)	(0.0170)	(0.0172)	(0.0171)
DEF	0.1380***	0.1715***	0.1313***	0.1477***	0.1238***	0.1678***	0.1290***	0.1165***	0.1326***
	(0.0090)	(0.0157)	(0.0094)	(0.0122)	(0.0099)	(0.0134)	(0.0095)	(0.0134)	(0.0094)
UNDVD	0.0334***	0.0325***	0.0391***	0.0320***	0.0355***	0.0311***	0.0388***	0.0277***	0.0385***
	(0.0033)	(0.0038)	(0.0041)	(0.0038)	(0.0040)	(0.0039)	(0.0040)	(0.0038)	(0.0041)
CD/UCD	-	0.0065	0.0035	0.0056	-0.0058	-0.0035	-0.0000	-0.0110**	-0.0010
	-	(0.0057)	(0.0066)	(0.0055)	(0.0066)	(0.0047)	(0.0056)	(0.0047)	(0.0060)
UNDVD*DEF	0.3318***	0.3277***	0.3098***	0.3361***	0.3156***	0.3184***	0.3222***	0.3643***	0.3093***
	(0.0146)	(0.0211)	(0.0166)	(0.0185)	(0.0165)	(0.0195)	(0.0169)	(0.0189)	(0.0171)
(CD/UCD)*DEF	-	-0.0477**	0.1152***	-0.0206	0.0729***	-0.0492***	0.1003***	0.0379**	0.0755**
	-	(0.0185)	(0.0330)	(0.0167)	(0.0230)	(0.0169)	(0.0286)	(0.0168)	(0.0326)
(CD/UCD)*UNDVD	-	0.0114	-0.0104	0.0077	-0.0059	0.0145**	-0.0100	0.0205***	-0.0097
	-	(0.0077)	(0.0069)	(0.0074)	(0.0068)	(0.0073)	(0.0068)	(0.0077)	(0.0069)
UNDVD*DEF*(CD/UVD)	-	-0.0403	-0.0102	-0.0258	0.0565	-0.0084	-0.0421	-0.0884***	0.0091
	-	(0.0316)	(0.0423)	(0.0303)	(0.0362)	(0.0305)	(0.0384)	(0.0322)	(0.0415)
ΔSIZE	0.0059***	0.0060***	0.0063***	0.0061***	0.0063***	0.0061***	0.0061***	0.0060***	0.0061***
	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)
ΔTANG	0.0308**	0.0371**	0.0347**	0.0298**	0.0276*	0.0319**	0.0334**	0.0323**	0.0345**
	(0.0147)	(0.0148)	(0.0147)	(0.0148)	(0.0147)	(0.0147)	(0.0147)	(0.0147)	(0.0148)
ΔR&D	0.0232	0.0214	0.0175	0.0204	0.0153	0.0140	0.0212	0.0278	0.0222
	(0.0239)	(0.0239)	(0.0239)	(0.0240)	(0.0240)	(0.0241)	(0.0239)	(0.0240)	(0.0239)
ΔPROF	-0.0085**	-0.0066	-0.0073*	-0.0083*	-0.0085**	-0.0061	-0.0069	-0.0085*	-0.0075*
	(0.0043)	(0.0043)	(0.0043)	(0.0043)	(0.0043)	(0.0044)	(0.0043)	(0.0044)	(0.0043)
ΔCAPEX	0.0649***	0.0631***	0.0644***	0.0650***	0.0668***	0.0670***	0.0628***	0.0652***	0.0642***
	(0.0166)	(0.0166)	(0.0165)	(0.0166)	(0.0165)	(0.0166)	(0.0165)	(0.0166)	(0.0165)
R^2	0.5326	0.5343	0.5357	0.5332	0.5354	0.5346	0.5348	0.5336	0.5343
Adj R2	0.4041	0.4058	0.4076	0.4044	0.4072	0.4063	0.4064	0.4049	0.4058
Wald (p-values)	0.0000	0.000	0.000	0.000	0.000	0.000	0.000	0.0000	0.0000
Observations	6203	6203	6203	6203	6203	6203	6203	6203	6203
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net debt issued divided by total assets. Column 1 represents firms in deficit. Regressions in column 2 and 3 represent constrained and unconstrained dummy base on asset size. Regressions in column 4 and 5 represent constrained and unconstrained firms based on firm age. Regressions in column 6 and 7 represent constrained and unconstrained firms based on cash flow. Regressions in column 8 and 9 represent constrained and unconstrained based on coverage ratio. Regressions control for firm fixed effects and include year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 6. The effect of financial constraints on repurchasing behavior

	Firms in Surplus								
	ALL FIRMS	CD SIZE	UCD SIZE	CD AGE	UCD AGE	CD COV	UCD COV	CD CF	UCD CF
	1	2	3	4	5	6	7	8	9
CONS	-0.0116	-0.0171	-0.0198	-0.0122	-0.0113	-0.0096	-0.0130	-0.0073	-0.0135
	(0.0157)	(0.159)	(0.0157)	(0.0160)	(0.0159)	(0.0158)	(0.0157)	(0.0158)	(0.0156)
SUR	0.6607***	0.6541***	0.6420***	0.6595***	0.6870***	0.6383***	0.6546***	0.6480***	0.6643***
	(0.126)	(0.143)	(0.0158)	(0.0142)	(0.0153)	(0.0180)	(0.0137)	(0.0173)	(0.0144)
UNDVD	0.0161***	0.0185***	0.0163***	0.0155***	0.0153***	0.0162***	0.0173***	0.0163***	0.0155***
	(0.0032)	(0.0035)	(0.0039)	(0.0036)	(0.0038)	(0.0036)	(0.0039)	(0.0035)	(0.0040)
CD/UCD	-	0.0068	-0.0129**	-0.0027	-0.0053	-0.0062	0.0076	-0.0098**	0.0026
	-	(0.0059)	(0.0063)	(0.0056)	(0.0062)	(0.0042)	(0.0048)	(0.0040)	(0.0051)
UNDVD*SUR	-0.4821***	-0.4040***	-0.5302***	-0.4613***	-0.5269***	-0.4407***	-0.4807***	-0.4239***	-0.5885***
	(0.0232)	(0.0280)	(0.0283)	(0.0278)	(0.0275)	(0.0309)	(0.0278)	(0.0293)	(0.0291)
(CD/UCD)*SUR	-	0.0276	0.0504**	0.0060	-0.0773***	0.0329	0.0298	0.0161	-0.0142
	-	(0.0269)	(0.0248)	(0.0287)	(0.0254)	(0.0232)	(0.0323)	(0.0232)	(0.0272)
(CD/UCD)*UNDVD	-	-0.0038	0.0012	0.0034	0.0031	0.0040	-0.0049	-0.0011	0.0007
	-	(0.0073)	(0.0062)	(0.0067)	(0.0064)	(0.0071)	(0.0062)	(0.0073)	(0.0062)
UNDVD*DEF*(CD/UCD)	-	-0.2284***	0.1683***	-0.0620	0.1473***	-0.0763	-0.0137	-0.1555***	0.2649***
	-	(0.0492)	(0.0481)	(0.0499)	(0.0501)	(0.0473)	(0.0524)	(0.0486)	(0.0473)
ΔSIZE	0.0285***	0.0284***	0.0279***	0.0283***	0.0281***	0.0280***	0.0285***	0.0284***	0.0291***
	(0.0039)	(0.0038)	(0.0038)	(0.0039)	(0.0039)	(0.0039)	(0.0039)	(0.0039)	(0.0038)
ΔTANG	0.0730***	0.0762***	0.0794***	0.0734***	0.0698***	0.0745***	0.0732***	0.0776***	0.0803***
	(0.0192)	(0.0192)	(0.0191)	(0.0193)	(0.0192)	(0.0193)	(0.0193)	(0.0193)	(0.0191)
ΔR&D	-0.1296***	-0.1405***	-0.1450***	-0.1368***	-0.1313***	-0.1294***	-0.1302***	-0.1342***	-0.1368***
	(0.0462)	(0.0461)	(0.0459)	(0.0464)	(0.0462)	(0.0467)	(0.0464)	(0.0463)	(0.0459)
ΔPROF	-0.0197***	-0.0217***	-0.0206***	-0.0202***	-0.0201***	-0.0179***	-0.0194***	-0.0180***	-0.0218***
	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0050)	(0.0049)	(0.0050)	(0.0049)
ΔCAPEX	-0.0056	-0.0122	-0.0085	0.0050	-0.0068	-0.0097	-0.0066	-0.0140	-0.0137
	(0.0246)	(0.0245)	(0.0244)	(0.0246)	(0.0245)	(0.0246)	(0.0246)	(0.0246)	(0.0244)
R^2	0.6877	0.6907	0.6923	0.6880	0.6890	0.6886	0.6879	0.6897	0.6925
Adj R2	0.5978	0.6012	0.6032	0.5977	0.5990	0.5985	0.5976	0.5998	0.6034
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	4389	4389	4389	4389	4389	4389	4389	4389	4389
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net debt issued divided by total assets. Column 1 represents firms in surplus. Regressions in column 2 and 3 represent constrained and unconstrained dummy base on asset size. Regressions in column 4 and 5 represent constrained and unconstrained firms based on firm age. Regressions in column 6 and 7 represent constrained and unconstrained firms based on cash flow. Regressions in column 8 and 9 represent constrained and unconstrained based on coverage ratio. Regressions control for firm fixed effects and include year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 7: Do firms that have target book leverage engage in market timing?

	All Firms	Under-levered Firms	Over-levered Firms	All Firms	Under-levered Firms	Over-levered Firms
	1	2	3	4	5	6
CONS	-0.0877***	-0.0440***	-0.0498**	-0.0930***	-0.0585***	-0.0322*
	(0.0124)	(0.0134)	(0.0229)	(0.0120)	(0.0145)	(0.0177)
DEF	0.4380***	0.2198***	0.4776***	0.4304***	0.1583***	0.4345***
	(0.0084)	(0.0067)	(0.0107)	(0.0074)	(0.0066)	(0.0090)
UNDVD	0.0843***	0.0509***	0.0739***	0.0777***	0.0391***	0.0667***
	(0.0028)	(0.0023)	(0.0034)	(0.0025)	(0.0023)	(0.0029)
UNDLVD	0.0532***	-	-	0.0756***	-	-
	(0.0025)	-	-	(0.0025)	-	-
UNDVD*DEF	0.0462***	0.1954***	0.0154	0.0808***	0.2063***	0.0585***
	(0.0147)	(0.0121)	(0.0169)	(0.0137)	(0.0113)	(0.0154)
UNDLVD*DEF	-0.1844***	-	-	-0.2347***	-	-
	(0.0108)	-	-	(0.0104)	-	-
UNDVD*UNDLVD	-0.0338***	-	-	-0.0410***	-	-
	(0.0035)	-	-	(0.0035)	-	-
UNDVD*DEF*UNDLVD	0.1341***	-	-	0.1159***	-	-
	(0.0194)	-	-	(0.0189)	-	-
ΔSIZE	0.0134***	0.0069***	0.0264***	0.0138***	0.0043**	0.0326***
	(0.0019)	(0.0020)	(0.0041)	(0.0018)	(0.0017)	(0.0040)
ΔTANG	0.0940***	0.0184	0.1456***	0.0853***	0.0260*	0.0946***
	(0.0117)	(0.0142)	(0.0207)	(0.0114)	(0.0135)	(0.0181)
ΔRD	0.0674***	0.0440**	0.0475	0.0366*	0.0588***	-0.1061**
	(0.0201)	(0.0210)	(0.0639)	(0.0196)	(0.0179)	(0.0477)
ΔPROF	-0.0086***	-0.0076**	0.0029	-0.0051*	0.0012	-0.0031
	(0.0031)	(0.0031)	(0.0082)	(0.0030)	(0.0029)	(0.0064)
ΔCAPEX	0.0283**	0.0701***	-0.0087	0.0186	0.0416***	-0.0223
	(0.0137)	(0.0163)	(0.0245)	(0.0133)	(0.0157)	(0.0211)
DEV	-	0.0200***	-0.1977***	-	0.2488***	-0.2920***
	-	(0.0072)	(0.0148)	-	(0.0199)	(0.0139)
R^2	0.5972	0.5561	0.7159	0.6199	0.5752	0.7159
Adjusted R^2	0.5294	0.4530	0.6395	0.5558	0.4703	0.6486
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	6543	4222	11201	5523	5154
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net book debt issued divided by total assets. Columns 1 and 4 represent all firms. Column 1 to 3 uses fitted values of book debt as a proxy for target leverage. Columns 4 to 6 repeats the regressions using industry median of book debt as a proxy for target leverage. Regressions control for firm fixed effects and include unreported year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 8. Do firms that have target market leverage engage in market timing?

	All Firms	Under-levered Firms	Over-levered Firms	All Firms	Under-levered Firms	Over-levered Firms
	1	2	3	4	5	6
CONS	-0.0915***	-0.0549***	-0.0436*	-0.0847***	-0.0750***	-0.0362**
	(0.0123)	(0.0132)	(0.0236)	(0.0122)	(0.0168)	(0.0176)
DEF	0.4508***	0.2049***	0.4553***	0.4616***	0.1662***	0.4794***
	(0.0030)	(0.0022)	(0.0109)	(0.0079)	(0.0071)	(0.0093)
UNDVD	0.0805***	0.0492***	0.0676***	0.0724***	0.0455***	0.0614***
	(0.0030)	(0.0022)	(0.0037)	(0.0026)	(0.0026)	(0.0029)
UNDLVD	0.0648***	-	-	0.0615***	-	-
	(0.0027)	-	-	(0.0026)	-	-
UNDVD*DEF	0.0530***	0.2030***	0.0403**	0.0432***	0.2155***	0.0255
	(0.0162)	(0.0111)	(0.0191)	(0.0147)	(0.0120)	(0.0159)
UNDLVD*DEF	-0.2209***	-	-	-0.2631***	-	-
	(0.0108)	-	-	(0.0106)	-	-
UNDVD*UNDLVD	-0.0318***	-	-	-0.0288***	-	-
	(0.0037)	-	-	(0.0035)	-	-
UNDVD*DEF*UNDLVD	0.1384***	-	-	0.1708***	-	-
	(0.0201)	-	-	(0.0194)	-	-
ΔSIZE	0.0140***	0.0058***	0.0383***	0.0136***	0.0077***	0.0295***
	(0.0018)	(0.0019)	(0.0045)	(0.0018)	(0.0019)	(0.0040)
ΔTANG	0.0892***	0.0778***	0.0952***	0.0796***	0.0003	0.1059***
	(0.0115)	(0.0136)	(0.0221)	(0.0115)	(0.0151)	(0.0175)
ΔRD	0.0639***	0.0569***	-0.0007	0.0414**	0.0711***	-0.6227***
	(0.0199)	(0.0219)	(0.0570)	(0.0198)	(0.0181)	(0.1006)
ΔPROF	-0.0078**	-0.0032	-0.0158*	-0.0035	0.0005	0.0053
	(0.0030)	(0.0030)	(0.0085)	(0.0030)	(0.0031)	(0.0070)
ΔCAPEX	0.0260*	0.0227	0.0129	0.0303**	0.0390**	0.0123
	(0.0135)	(0.0163)	(0.0242)	(0.0134)	(0.0170)	(0.0207)
DEV	-	0.2054***	-0.1567***	-	0.2096***	-0.1446***
	-	(0.0166)	(0.0140)	-	(0.0140)	(0.0103)
R^2	0.6080	0.5571	0.7104	0.6120	0.5640	0.7117
Adjusted R^2	0.5420	0.4620	0.6331	0.5467	0.4567	0.6436
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	7035	3775	11201	5614	5124
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net book debt issued divided by total assets. Columns 1 and 4 represent all firms. Column 1 to 3 uses fitted values of market debt as a proxy for target leverage. Columns 4 to 6 repeat the regressions using industry median of market debt as a proxy for target leverage. Regressions control for firm fixed effects and include unreported year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 9. Net market debt issued and target market leverage

	All Firms	Under-levered Firms	Over-levered Firms	All Firms	Under-levered Firms	Over-levered Firms
	1	2	3	4	5	6
CONS	-0.1248***	-0.0546***	-0.0548	-0.1099***	-0.0630***	-0.0344
	(0.0216)	(0.0146)	(0.0564)	(0.0215)	(0.0171)	(0.0401)
DEF	0.5521***	0.1800***	0.5784***	0.5662***	0.1248***	0.5758***
	(0.0148)	(0.0074)	(0.0260)	(0.0140)	(0.0072)	(0.0213)
UNDVD	0.1158***	0.0496***	0.0993***	0.0987***	0.0440***	0.0843***
	(0.0053)	(0.0025)	(0.0088)	(0.0046)	(0.0026)	(0.0065)
UNDLVD	0.0977	-	-	0.0878***	-	-
	(0.0047)	-	-	(0.0046)	-	-
UNDVD*DEF	0.0400	0.1670***	-0.0152	0.0113	0.1880***	-0.0163
	(0.0286)	(0.0123)	(0.0455)	(0.0260)	(0.0122)	(0.0362)
UNDLVD*DEF	-0.3464***	-	-	-0.4053***	-	-
	(0.0191)	-	-	(0.0188)	-	-
UNDVD*UNDLVD	-0.0658***	-	-	-0.0553***	-	-
	(0.0065)	-	-	(0.0063)	-	-
UNDVD*DEF*UNDLVD	0.1232***	-	-	0.1827***	-	-
	(0.0354)	-	-	(0.0343)	-	-
ΔSIZE	0.0233***	0.0123***	0.0604***	0.0227***	0.0140***	0.0478***
	(0.0032)	(0.0021)	(0.0108)	(0.0032)	(0.0020)	(0.0091)
ΔTANG	0.0667***	0.0350**	0.1025*	0.0565***	-0.0172	0.0798**
	(0.0203)	(0.0151)	(0.0527)	(0.0203)	(0.0154)	(0.0400)
ΔRD	0.0770**	0.0673***	0.0043	0.0398	0.0577***	-0.4643**
	(0.0350)	(0.0242)	(0.1362)	(0.0351)	(0.0184)	(0.2297)
ΔPROF	-0.0210***	-0.0044	-0.0659***	-0.0149***	-0.0038	-0.0428***
	(0.0053)	(0.0033)	(0.0204)	(0.0053)	(0.0032)	(0.0160)
ΔCAPEX	0.0573**	0.0748***	-0.0118	0.0617**	0.0872***	0.0283
	(0.0238)	(0.0180)	(0.0579)	(0.0238)	(0.0173)	(0.0473)
DEV	-	0.2286***	-0.3188***	-	0.1322***	-0.2770***
	-	(0.0183)	(0.0334)	-	(0.0143)	(0.0234)
R^2	0.4513	0.4829	0.5097	0.4525	0.5094	0.5068
Adjusted R^2	0.3589	0.3719	0.3789	0.3603	0.3888	0.3903
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	7035	3775	11201	5614	5124
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net market debt issued divided by total assets. Columns 1 and 4 represent all firms. Column 1 to 3 uses fitted values of market debt as a proxy for target leverage. Columns 4 to 6 repeat the regressions using industry median of market debt as a proxy for target leverage. Regressions control for firm fixed effects and include unreported year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.

Table 10. The effect of surplus and distance on timing behavior

	BL*= Fitted Values	BL* = Ind Median	ML*= Fitted Values	ML* = Ind Median	ML*= Fitted Values	ML* = Ind Median
	1 (Δdbl)	2 (Δdbl)	3 (Δdbl)	4 (Δdbl)	5 (Δdml)	6 (Δdml)
CONS	-0.0900***	-0.0690***	-0.0785***	-0.0985***	-0.0961***	-0.1246***
	(0.0144)	(0.0134)	(0.0140)	(0.0135)	(0.0221)	(0.0226)
DD	0.0885***	0.0683***	0.0772***	0.0708***	0.0921***	0.0917***
	(0.0027)	(0.0025)	(0.0026)	(0.0025)	(0.0040)	(0.0041)
UNDVD	0.0730***	0.0476***	0.0595***	0.0503***	0.0748***	0.0737***
	(0.0033)	(0.0031)	(0.0032)	(0.0031)	(0.0050)	(0.0052)
DIST	0.1745***	0.5254***	0.3233***	0.4906***	0.5591***	0.5097***
	(0.0088)	(0.0123)	(0.0107)	(0.0120)	(0.0169)	(0.0201)
UNDVD*DD	0.0059	0.0174***	0.0150***	0.0152***	0.0089	-0.0010
	(0.0040)	(0.0037)	(0.0039)	(0.0037)	(0.0061)	(0.0062)
DD*DIST	-0.0888***	-0.2407***	-0.1257***	-0.2369***	-0.2741***	-0.2214***
	(0.0118)	(0.0150)	(0.0138)	(0.0148)	(0.0217)	(0.0248)
UNDVD*DIST	-0.0911***	-0.2074***	-0.1133***	-0.1931***	-0.2571***	-0.2004***
	(0.0139)	(0.0191)	(0.0169)	(0.0184)	(0.0265)	(0.0309)
UNDVD*DD*DIST	0.0428**	0.0777***	0.0397*	0.0722***	0.0158	0.1194***
	(0.0181)	(0.0242)	(0.0219)	(0.0235)	(0.0345)	(0.0393)
ΔSIZE	0.0345***	0.0310***	0.0327***	0.0312***	0.0406***	0.0403***
	(0.0021)	(0.0020)	(0.0021)	(0.0020)	(0.0033)	(0.0033)
ΔTANG	0.0559***	0.0364***	0.0750***	0.0407***	0.0594***	0.0166
	(0.0136)	(0.0127)	(0.0133)	(0.0128)	(0.0209)	(0.0214)
ΔRD	-0.0885***	-0.0865***	-0.0994***	-0.0837***	-0.0930***	-0.0689*
	(0.0233)	(0.0216)	(0.0227)	(0.0218)	(0.0356)	(0.0365)
ΔPROF	-0.0227***	-0.0063*	-0.0157***	-0.0063*	-0.0284***	-0.0203***
	(0.0036)	(0.0033)	(0.0035)	(0.0033)	(0.0054)	(0.0056)
ΔCAPEX	0.0130	0.0002	-0.0199	0.0036	0.0007	0.0314
	(0.0160)	(0.0148)	(0.0156)	(0.0150)	(0.0245)	(0.0250)
R^2	0.4507	0.5277	0.4800	0.5195	0.4216	0.3944
Adjusted R^2	0.3582	0.4482	0.3925	0.4386	0.3243	0.2925
Wald (p-values)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	11201	11201	11201	11201	11201	11201
Period	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008	1984-2008

The dependent variable is net book debt issued divided by total assets for Columns 1 to 4 and net market debt issued for columns 5 and 6. Regressions control for firm fixed effects and include unreported industry and year dummies. Rogers (1993) standard errors are reported in parentheses. (*), (**) and (***) indicate that coefficients are significant at 10, 5 and 1 % level, respectively.