Finding market timing patterns when they are unlikely to exist

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Abstract

We show that periods during which firms issue equity and simultaneously retire debt reflect market timing patterns: such leverage decreasing recapitalizations (LDRs) occur after stock-price run-ups and in periods of high equity valuation which subsequently decrease. The pattern even persists when the LDR is likely triggered by creditors exercising control rights - such as firms with high leverage or violating financial covenants. Empirical asset pricing tests also can not reject a market timing interpretation as the stock-price run-up pertains after adjusting for multiple risk factors and the positive excess returns do not persist after the capital structure rebalancing.

Keywords: equity issue; market timing; creditor control; financial reporting conservatism; covenants; earnings management

1 Introduction

It is a well known fact that firms tend to issue equity when share valuations are high (Asquith and Mullins, 1986; Masulis and Korwar, 1986). Moreover, these firms experience pre-issue stock price run-ups that are large and positive, whereas (abnormal) returns following a seasoned equity offering (SEO) are often negative (Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Eckbo et al., 2007). However, there is little agreement as to the underlying explanation for these empirical findings.

For example, Baker and Wurgler (2002) suggest that market timing efforts drive equity issues and thereby capital structure choices. Leary and Roberts (2005), on the other hand, conclude that the high valuations reflect growth opportunities and that the corresponding effect on capital structures can be rationalized with the existence of leverage adjustment costs. Kim and Weisbach (2008) observe that firms stockpile cash following periods of equity issues and argue this behavior is consistent with market timing efforts. DeAngelo, DeAngelo, and Stulz (2010) instead argue that the increase in cash reflects asset growth effects and that - without the SEO - firms would have quickly run out of funds. Finally, Dong, Hirshleifer, and Teoh (2012) control for both growth opportunities and a computed overvaluation measure and suggest again that mispricing drives financing decisions.

Empirical asset pricing tests are also subject to disagreement. Butler, Cornaggia, Grullon, and Weston (2011) find that investment based factor models explain the negative stock return of firms doing seasoned equity offerings. However, Lewis and Tan (2016) show that managers are more likely to issue equity when analysts are optimistic about long-term growth prospects. Further controlling for research and development expenses in cross-sectional return regressions, they suggest that abnormal returns of equity issuers are negative and interpret this as consistent with a managerial attempt to time the market. Finally, Huang and Ritter (2017) show that the frequency and size of equity (and debt) issues is negatively correlated with future abnormal stock returns, suggesting again a market timing story.

In this paper, we take a different route and investigate the potential impact of market timing efforts by focusing on an over-looked subsample of equity issuers: firms that perform a leverage decreasing recapitalization (LDR) by issuing equity and using a significant amount of the proceeds to actively retire debt. The focus on LDRs is interesting for several reasons. First, it attempts to isolate periods of neutral asset growth and could therefore help in identifying the impact of market timing efforts. Second, shareholders have little incentive to recapitalize outside of bankruptcy or strategic debt renegotiation as such a transaction transfers wealth from shareholders to bondholders (Fischer, Heinkel, and Zechner, 1989; Admati, DeMarzo, Hellwig, and Pfleiderer, 2017). Ceteris paribus, this reduces the likelihood of market timing as the overall benefit from selling over-priced shares would need to exceed the wealth transfer to bond holders. Finally, there is a large literature suggesting that LDRs may be the result of creditors exercising control rights (Smith and Warner, 1979; Aghion and Bolton, 1992; Dewatripont and Tirole, 1994; Nini, Smith, and Sufi, 2009). It is not clear that creditors have an incentive to time the equity market.

Using a large Compustat sample of 13,799 firms (140,067 firm-years) over the period from 1971 to 2016, we define LDRs by employing information from a company's cash flow statement and requiring that both net equity issues (NEIs) and net debt retirements (NDRs) exceed at least 5% of the book value of assets. While the size threshold is standard (Hovakimian, Opler, and Titman, 2001; Leary and Roberts, 2005), the definition also includes private equity issues and we therefore supplement results for a subsample of LDRs which issue public equity (information obtained from SDC, henceforth referred to as public LDRs).[1] We find that LDRs account for 21 percent of all observed NEIs. Moreover, the latter become more frequent during boom periods whereas this is not the case for LDRs.

Turning to firm characteristics, we show that firms performing LDRs have higher leverage and lower cash holdings than the full sample of net equity issuers. Interestingly, both groups of issuers are on average unprofitable, invest substantial amounts into both *Capex* and *R&D* and are valued at high valuation ratios (Q). Contrary to the findings in Teoh, Welch, and Wong (1998) and Rangan (1998), we find no evidence that firms issuing net equity or undertaking a LDR are

[1] As will be shown through-out the paper, our results are not sensitive to this difference in the LDR definition.

likely to inflate earnings upwards by opportunistically altering discretionary accounting accruals (Dechow, Sloan, and Sweeney, 1995).[2] Interestingly, we find that physical investment increases substantially in periods following recapitalizations which is consistent with a subsequent exercise of growth options (Myers, 1977).

We also provide detailed evidence consistent with intuition that LDRs reflect the exercise of creditor control rights. For example, we show that LDR firms report more conservatively than the average firm or the average net equity issuer. This result obtains when focusing on the speed with with negative stock returns are reflected in the accounting data (Khan and Watts, 2009) or when using alternative accrual measures such as the likelihood of goodwill impairment or the recognition of restructuring costs (Tan, 2013). Moreover, we find that the financial reporting conservatism is particularly strong for LDR firms with high leverage in the year preceding the recapitalization. In addition, for those firms the average size of the net equity issue and net debt retirement is highly economically significant (equal to 22 and 19% of book assets respectively). As an additional robustness check, we merge our sample with quarterly covenant violation data from Nini et al. (2009) and show that LDRs are more likely among firms that violate financial covenants, suggesting again the exercise of creditor control rights.

Taken together, LDR firms exhibit characteristics which collectively reduce the likelihood of finding market timing patterns. They are relatively less frequent in equity market boom periods, they are not driven by earnings management considerations, they likely reflect exercise of creditor control rights and thus become more frequent among firms that violate financial covenants. However, as shown below, we show that equity valuation dynamics of LDR firms exhibit patterns which are consistent with a market timing interpretation.

Our first exercise controls for several fundamental factors by adjusting the valuation framework of Fama and French (1998) to specifically account for LDRs. This framework relates a scaled

[2] This finding is may reflect the evidence in Givoly and Hayn (2000) who report a general tendency among U.S. public corporates to report financial statements more conservatively. We also find that losses of equity issuers (LDR firms) continue to increase in magnitude after the 2005 Securities Offering Reform (SOR). Our descriptive evidence is thus consistent with Clinton, White, and Woidtke (2014) and Shroff, Sun, White, and Zhang (2013) who show that firms did not opportunistically use the relaxed reporting guidelines ahead of the security issues.

version of the market-to-book ratio (precisely its excess value over one) to various fundamental factors and an indicator variable indicating the presence of a LDR. Our findings suggest that LDRs take place during periods of high valuation which are followed by a decrease in valuation ratios. Most importantly, the findings are robust to exploring cross-sectional differences among LDR firms. For example, they also obtain among firms with high leverage, for those that are over-levered or among firms that violated financial covenants.

Finally, LDR firms exhibit significant stock price run-ups and we show that these patterns survive risk-adjustment (Fama and MacBeth, 1973; Fama and French, 1993, 2015). That is, when estimating different empirical asset pricing models we find positive abnormal returns prior to the LDR. Moreover, this trend does not continue after the LDR as abnormal returns are either negative (statistically significant) or zero. As a final exercise, we show that the initial stock price run-up significantly predicts the LDR even after controlling for the ex-ante unobservable subsequent investment need. This test is particularly powerful as it gives the investment based explanation an edge over market timing by using the subsequent investment outlays as an explanatory variable. In short, our paper finds systematic evidence of market timing patterns even though they were unlikely to exist in the first place.

Our paper is most closely related to Autore, Bray, and Peterson (2009) and Hertzel and Li (2010). Autore, Bray, and Peterson (2009) investigate the relation between the stated use of proceeds and the subsequent stock and operating performance of the issuer. While they find significant negative performance if the SEO finances a recapitalization, the analysis is based on a relatively small sample of 257 issuers over the period from 1997 to 2003. Hertzel and Li (2010) decompose a firm's market-to-book ratio into components reflecting over-valuation and growth opportunities and find that debt reductions are more likely to follow SEOs in case the firm was estimated to be overvalued.

Our study is instead based on a large sample of approximately 3,000 LDRs which take place over a period of four decades and are therefore not specific to a special period such as the burst of the dot-com bubble. We contribute to the literature by expanding beyond pure debt reductions as we condition our analysis on situations where creditors are likely to exercise control rights in conjunction with those issues. Examples include the direct violation of bond covenants, but also situations where creditor control is likely such as firms with high (excess) leverage. Moreover, we estimate abnormal stock returns relative to several empirical asset pricing models and find that the abnormal stock price run-up does not continue after the LDR.

The paper proceeds as follows. Section 2 presents the sample and provides descriptive evidence on LDRs. Section 3 derives testable hypothesis and Section 4 estimates the impact of LDRs on valuation ratios, while Section 5 investigates corresponding return patterns. Section 6 concludes the paper.

2 Data and descriptive evidence

2.1 Sample Construction

The sample consists of U.S. public industrial corporations listed on Crisp/Compustat (CCM) over the period from 1971 to 2016. As usual, we exclude financial firms, utilities and government entities. In addition, we require the availability of one-year lagged information on our main variables (to be introduced below). Finally, we merge the CCM sample with Crsp (and SDC) and require the availability of trailing twelve months stock returns. All other sample selection criteria are standard and are listed in Appendix Table 1. The final sample consists of 13,799 firms and 140,067 firm-years.

We focus on leverage decreasing recapitalizations (LDR) which we define as periods during which firms issue equity and use a significant amount of the proceeds to retire debt. Our definition is based on information obtained from a company's cash flow statement which includes public and private equity issues (as well as public and private debt retirement):

$$LDR_t = 1 \ if \ NEI_t = 1 \ and \ NDR_t = 1 \quad (1)$$

$$NEI_t = 1 \ if \ \frac{nei_t}{a_t} > th \quad (2)$$

$$NDR_t = 1 \ if \ \frac{ndi_t}{a_t} < -th \quad (3)$$

where *nei* are common and preferred stock issues net of dividends and share repurchases, *a* is the book value of assets) and *ndi* are short and long-term debt issues net of debt retirement. The variable *th* is a size threshold which is set equal to 5%. While the size of the threshold is standard (Hovakimian, Opler, and Titman, 2001; Leary and Roberts, 2005), the LDR definition also includes private equity issues. We therefore provide results separately for LDRs that happen in periods when the firm issues public equity (information obtained from SDC, henceforth referred to as public LDRs).

Table 1 displays annual values for the numbers of U.S. publicly listed firms (column 1), net equity issues (NEIs) and LDRs. Column 2 shows that NEIs vary substantially over time and peak in the late 1990s. The dynamics are similar if one conditions on public $NEIs$ (column 3), though the absolute frequency is reduced by approximately 60 percent. Columns 4 and 5 show frequencies of LDRs (all and public) and columns 6 and 7 further display the fraction of LDRs relative to NEIs. On average, every fifth NEI finances a major debt retirement (irrespective of whether the equity issue involves public or private equity). Finally, columns 4 to 7 further suggest that LDRs become relatively less frequent in periods of high net equity issue activity. To the extent that market timing is more prevalent during hot markets, this raises the possibility that LDRs are driven by other factors than the average net equity issue.

Table 2 further compares firms performing NEIs and LDRs. The table confirms that capital structure differs across the two groups as leverage (market and book) is substantially lower for the full sample of net equity issuers. For example, column 1 shows that market leverage equals 15% in the year preceding the NEI and subsequently decreases to 14%. For LDR firms, on the other hand, the effect of the LDR on leverage is substantial as market leverage decreases from 29% to 18% (column 3). Furthermore, the LDR leads 8% of all firms to become all-equity financed and 35% almost all-equity financed, suggesting an active decision to abstain from debt financing.[3] Also note that, while LDR firms have substantial cash holdings (19%), they are - nevertheless - dwarfed by those of net equity issuers (31%).

Interestingly, firms performing either a NEI or a LDR are highly unprofitable. The average ratio of operating profits to assets is -8% for LDR firms, -16% for NEI firms but +6% for the average sample firm (untabulated). Publicly financed LDRs tend to be more profitable (-2%). The significant operating losses reflect heavy investment into $R\&D$ which equals 9% (LDR) and 13% (NEIs). Furthermore, both groups also invest heavily into capital expenditures (7% on average). Notwithstanding the low current profitability, market-to-book ratios (Q) are high for firms performing either a NEI or a LDR. Absolute values exceed two and continue to be positive when adjusting for industry effects (untabulated).[4]

The large operating losses of firms performing NEIs differ starkly from the earnings management patterns documented in Teoh, Welch, and Wong (1998) and Rangan (1998). These papers find that - surrounding SEOs - firms report positive earnings which are further inflated by opportunistically altering discretionary accounting accruals. In Table 3, we show that this trend has not continued. From 2000 onwards, average earnings of public NEIs are consistently negative and - most of the time - even lower than operating cash flow. In other words, total accounting accruals are negative in the post 1999 period (and estimated discretionary accruals are close to zero). While losses of firms undertaking public LDRs are less severe, accruals (total and estimated discretionary) are non-positive, reducing the overall likelihood of earnings management activities.

[3]We define almost all-equity financed firms as those with a market leverage of less than 5% (Strebulaev and Yang, 2013).

[4]To be precise, we compute yearly values of industry median Q using the three-digit SIC code and then subtract these values from Q for each firm. In this case, average values of excess Q are 1.33 (all net equity issuers), 1.00 (public net equity issuers), 0.88 (all LDR firms) and 0.63 (public LDRs).

2.2 Creditor control and financial distress

Trade-off theory of capital structure implies that firms recapitalize only when close to bankruptcy as such a transaction transfers wealth from shareholders to bondholders (Fischer, Heinkel, and Zechner, 1989; Admati, DeMarzo, Hellwig, and Pfleiderer, 2017).[5] Outside of bankruptcy, LDRs are typically rationalized as the result of creditors exercising control rights. That is, bond covenants or agreements with private creditors can induce shareholders to credibly commit to and execute active leverage reductions (Nini, Smith, and Sufi, 2009). Relatedly, Tan (2013) shows that financial reporting conservatism increases in response to covenant violations.

Below, we provide descriptive evidence consistent with the idea that LDRs likely reflect the exercise of creditor control rights. First, we document that financial reporting conservatism increases in response to LDRs. Second, we show that this increase is particularly pronounced for LDR firms with high leverage prior to the recapitalization. Finally, we demonstrate that LDRs are more likely among firms that violate financial covenants.

Table 4 employs different measures of financial reporting conservatism and reveals that firms performing LDRs score higher on each single measure. Specifically, the table presents coefficient estimates of the following regression

$$Cons_{i,t} = \alpha + \beta_1 LDR_{i,t} + \beta_2 NEI_{i,t} + \gamma_k + \eta_t + \epsilon_{i,t} \tag{4}$$

where $Cons$ is the measure of financial reporting conservatism (explained below), LDR and NEI are indicator variables denoting the year of a leverage decreasing recapitalization or a net equity issue, γ_k are industry- and η_t are year fixed effects.

In column (1), the conservatism measure is the firm's $Cscore$ which reflects the sensitivity of earnings to negative stock returns which, as in Khan and Watts (2009), is allowed to vary with a firm's size, growth opportunities and leverage.[6] The measure is built on the intuition that

[5] Ceteris paribus, this reduces the likelihood of market timing as the overall benefit from selling over-priced shares would need to exceed the wealth transfer to bond holders.

[6] The $Cscore$ measure is estimated following the cross-sectional regression framework of Khan and Watts (2009), in particular section 2.2 (page 135) in their paper.

a stronger sensitivity of earnings to negative stock returns reflects more conservative financial reporting. Panel A excludes industry and year-fixed effects and shows that LDR firms have a significantly higher $Cscore$ than the average sample firm. Moreover, firms are estimated to report less conservatively during traditional net equity issues which suggests that the higher reported conservatism of LDRs likely reflects the exercise of creditor control rights.

Columns 2 to 6 present alternative accrual measures of reporting conservatism. Each of the five variables presents an unpopular financial reporting decision which raises costs and decrease net income. For example, column 2 shows that LDR firms increase restructuring costs relative to the average firm, whereas net equity issuers decrease such cost. LDR firms are also more likely to increase the impairment of goodwill, to write down assets, to recognize special items in the income statement or to report discontinued operations. The described patterns are similar in Panel B which further controls for industry and year fixed effects.

To shed further light on the relation between creditor control and financial distress, Table 5 categorizes LDR firms based on two measures of leverage leverage. In Panel A, we first compute the distribution of lagged market leverage using the full sample of 140,067 firm-years and then employ the corresponding quintile cutoff values to categorize LDR firms into five different leverage groups (ranging from low to high). In Panel B, the classification is done using quintile cutoff values from the distribution of market leverage relative to the industry median leverage ratio in that year (henceforth referred to as excess industry leverage).

Panel A confirms that LDR firms on average have relatively high leverage as only 2% are placed in the lowest leverage quintile. Nearly half of all LDR firms place in the two highest leverage quintiles with an average leverage ratio of 49% (column 2) in the year prior to the LDR. Moreover, the estimated deviation from a leverage target in the year preceding the recapitalization is positive for those LDRs and equal to 9%, on average.[7]

Focusing on the LDR firms in the highest leverage quintiles, the effect of the recapitalization is

[7]The leverage target L^* is estimated using a rolling window regression (to avoid capturing a mechanical mean-reversion due to the recapitalization) of market leverage on lagged values of size, $Prof$, Q, the ratio of cash-to-assets, asset tangibility, $R\&D$, $Capex$, industry median leverage, time and firm fixed effects.

economially significant: the average size of the net equity issue (column 8) and net debt retirement (column 9) are similar (22% and 19% of assets, respectively) and they reduce average leverage to 31% (column 5). Consistent with the idea that the recapitalization is likely to be driven by creditors exercising control rights, we find that the $Cscore$ is highest among those firms. Interestingly, average profitability (column 7) is positive and Q is lower and closer to one (column 10). Turning to lower levels of initial leverage, we instead find that the size of net equity issues and net debt retirements differ substantially while $R\&D$ expenditures and Q increase simultaneously. Our analysis below will account for those cross-sectional differences.

Panel B displays the same variables as in Panel A, but now assigns LDR firms into groups using the distribution of the excess industry leverage in the year preceding the transaction. This alternative assignment increases the fraction of LDR firms in the two highest quintiles to 62%, but decreases average market leverage for those firms to 37% in the year preceding the LDR. While the $Cscore$ measure is comparable to Panel A, the average size of net equity issue and net debt retirement deviates more for those firms but remains economically significant (32% and 20%, respectively).[8]

The evidence thus shows that LDR firms exhibit a higher degree of financial reporting conservatism and that this relation is particularly pronounced for LDR firms with high leverage in the year preceding the recapitalization. To further support our interpretation that these findings reflect the exercise of creditor control rights, we also merge our sample with data on covenant violations obtained from Nini, Smith, and Sufi (2009). This dataset is based on quarterly SEC filings for public U.S. corporations over the period from 1996 to 2008. For those firms, the authors identify whether a (at least one) financial covenant was violated or not.

The successful merge results in a subsample of 43,266 firm years out of which financial covenants are violated in 13% (or 5,812 cases). Consistent with the idea that LDRs reflect the exercise of creditor control rights, we find that the frequency of covenant violations is relatively larger during periods of LDRs (20%, or 256 cases). While untabulated, we find that the higher frequency of

[8] This is likely explained by the fact that LDR firms placed in the fourth excess industry leverage quintile still experience substantial asset growth.

covenant violations among LDR firms also obtains in a multi-variate setting.

2.3 Post-LDR investment activity

Because the LDR moves the firm back to a more conservative capital structure, one may expect that the firm suffers less from agency costs of debt after the capital structure rebalancing (Myers, 1977). If this is indeed the case, we would expect that - ceteris paribus - the LDR allows firms to invest in a less constrained way. Put differently, the LDR should be followed by an increase in the physical investment activity of firms.

Figure 1 illustrates the investment dynamics in event time for firms undertaking a LDR in event year 0. The figure tracks, over the next three years, the evolution of three different measures of investment into fixed assets (all of which are scaled by the lagged value of book assets in order to accurately measure the resulting asset growth). The solid blue line shows capital expenditures (I_{CX}) which equal 9% of lagged book assets in the year of the LDR. The red dashed line also includes cash outlays for patent purchases and acquisitions, as well as net reductions resulting from asset sales, decreasing the total cash investment (I_{CF}) to 7% in year 0. Comparing the two measures suggests that LDR firms were selling assets in order to help finance capital expenditures. Finally, the long-dashed green line is based on the broadest measure of fixed asset investment (I_{FA}) and is computed from yearly changes in fixed assets in the firm's balance sheet (Lewellen and Lewellen, 2016).[9]

What happens following the LDR is interesting. All three measures of investment increase substantially. Investment into capital expenditures and total cash financed investment are now similar and equal to 10% and 11% of assets, respectively. Finally, we can see that total fixed asset investment (as measured by I_{FA}) increases by 50% from 17% to 24% of lagged book assets. The substantial increase in physical investment after the LDR is consistent with the idea that the rebalancing has potentially mitigated a debt overhang problem.

Summing up, the descriptive information presented in this section has shown that LDR firms

[9] The yearly changes in fixed assets are adjusted for non-cash charges that affect fixed assets such as depreciation and write-downs.

exhibit characteristics which collectively reduce the likelihood of finding market timing patterns. They are relatively less frequent in equity market boom periods, they are not driven by earnings management considerations, they likely reflect exercise of creditor control rights and thus become more frequent among firms that violate financial covenants.

3 Valuation framework and hypothesis development

This section presents a valuation framework relating several fundamental factors to a measure of firm value. We then derive corresponding market timing hypotheses which are tested empirically in Section 4. Finally, we return to an analysis of stock returns in a multivariate asset pricing framework in Section 5 .

3.1 Valuation framework

The approach below is based on an extension to Fama and French (1998) who estimate the value impact of debt and dividend payments.[10] To arrive at our regression specification, we start from the well-known fact that levered firm value (V^L) can be decomposed into the value of the firm's unlevered assets (V_U) and the tax shield associated with debt financing (τD):[11]

$$V^L = V_U + \tau D$$

Assuming that unlevered firm value consists of both assets in place (V_A) and growth options (V_G), we can further write that

$$V^L = V_A + V_G + \tau D$$

[10]The Fama-French valuation framework has been used extensively in the empirical cash literature which attempts to estimate the shadow value of cash holdings (Pinkowitz and Williamson, 2004; Pinkowitz et al., 2006; Kisser, 2013).

[11]If the financial markets are competitive and corporations are taxed then, ceteris paribus, the value of the levered firm equals that of the unlevered firm plus the value of the debt tax shield, i.e., $V_L = V_U + \tau D$, where the L and U denote levered and unlevered, respectively, and (τD) denotes the value of the debt tax shield (Modigliani and Miller, 1958).

Using the book value of assets (A) as an approximation for the value of assets in place, leads to the following regression specification

$$V^L - A = \alpha + \beta V_G + \gamma D + \epsilon$$

In order to estimate the valuation model, one needs to control for the value of growth opportunities. Therefore (levels and changes of) operating profits ($prof$), R&D expenses (rd) and capital expenditures ($capex$) are included as additional control variables. Standardizing all variables by assets to both deal with heteroskedasticity and to also make sure that the largest firms do not drive results, implies that

$$Q_t^E = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+v}}{A_t} + \gamma BL_t + \epsilon_t$$

where Q_t^E is $(V_t^L - A_t)/A_t$ and can be interpreted as the the excess of Q over one. The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to assets and the compact notation dX_t (dX_{t+v}) denotes the lagged one year (future v-year) change in the variable of interest ($prof$, rd or $capex$).[12] Using a two-year future change is in line with evidence that two years is as far ahead as the market can predict (Fama, 1990; Fama and French, 1998). Finally, BL is the book leverage ratio.

3.2 Hypotheses development

The valuation framework of the previous section allows us to investigate whether LDRs systematically reflect market timing patterns. We first test whether LDR firms have a systematically higher valuation ratio and estimate

$$Q_t^E = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+v}}{A_t} + \gamma BL_{t-1} + \delta^1 LDR_t + \epsilon_t \qquad (5)$$

[12] Specifically, $dX_t = (X_t - X_{t-v})/A_t$ and $dX_{t+v} = (X_{t+v} - X_t)/A_t$.

Note that the regression employs the lagged book leverage ratio in order to disentangle the effect of the LDR from the level of leverage. Second, we investigate whether the period of the LDR is followed by a decrease in valuation ratios

$$\Delta Q_t^E = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta \frac{dX_t}{A_t} + \phi \frac{dX_{t+v}}{A_t} + \gamma BL_{t-1} + \delta^2 LDR_t + \epsilon_t \quad (6)$$

where $\Delta Q_t^E = Q_t^E - Q_{t-1}^E$. Taken together, the analysis of the coefficient estimates δ and ϕ allows us to specify the following hypothesis for LDR firms

(H1) LDR firms are unlikely to be driven by market timing and therefore should not exhibit dynamics in valuation ratios that are consistent with a market timing interpretation (H1: $\delta^1 \leq 0$ and $\delta^2 \geq 0$)

However, the evidence in Section 2 has revealed significant cross-sectional heterogeneity among the sample of LDR firms which may reduce the power of H1. Specifically, it was shown that LDRs of firms with high leverage or those violating financial covenants likely reflect the exercise of creditor control rights. We therefore also test the following two modified hypotheses:

(H2) LDR firms with high leverage are unlikely to be driven by market timing and therefore should not exhibit dynamics in valuation ratios that are consistent with a market timing interpretation (H2: $\delta^1 \leq 0$ and $\delta^2 \geq 0$)

(H3) LDR firms violating financial covenants are unlikely to be driven by market timing and therefore should not exhibit dynamics in valuation ratios that are consistent with a market timing interpretation (H3: $\delta^1 \leq 0$ and $\delta^2 \geq 0$)

4 Do LDRs exhibit market timing patterns?

4.1 (H1) LDRs and market timing patterns

Table 6 displays the correlation between LDRs and shareholder value. Specifically, columns 1 to 3 test whether LDRs occur during periods of high valuations and present estimates of equation 5. Next, columns 4 to 6 investigate whether valuations decrease following the LDR and correspond to equation 6. To maximize sample size, we focus on one year future changes in the control variables ($v = 1$). Results are provided using OLS regression (columns 1 and 4), accounting for firm-fixed effects (columns 2 and 5) as well as cross-sectional regressions in columns 3 and 6 (Fama and MacBeth, 1973). Note that Fama-MacBeth regressions have the advantage that they identify the average cross-sectional effect, but come with the drawback of relatively little test power when applied to yearly data.

Focusing on the coefficient of the LDR indicator variable in column 1, we can see that the existence of a LDR increases excess Q by 0.44 units. In other words, this suggests that firms undertaking a leverage decreasing recapitalization have a market-to-book ratio that is approximately 0.4 units higher than for the average sample firm. Moreover, the coefficient is highly statistically significant and robust to alternative estimation methods including the presence of firm fixed effects (column 2) or FMB regressions (column 3). Investigating the period after the LDR, columns 4 to 6 provide strong evidence that the LDR is followed by a decrease in valuation ratios. Independent of the estimation method (OLS, FE, FMB) we find that that excess Q decreases by approximately 0.14 units.[13]

Also interesting, the coefficient estimate of operating profitability ($Prof$) shows that more profitable firms have lower excess market-to-book ratios. In other words, the negative correlation implies that low profitability firms on average have higher valuations, which is consistent with characteristics of high market-to-book firms (Fama and French, 1992; Novy-Marx, 2013). In addition, the correlation with lagged leverage is negative. Both coefficient estimates reflect the

[13]Appendix Table 3 shows that the the pattern is similar when investigating when investigating the subsequent two-year (instead of one year) period.

descriptive evidence above (Table 5) showing that LDR firms with low initial leverage are unprofitable but valued highly (whereas those with high leverage are more profitable and have lower market-to-book ratios).[14]

Table 7 shows that similar findings also obtain for the subsample of public LDRs: valuation peaks in the year of the LDR and drops subsequently. Taken together, these patterns reject H1 as valuations peak in the year of the LDR and decrease subsequently. The documented pattern for LDRs is thus consistent with previously documented evidence on stock returns surrounding stock issues (Asquith and Mullins, 1986; Masulis and Korwar, 1986; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995).

4.2 (H2) LDRs of highly levered firms and market timing patterns

We now test H2 which employs the previously documented cross-sectional differences among LDR firms. Specifically, H2 assumes that LDRs undertaken by highly levered firms are unlikely to reflect market timing patterns as creditors presumably exercise control rights in connection with the LDR. Table 8 displays corresponding results when defining highly levered LDR firms as those for which the lagged market leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms (Panel A, Table 5).

Panel A investigates the correlation between the LDR indicator variable and excess Q and robustly confirms the previously found positive relation. Columns (1) to (3) contain results for the full sample of high leverage LDR firms and show that - irrespective of the estimation method - the LDR raises Q^E by 0.17 to 0.25 relative to the average Q^E of all highly levered firms. Columns (4) to (6) focus on the subset of public LDR firms with high leverage and reveal quantitatively similar findings. These patterns are particularly interesting as the size of the underlying LDR components was shown to be economically significant (with both net equity issues and net debt retirements equalling approximately 20% of book assets).

[14] In untabulated results we find that firm size to a large part explains the negative impact of profitability (for large firms the correlation with excess Q becomes positive). Irrespective of size, LDRs are always associated with high valuation periods that are followed by decreasing subsequent valuations.

Panel B tests whether LDRs of financially distressed firms are followed by a decrease in valuation ratios. Using the same samples as in Panel A, we find that all coefficient estimates γ_2 of the LDR indicator variable are negative, with five out of six being statistically different from zero. The table further shows that Q^E decreases by 0.05 and 0.12 relative to the year of the LDR.

In Appendix Tables 4 and 5, we further verify that these findings are robust to changing the financial distress classification to excess industry leverage (Panel B, Table 5) or those that are over-levered relative to an estimated time-varying target leverage ratio. Taken together, our findings suggest that highly levered LDR firms exhibit dynamics in valuation ratios that are consistent with a theory of market timing.

4.3 (H3) LDRs, covenant violations and market timing patterns

Table 9 is based on the above presented subsample of firms covering the period from 1996 to 2008 which are successfully merged with the data documenting the existence of covenant violations obtained from Nini, Smith, and Sufi (2009). Columns (1) to (3) employ Q^E as the dependent variable and show that the cross-sectional correlation between LDRs and valuation also persists among firms that violate financial covenants. These findings are robust to using OLS, FE or FMB regressions. Columns (4) to (6) investigate the impact of the LDR on the subsequent change in excess Q. All three coefficient estimates are negative and statistically significant.

Taken together, all findings in this section reject hypotheses H1, H2 and H3. In other words, we find that LDR firms exhibit valuation dynamics that are consistent with a market timing interpretation. Valuation ratios peak in the year of the LDR and decrease subsequently. These findings also obtain for LDR firms with high absolute leverage, positive excess leverage or those violating financial covenants.

The surprising aspect of our findings is that our sample firms are unlikely to be in a position to time the market in the first place. After all, they have been selected based on the idea that creditor control is likely. While these results are already obtained in a multivariate framework, we now turn to an additional analysis of stock returns to investigate in greater detail whether exposure to growth and investment explains our findings.

5 Do market timing patterns survive risk adjustment?

Table 10 displays descriptive evidence on market-adjusted stock returns ($r_i - r_m$) surrounding the year of the LDR. Panel A shows that all LDR firms experience significant stock price run-ups leading up to the LDR. Moreover, subsequent returns are flat or slightly negative. Panels B to D further focus subsamples of LDRs for which - as shown above - the simultaneous exercise of creditor control rights is likely.

Specifically, Panel B shows results for highly levered LDRs (which are again defined as LDR firms which are placed in the upper two absolute leverage quintiles of Table 5). Panel C performs the same classification but instead uses the lagged distribution of leverage in excess of the industry median leverage ratio. Finally, Panel D conditions on LDRs which happen in periods of financial covenant violations. In all three cases, the patterns are similar as in Panel A. The data reveal significant stock price run-ups prior to the LDR which are followed by flat to slightly negative market-adjusted returns.[15]

Below, we investigate whether exposure to systematic risk factors explains the return dynamics before and after the LDR. To this end, we merge our annual sample of 140,067 firm-years again with the CRSP database. This time - following Huang and Ritter (2017) - the merge imposes a four month lag between the date of the fiscal year-end (reported in Compustat) and the first monthly stock return (used from Crsp). This choice is somewhat more restrictive than market timing papers relying on security issue announcement returns and it is driven by the fact that we use the broader Compustat database (instead of SDC) to identify net equity issues and leverage decreasing recapitalizations.[16] Finally, monthly market returns, risk-free rates and returns of the book-to-market, size and momentum factors are obtained from Ken French's data library.[17] The

[15] The pattern may be most surprising in Panel D as it survives a drastic loss of power given the substantially reduced sample size.

[16] Results are robust to changing the lag to zero, seven months or if we merge with Crsp based on the filing date of the security issue obtained from SDC.

[17] Consistent with Fama and French (1993), we compute the book-to-market ratio using the seven month lagged

merge with CRSP reduces the overall sample somewhat to 13,179 firms and 1,479,533 firm-months.

5.1 Are stock price run-ups indicative of market timing?

We first investigate whether the increase in the stock price prior to the LDR reflects positive risk-adjusted returns (α). We begin by estimating cross-sectional return regressions (Fama and MacBeth, 1973) where we test whether stock returns in year t are higher when the firm performs a LDR in year $t+1$ and display corresponding results in Table 11.

Panel A uses the full sample of 1,479,533 observations and column 1 shows coefficient estimates when regressing monthly excess returns ($r_i - r_f$) on two indicator variables only: a dummy variable denoting the LDR and another denoting equity issues. The latter is orthogonalized (meaning it identifies all equity issues but LDRs) which is necessary to completely separate the two financing effects. Both coefficient estimates are positive, equal to 1% per month and highly statistically significant. Column 2 adds the firm characteristics book-to-market (precisely its logarithm), size and two momentum factors to the regression. Accounting for those variables slightly increases the coefficient estimate of the LDR dummy, which equals 1.5% after further controlling for profitability, asset growth and R&D expenses (columns 3 to 5). Panel B displays results when focusing only on highly levered firms and shows that findings are similar to above. In other words, the effect also persists among highly levered firms as LDR firms experience a positive risk-adjusted return run-up that exceeds the average firm by 1.7-2% (columns 1 to 5).[18]

While the cross-sectional return regressions are informative, they come with the drawback that individual stock returns are very noisy which leaves a large fraction of the return variability unexplained. We therefore complement the analysis by forming portfolios of LDR firms (precisely, again those that perform the LDR in the following year) and then evaluate those returns relative to different empirical asset pricing models (Sharpe, 1964; Fama and French, 1992, 2015). Table 12 presents monthly excess returns of a trading strategy investing in firms that performed a LDR (Panel A is based on equally-weighted, Panel B on value-weighted returns). Abnormal returns

value of market equity and we drop negative book-equity firms from the sample.

[18] Untabulated results reveal similar findings when focusing on LDR firms with high excess leverage.

are computed relative to three competing asset pricing models: the capital asset pricing model (CAPM), the Fama and French three-factor model (FF3) and the five factor model (FF5) which also accounts for profitability and investment (Novy-Marx, 2013; Zhang, 2005).

Panel A suggests significant abnormal returns leading up to the LDR. Interestingly, all three asset pricing models suggest similar magnitudes ranging between 89 basis points (FF3) to 1.06% (CAPM). Turning to Panel B, it seems that value weighting LDR firms kills the statistical significance of the abnormal returns. However, when investigating the value-weighted portfolio weights, we find that a few large firms are likely to drive these findings: the median weight is 0.32% and the 90th percentile is 3.7%. Confirming our intuition, we compute again value-weighted portfolios - but this time without the 10% largest firms (those with former weights in excess of 3.7%) - and find again that the corresponding excess returns are positive and statistically significant.[19]

5.2 Does the stock price run-up continue after the LDR?

We next investigate whether the stock price run-up continues following the LDR. Finding such a trend would clearly undermine the market timing interpreation. However, as seen below, the data clearly reject this possibility.

Table 13 displays results of cross-sectional return regressions (Fama and MacBeth, 1973) which now test whether stock returns in year t are higher in case the firm performed a LDR in year $t-1$. Panel A of Table 13 corresponds again to the full sample of firms. Focusing on the coefficient of LDR, we can see that it is non-positive in all of the 5 columns. Moreover, the point estimate is negative (and statistically significant) after controlling for size, value and momentum (column 2) and additionally profitability (column 3). Consistent with the descriptive evidence presented in Section 2 that LDR firms significantly increase physical investment in the subsequent year, column 4 shows that the sensitivity to asset growth is negative. In addition, the coefficient on LDR is now statistically insignificant and this finding is robust to the additional inclusion of $R\&D$

[19]Results are similar when focusing only on highly levered LDR firms. Equally weighted portfolios exhibit positive excess returns, whereas the excess return for value-weighted portfolios is statistically insignificant. Dropping again the 10% largest firms (this time the 90th percentile is 7.5%) we find statistically significant and positive risk adjusted returns for the CAPM and the FF3 model.

expenditures (column 5).

Panel B displays results when focusing only on financially distressed firms which are again defined as those being in the upper two leverage quintiles of the lagged market leverage distribution. All point estimates of LDR are negative, yet not statistically different from zero at conventional levels of significance (in column 5, the unreported value of the t-statistics is -1.85).

Finally, Table 14 displays estimates of abnormal returns when focusing on the performance of portfolios of LDR firms. Irrespective of whether returns are equally weighted (Panel A) or value-weighted (Panel B), we do not find evidence that the stock price run-up continues after the LDR. Instead, all six estimates of abnormal returns (α) are statistically insignificant. While not tabulated, findings are similar for portfolios of LDR firms with high leverage.

5.3 What drives the LDR decision?

The analysis above shows that LDR firms are subject to significant stock price run-ups which do not continue following the LDR. Moreover, there is a substantial drop in valuation ratios after the capital structure rebalancing. While the patterns (of valuation ratios and total returns) after the LDR may be rationalized by the substantial increase in physical investment of those firms, the significant stock price run-up makes it impossible to reject a market timing interpretation as it also obtains after risk-adjusting the return estimates.

As a last exercise, we return to the annual CCM database (13,709 firms and 140,067 firm-years) and present estimates of a binary choice model explaining the decision of a firm to undertake the LDR

$$LDR_{i,t} = \alpha + \beta_1 runup_{i,t-v} + \beta_2 \frac{dInv_{t+v}}{A_t} + \gamma X_{i,t} + \epsilon_{i,t}, \tag{7}$$

where $LDR_{i,t}$ takes a value of one if firm i undertakes at least a LDR in year t, $runup_{i,t-v}$ is the total abnormal stock return measured from year $t-v$ to t and $dInv_{t+v} = Inv_{t+v} - Inv_t$ is the change in physical investment following the LDR period. The vector X of control variables contains a standard choice of firm characteristics which are introduced below.

Note that this regression gives an edge to an investment based explanation of the LDR as it employs the ex-ante unobservable magnitude of subsequent investment $dInv_{t+v}$ as one of the control variables explaining the capital structure rebalancing. In other words, the setup reduces the likelihood of finding market timing patterns. Nevertheless, Table 15 shows that the stock price run-up continues to be statistically significant. Panel A reflects the full sample of firms and column 1 performs are horse race between including only the stock-price run-up (measured over the past year) and the corresponding subsequent investment increase. Notwithstanding the fact that we control for ex-ante unobservable information, the stock price run-up positively predicts the LDR with high statistical significance (t-statistic of 12.4). Controlling for additional firm characteristics in the year preceding the LDR (leverage, profitability, capex, $R\&D$, Q and size) does not change this inference (column 2), nor does varying the length of the run-up and subsequent investment period v to two (columns 3 and 4) or three years (columns 5 and 6).

Moreover, as shown by Panel B, the strong predictive power of the stock price run-up also remains among the subsample of LDR firms with high initial leverage for which market timing efforts were ex-ante even more unlikely. Taken together, our paper finds systematic evidence of market timing patterns even though they were unlikely to exist in the first place.

6 Conclusion

This paper investigates whether valuation dynamics surrounding leverage decreasing recapitalizations (LDRs) exhibit market timing patterns. The underlying and novel idea is that the focus on LDRs likely identifies cases where creditors have substantial influence over the firm. Consistent with this intuition, we show that LDR firms exhibit substantial financial reporting conservatism and find that a substantial fraction of LDRs are undertaken by firms with high (excess) leverage. For these firms, the LDR significantly reduces market leverage from 49% in the year preceding the LDR to close to 30%. In addition, we show that covenant violations frequently occur among

LDR firms.

We then demonstrate that LDRs reflect many valuation patterns that are frequently interpreted as being consistent with market timing efforts: they occur during periods of high equity valuations, and are followed by subsequent decreases in valuation ratios. These findings obtain in a multivariate setting and are particularly surprising as they prevail even among the subset of LDR firms with high (excess) leverage or those violating financial covenants.

Finally, we present detailed evidence of a stock price run-up in the period leading up to the LDR. Moreover, empirical asset pricing tests show that this pattern survives risk adjustment and - most importantly - it does not continue after the capital structure rebalancing. While LDR firms significantly increase physical investment after the transaction, the stock price run-up significantly predicts the decision to rebalance - even after controlling for the leverage prior to the rebalancing. In sum, we find market timing patterns even though they were unlikely to exist in the first place.

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Figure 1: **Investment dynamics of firms performing LDRs**

The figure displays three measures of investment for firms performing leverage decreasing recapitalizations (LDRs). LDRs consists of a net equity issue and a simultaneous debt retirement, both of which are measured relative to a size threshold which is set to 5% of book assets. The three investment measures are all scaled by the lagged value of book assets and include capital expenditures (I_{CX}), total cash financed investment (I_{CF}) and total investment into fixed assets (I_{FA}). The figure plots the subsequent values in event time of I_{CX}, I_{CF} and I_{CFA}. Exact variable definitions are given in Appendix Table 1. Total sample of 13,799 firms and 140,067 firm-years.

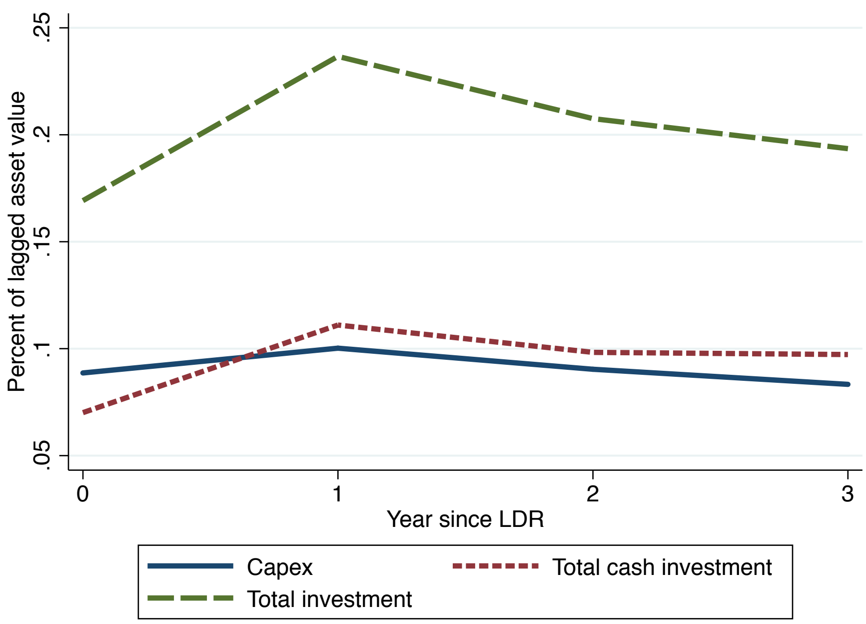

Table 1: **Yearly frequency of net equity issues and leverage decreasing recapitalizations**

The table summarizes the frequency of net equity issues (NEIs) and leverage decreasing recapitalizations (LDRs) which are defined using information from a firm's cash flow statement. NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. LDRs further require a simultaneous net debt retirement (short and long term retirement net of issues, also in excess of 5% of assets). Public NEIs or LDRs additionally impose a simultaneous public equity issue (identified through SDC). Columns 1 to 5 display the number of firms, NEIs, public NEIs, LDRs and public LDRs. Columns 6 and 7 show the fraction of LDRs relative to NEIs. Exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

		NEI		*LDR*		*LDR/NEI*	
Year	Firms	All	Public	All	Public	All	Public
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1972	1,596	88	52	18	7	0.20	0.13
1973	1,889	39	16	10	3	0.26	0.19
1974	2,655	38	10	7	1	0.18	0.10
1975	2,701	60	23	19	6	0.32	0.26
1976	2,519	81	44	22	14	0.27	0.32
1977	2,642	78	14	17	2	0.22	0.14
1978	2,578	107	40	20	8	0.19	0.20
1979	2,701	130	44	31	12	0.24	0.27
1980	2,852	274	128	58	29	0.21	0.23
1981	2,870	311	159	62	30	0.20	0.19
1982	3,070	280	110	46	18	0.16	0.16
1983	3,132	623	346	132	78	0.21	0.23
1984	3,338	330	78	89	19	0.27	0.24
1985	3,366	414	135	93	22	0.22	0.16
1986	3,316	531	160	143	33	0.27	0.21
1987	3,470	478	130	141	37	0.29	0.28
1988	3,525	275	53	73	12	0.27	0.23
1989	3,408	325	84	83	27	0.26	0.32
1990	3,372	319	75	84	21	0.26	0.28
1991	3,368	462	190	149	78	0.32	0.41
1992	3,362	503	192	137	60	0.27	0.31
1993	3,603	646	242	163	66	0.25	0.27
1994	3,904	581	196	115	34	0.20	0.17
1995	4,125	731	242	113	46	0.15	0.19
1996	4,306	873	334	159	67	0.18	0.20
1997	4,611	808	280	139	53	0.17	0.19
1998	4,480	690	172	118	36	0.17	0.21
1999	4,153	718	181	110	34	0.15	0.19
2000	3,983	857	250	143	31	0.17	0.12
2001	3,840	582	303	112	62	0.19	0.20
2002	3,545	444	281	122	77	0.27	0.27
2003	3,293	537	344	107	69	0.20	0.20
2004	3,147	553	391	97	63	0.18	0.16
2005	3,051	461	267	68	45	0.15	0.17
2006	2,977	430	268	56	34	0.13	0.13
2007	2,854	395	244	57	31	0.14	0.13
2008	2,809	228	140	45	29	0.20	0.21
2009	2,691	346	254	106	87	0.31	0.34
2010	2,538	302	218	52	41	0.17	0.19
2011	2,469	301	195	53	33	0.18	0.17
2012	2,407	261	193	27	20	0.10	0.10
2013	2,360	324	232	43	34	0.13	0.15
2014	2,373	333	238	41	28	0.12	0.12
2015	2,433	401	276	55	39	0.14	0.14
2016	2,385	365	244	57	37	0.16	0.15
Avg.	3,254	436	187	88	38	0.21	0.21

Table 2: **Selected firm characteristics**

The table displays firm characteristics for firms performing a net equity issue (columns 1 and 2) or a leverage decreasing recapitalization (LDR, columns 3 and 4). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. LDRs further require a simultaneous net debt retirement (short and long term retirement net of issues, also in excess of 5% of assets). Public NEIs or LDRs additionally impose a simultaneous public equity issue (identified through SDC). The table displays average values of the following variables: the market leverage ratio (L), the book leverage ratio (BL), the fraction of all-equity financed firms (AE), the fraction of almost all-equity financed firms (AAE), the cash ratio (CR), the ratio of operating profits to assets ($Prof$), the ratio of R&D expenditures to assets (*R&D*), the ratio of capital expenditures to assets (*Capex*), the market-to-book ratio (Q) and the logarithm of assets (*Size*). Exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

	NEIs		LDRs		LDR - NEI	
	All	Public	All	Public	All	Public
	(1)	(2)	(3)	(4)	(5)	(6)
L (lagged)	0.15	0.15	0.29	0.28	0.13	0.13
L	0.14	0.13	0.18	0.15	0.04	0.03
BL (lagged)	0.22	0.21	0.38	0.36	0.15	0.15
BL	0.20	0.18	0.24	0.20	0.03	0.02
AE	0.18	0.19	0.08	0.10	-0.10	-0.09
AAE	0.48	0.50	0.35	0.38	-0.13	-0.13
CR	0.31	0.35	0.19	0.20	-0.12	-0.14
$Prof$	-0.16	-0.12	-0.08	-0.02	0.08	0.10
R&D	0.13	0.13	0.09	0.09	-0.04	-0.04
Capex	0.07	0.07	0.07	0.07	-0.01	0.00
Q	3.01	2.70	2.35	2.13	-0.65	-0.57
Size	3.90	4.60	3.91	4.71	0.01	0.11
N	17,913	8,068	3,592	1,613		

Table 3: **Net income, operating cash flow and the use of accounting accruals**

The table displays yearly average values of net income, operating cash flow, total and (estimated) discretionary accounting accruals in the year of a public net equity issue (NEI, columns 1 to 4) or a public leverage decreasing recapitalization (LDR, columns 5 to 8). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. LDRs further require a simultaneous net debt retirement (short and long term retirement net of issues, also in excess of 5% of assets). Public NEIs or LDRs additionally impose a simultaneous public equity issue (identified through SDC). Net income, operating cash flow and total cash accruals are all scaled by the lagged book value of assets, discretionary accruals are estimated using the modified Jones model. All four variables are defined as in Dechow et al. (1995) and the exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

	Public NEIs				Public LDRs			
Year	NI	OFF	TACC	DACC	NI	OFF	TACC	DACC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1972	0.10	0.01	0.10	0.06	0.14	0.09	0.05	0.03
1973	0.11	0.03	0.08	0.07	0.10	0.08	0.02	0.00
1974	0.09	-0.05	0.14	0.11	0.04	0.03	0.01	-0.02
1975	0.13	0.12	0.00	0.03	0.12	0.21	-0.10	-0.05
1976	0.15	0.10	0.05	0.04	0.16	0.18	-0.03	-0.02
1977	0.13	0.02	0.11	0.08	0.13	0.08	0.06	0.00
1978	0.13	0.06	0.07	0.05	0.17	0.10	0.07	0.04
1979	0.11	0.05	0.06	0.04	0.10	0.05	0.05	0.01
1980	0.10	0.05	0.05	0.05	0.07	0.07	0.00	0.00
1981	0.08	0.04	0.04	0.06	0.10	0.08	0.02	0.02
1982	0.08	0.04	0.04	0.05	0.07	0.05	0.01	-0.01
1983	0.05	0.03	0.03	0.03	0.04	0.05	-0.01	-0.01
1984	0.02	-0.04	0.06	0.04	-0.05	-0.13	0.08	0.06
1985	0.05	-0.01	0.07	0.07	0.00	-0.03	0.03	0.01
1986	0.04	-0.01	0.05	0.05	0.02	0.00	0.03	0.03
1987	0.01	-0.02	0.04	0.04	0.07	0.08	-0.02	0.00
1988	0.03	-0.04	0.07	0.05	-0.02	-0.08	0.07	0.04
1989	0.02	-0.05	0.07	0.07	0.08	0.03	0.04	0.04
1990	-0.06	-0.05	0.00	0.03	-0.04	-0.04	0.00	0.02
1991	-0.03	-0.03	0.02	0.03	0.02	0.03	0.02	0.04
1992	-0.12	-0.11	0.01	0.03	0.02	0.04	0.00	0.01
1993	-0.11	-0.09	0.00	0.02	0.00	0.03	-0.03	0.01
1994	-0.11	-0.13	0.04	0.04	-0.10	-0.07	-0.01	0.01
1995	-0.04	-0.07	0.03	0.02	-0.02	-0.08	0.06	0.06
1996	-0.08	-0.09	0.03	0.03	0.01	0.01	0.02	0.02
1997	-0.05	-0.05	0.01	0.02	-0.01	0.02	0.00	0.01
1998	-0.07	-0.07	0.02	0.02	0.03	0.00	0.04	0.03
1999	-0.15	-0.09	-0.04	0.00	0.00	0.06	-0.05	-0.01
2000	-0.34	-0.25	-0.07	-0.03	-0.11	-0.08	-0.03	0.00
2001	-0.37	-0.27	-0.08	-0.02	-0.19	-0.11	-0.06	-0.01
2002	-0.31	-0.24	-0.05	-0.01	-0.12	-0.06	-0.06	-0.01
2003	-0.31	-0.25	-0.04	-0.01	-0.20	-0.15	-0.05	0.00
2004	-0.31	-0.25	-0.04	-0.01	-0.12	-0.08	-0.02	0.01
2005	-0.35	-0.30	-0.04	-0.01	-0.16	-0.11	-0.04	-0.01
2006	-0.34	-0.30	-0.03	-0.01	-0.26	-0.21	-0.02	0.00
2007	-0.39	-0.33	-0.05	-0.01	-0.35	-0.28	-0.05	-0.02
2008	-0.42	-0.36	-0.03	0.00	-0.34	-0.25	-0.03	0.00
2009	-0.36	-0.29	-0.05	-0.01	-0.21	-0.14	-0.06	-0.01
2010	-0.40	-0.34	-0.02	0.01	-0.34	-0.26	-0.05	-0.02
2011	-0.39	-0.33	-0.04	-0.02	-0.15	-0.11	-0.04	-0.02
2012	-0.45	-0.40	-0.03	0.01	-0.47	-0.40	-0.06	-0.02
2013	-0.46	-0.37	-0.06	-0.01	-0.31	-0.21	-0.08	-0.02
2014	-0.44	-0.38	-0.04	-0.01	-0.35	-0.32	-0.01	0.01
2015	-0.50	-0.44	-0.04	-0.01	-0.48	-0.39	-0.06	0.00
2016	-0.50	-0.41	-0.06	-0.01	-0.43	-0.33	-0.06	-0.01
Avg.	-0.21	-0.19	-0.01	0.01	-0.10	-0.07	-0.02	0.01
Avg. (pre 2000)	-0.02	-0.04	0.03	0.04	0.02	0.02	0.01	0.02
Avg. (post 1999)	-0.38	-0.32	-0.05	-0.01	-0.24	-0.18	-0.05	-0.01

Table 4: **LDRs and measures of financial reporting conservatism**

The table displays measures of financial reporting conservatism for LDR firms. Specifically, the table presents coefficient estimates of the generic regression

$$Cons_{i,t} = \alpha + \beta_1 LDR_{i,t} + \beta_2 NEI_{i,t} + \gamma_k + \eta_t + \epsilon_{i,t}$$

where $Cons$ is the measure of financial reporting conservatism introduced below, LDR and NEI are indicator variables denoting a leverage decreasing recapitalization or a net equity issue, γ_k are industry- and η_t year fixed effects. The measures of financial conservatism include a firm's $Cscore$ (column 1, Khan and Watts (2009)) and the ratios of restructuring costs (column 2), goodwill impairment (column 3), write downs (column 4), special items (column 5) and discontinued operations (column 6) to book equity. NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. LDRs further require a simultaneous net debt retirement (short and long term retirement net of issues, also in excess of 5% of assets). Exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

	$Cscore$ (1)	Restructuring Costs (2)	Goodwill Impairment (3)	Write down (4)	Special items (5)	Discontinued Operations (6)
Panel A: Univariate comparison of LDRs and NEIs						
α	0.1333**	-0.0019**	-0.0019**	-0.0011**	-0.0289**	-0.0026**
LDR	0.0229**	-0.0005**	-0.0010**	-0.0003*	-0.0120*	-0.0021*
NEI	-0.0046**	0.0003**	0.0006**	-0.0001	-0.0139**	-0.0011**
Year	no	no	no	no	no	no
Industry	no	no	no	no	no	no
R^2	0.00	0.00	0.00	0.00	0.00	0.00
N	140,067	140,067	140,067	140,067	140,067	140,067
Panel B: Multivariate comparison of LDRs and NEIs						
α	0.0984**	0.0012**	-0.001	-0.0004	-0.0226	-0.0082**
LDR	0.0160**	-0.0007**	-0.0010**	-0.0004**	-0.0136**	-0.0014
EI	-0.0044**	0.0005**	0.0004**	0	-0.0082**	-0.0019**
Year	yes	yes	yes	yes	yes	yes
Industry	yes	yes	yes	yes	yes	yes
R^2	0.15	0.11	0.06	0.07	0.02	0.00
N	140,067	140,067	140,067	140,067	140,067	140,067

Table 5: **Leverage decreasing recapitalizations, leverage and financial distress**

The table categorizes firms performing leverage decreasing recapitalizations (LDRs) into different leverage groups. In Panel A, the assignment is made using the quintile cutoff values of the lagged market leverage ratio distribution for the full sample of firms. In Panel B, cutoff values are chosen using the distribution of lagged market leverage relative to the industry median leverage ratio in the year preceding the issue (henceforth referred to as excess industry leverage). LDRs are defined as periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. The table displays average values of the following variables: the market leverage ratio (L), the estimated deviation from target leverage ($L - L^*$), the ratio of net equity issues (nei) and net debt retirements (ndi) relative to book assets (at), the estimated measure of financial reporting conservatism ($Cscore$), the ratio of operating profits to assets ($Prof$), the ratio of capital expenditures to assets ($Capex$), the ratio of R&D expenditures to assets ($R\&D$) and the market-to-book ratio (Q). The leverage target L^* is estimated using a rolling window regression of market leverage on lagged values of size, $Prof$, Q, the ratio of cash-to-assets, asset tangibility, $R\&D$, $Capex$, industry median leverage, time and firm fixed effects. The $Cscore$ is estimated following Kahn and Watts (2009), see Appendix. Exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

Quintiles (YL)	Fraction	Period $t-1$		Period t							
		L	$L - L^*$	L	nei/at	ndi/at	$Cscore$	$Prof$	$Capex$	$R\&D$	Q
	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)
Panel A: Y is based on market leverage											
1 (= low L)	0.02	0.00	-0.06	0.07	0.45	-0.12	0.13	-0.36	0.08	0.17	4.13
2	0.24	0.05	-0.05	0.04	0.59	-0.14	0.12	-0.27	0.07	0.17	3.90
3	0.26	0.17	-0.03	0.10	0.40	-0.19	0.13	-0.09	0.07	0.10	2.51
4	0.24	0.34	0.03	0.20	0.25	-0.17	0.16	0.02	0.07	0.05	1.63
5	0.24	0.63	0.15	0.41	0.19	-0.21	0.21	0.04	0.06	0.02	1.20
Avg(4 and 5)		0.49	0.09	0.31	0.22	-0.19	0.18	0.03	0.06	0.04	1.42
Panel B: Y is based on excess industry leverage											
1 (= low L)	0.11	0.12	-0.08	0.07	0.35	-0.14	0.08	-0.05	0.10	0.04	2.98
2	0.11	0.13	-0.04	0.09	0.38	-0.14	0.09	-0.09	0.09	0.08	3.17
3	0.16	0.15	-0.03	0.10	0.54	-0.15	0.12	-0.18	0.07	0.15	2.98
4	0.29	0.23	0.00	0.14	0.39	-0.18	0.15	-0.12	0.06	0.12	2.44
5	0.33	0.52	0.13	0.33	0.25	-0.22	0.21	-0.01	0.05	0.06	1.49
Avg(4 and 5)		0.37	0.06	0.24	0.32	-0.20	0.18	-0.06	0.06	0.09	1.97

Table 6: **(H1) LDRs and market timing patterns**

The table presents estimates of the correlation between leverage decreasing recapitalizations (LDRs) and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in columns 1 to 3) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in columns 4 to 6). Hypothesis H1 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$. The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. Finally, BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity and retires net debt for at least 5% of assets. Estimation is based on OLS regression (columns 1 and 4), firm fixed effects (columns 2 and 5) and cross-sectional Fama-MacBeth regressions (column 4 and 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	$Y_t^1 = Q_t^E$			$Y_t^2 = \Delta Q_t^E$		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
$Prof$	-1.074**	-0.422**	-0.666*	0.278**	0.280**	0.152
	(0.055)	(0.096)	(0.302)	(0.033)	(0.031)	(0.109)
$R\&D$	4.701**	4.688**	5.614**	0.166*	0.133*	-0.105
	(0.099)	(0.203)	(0.228)	(0.065)	(0.065)	(0.181)
$Capex$	2.142**	2.694**	2.082**	-0.611**	-0.899**	-0.595**
	(0.071)	(0.134)	(0.178)	(0.044)	(0.051)	(0.095)
BL	-0.617**	-0.271**	-0.553**	0.182**	0.187**	0.169**
	(0.024)	(0.047)	(0.059)	(0.014)	(0.015)	(0.033)
LDR	0.435**	0.312**	0.439**	-0.144**	-0.140**	-0.123**
	(0.034)	(0.028)	(0.049)	(0.023)	(0.023)	(0.027)
ΔX_t	yes	yes	yes	yes	yes	yes
ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	3,057	3,057	3,057	3,057	3,057	3,057
R^2	0.30	0.00	0.26	0.09	0.00	0.03
N	124,408	124,408	124,408	124,408	124,408	124,408

Table 7: **(H1) Public LDRs and market timing patterns**

The table presents estimates of the correlation between public LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in columns 1 to 3) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in columns 4 to 6). Hypothesis H1 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$. The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. Finally, BL is the book leverage ratio and I^* and LDR equals one in case the firm simultaneously issues net equity, retires net debt for at least 5% of assets and the equity issue is public. Estimation is based on OLS regression (columns 1 and 4), firm fixed effects (columns 2 and 5) and cross-sectional Fama-MacBeth regressions (column 4 and 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	$Y_t^1 = Q_t^E$			$Y_t^2 = \Delta Q_t^E$		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
$Prof$	-1.102**	-0.433**	-0.689*	0.286**	0.287**	0.161
	(0.055)	(0.096)	(0.303)	(0.033)	(0.031)	(0.109)
$R\&D$	4.718**	4.705**	5.663**	0.163*	0.128*	-0.115
	(0.099)	(0.203)	(0.233)	(0.065)	(0.065)	(0.183)
$Capex$	2.157**	2.697**	2.101**	-0.615**	-0.901**	-0.599**
	(0.071)	(0.135)	(0.180)	(0.044)	(0.051)	(0.095)
BL	-0.580**	-0.234**	-0.522**	0.173**	0.175**	0.161**
	(0.024)	(0.047)	(0.057)	(0.014)	(0.015)	(0.033)
LDR	0.192**	0.229**	0.291**	-0.118**	-0.124**	-0.098*
	(0.040)	(0.033)	(0.050)	(0.028)	(0.029)	(0.038)
ΔX_t	yes	yes	yes	yes	yes	yes
ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,452	1,452	1,452	1,452	1,452	1,452
R^2	0.29	0.14	0.26	0.09	0.09	0.03
N	124,408	124,408	124,408	124,408	124,408	124,408

Table 8: **(H2) LDRs and market timing patterns for firms with high leverage**

The table presents estimates of the correlation between LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in Panel A) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in Panel B). Hypothesis H2 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$ for financially distressed firms which we define as those for which the lagged market leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms (Panel A, Table 5). The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity, retires net debt for at least 5% of assets, Panel A or a public LDR (additionally requires the equity issue to be public, Panel B). Estimation is based on OLS regression (columns 1, 4), firm fixed effects (columns 2, 5) and cross-sectional Fama-MacBeth regressions (column 3, 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	All LDRs			Public LDRs		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Contemporaneous valuation level ($Y_t^1 = Q_t^E$)						
$Prof$	-0.365**	0.140**	-0.033	-0.394**	0.130**	-0.058
	(0.095)	(0.031)	(0.121)	(0.094)	(0.031)	(0.122)
$R\&D$	3.389**	2.986**	3.044**	3.415**	3.015**	3.088**
	(0.170)	(0.131)	(0.236)	(0.168)	(0.131)	(0.237)
$Capex$	0.906**	1.497**	0.830**	0.911**	1.492**	0.833**
	(0.048)	(0.053)	(0.085)	(0.048)	(0.053)	(0.085)
BL	1.141**	0.765**	1.106**	1.155**	0.780**	1.121**
	(0.023)	(0.018)	(0.041)	(0.023)	(0.018)	(0.040)
LDR	0.245**	0.171**	0.247**	0.220**	0.183**	0.218**
	(0.026)	(0.011)	(0.035)	(0.029)	(0.016)	(0.034)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,471	1,471	1,471	708	708	708
R^2	0.32	0.16	0.27	0.32	0.16	0.27
N	49,112	49,112	49,112	49,112	49,112	49,112
Panel B: Subsequent valuation change ($Y_t^2 = \Delta Q_t^E$)						
$Prof$	0.053	0.187**	-0.042	0.06	0.194**	-0.036
	(0.063)	(0.032)	(0.058)	(0.062)	(0.032)	(0.059)
$R\&D$	0.496**	0.530**	0.316	0.492**	0.510**	0.313
	(0.141)	(0.136)	(0.184)	(0.141)	(0.136)	(0.186)
$Capex$	-0.121**	-0.546**	-0.130	-0.122**	-0.543**	-0.132
	(0.041)	(0.054)	(0.066)	(0.041)	(0.054)	(0.067)
BL	-0.083**	-0.195**	-0.064**	-0.086**	-0.206**	-0.067**
	(0.016)	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)
LDR	-0.063**	-0.114**	-0.064**	-0.076**	-0.119**	-0.051
	(0.022)	(0.012)	(0.017)	(0.026)	(0.016)	(0.031)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,471	1,471	1,471	708	708	708
R^2	0.07	0.08	0.02	0.07	0.07	0.02
N	49,112	49,112	49,112	49,112	49,112	49,112

Table 9: **(H3) LDRs and market timing patterns for firms violating financial covenants**

The table presents estimates of the correlation between LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in columns 1 to 3) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in columns 4 to 6). Hypothesis H3 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$ for firms violating financial coventants. The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. Finally, BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity and retires net debt for at least 5% of assets. The identification of financial covenant violations is obtained from Nini et al. (2009). Results are displayed for the full sample of firms that violated covenants using OLS regression (columns 1 and 4), firm fixed effects (columns 2 and 5) and cross-sectional Fama-MacBeth regressions (column 4 and 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix table 1 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	$Y_t^1 = Q_t^E$			$Y_t^2 = \Delta Q_t^E$		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
$Prof$	-1.437**	-1.138**	-0.956	0.589**	0.608**	0.539**
	(0.267)	(0.305)	(0.456)	(0.161)	(0.163)	(0.142)
$R\&D$	4.507**	4.444**	4.518**	0.464	0.505	0.144
	(0.403)	(0.474)	(0.458)	(0.315)	(0.303)	(0.618)
$Capex$	2.604**	2.633**	2.504**	-0.493*	-0.533*	-0.589
	(0.301)	(0.400)	(0.550)	(0.229)	(0.238)	(0.378)
BL	0.045	-0.014	-0.044	0.006	0.005	0.006
	(0.096)	(0.117)	(0.075)	(0.062)	(0.063)	(0.090)
LDR	0.379**	0.394**	0.393*	-0.233**	-0.254**	-0.215*
	(0.122)	(0.109)	(0.130)	(0.084)	(0.087)	(0.098)
ΔX_t	yes	yes	yes	yes	yes	yes
ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	202	202	202	202	202	202
R^2	0.27	0.00	0.25	0.13	0.13	0.07
N	4,625	4,625	4,625	4,625	4,625	4,625

Table 10: **Stock return dynamics surrounding the LDR**

The table displays total stock returns surrounding the year of the leverage decreasing recapitalization (LDR, $t = 0$). Stock returns include capital gains and dividends, are in excess of the market return and are measured on a trailing basis relative to the year of the LDR. For example, the documented excess return $(r_i - r_m)$ for year -2 is the total excess return measured over the corresponding 36 months period (from the beginning of year $t = -2$ to the end of year $t = 0$). Panel A defines LDRs as periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. Public LDRs additionally impose a simultaneous public equity issue (obtained from SDC). Panel B defines highly levered LDRs as those for which the lagged market leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms (see Panel A, Table 5). Panel C defines highly excess levered LDRs by instead using the lagged market leverage relative to the industry median leverage as the underlying distribution (see Panel B, Table 5). Panel D defines LDRs violating financial covenants as those that are successfully merged with the sample of Nini et al. (2009). Exact variable definitions are given in Appendix Table 2. Total sample of 13,799 firms and 140,067 firm-years.

	$(r_i - r_m)$				
	-2	-1	0	1	2
Panel A: LDRs					
All	1.37	0.26	0.19	0.01	-0.04
N	2,705	3,154	3,592	3,165	2,769
Public	1.81	0.57	0.33	-0.01	-0.07
N	1,226	1,405	1,613	1,488	1,328
Panel B: High leverage LDRs					
All	1.07	0.18	0.29	0.03	0.02
N	1,409	1,579	1,720	1,517	1,324
Public	1.82	0.55	0.46	0.05	0.05
N	641	707	773	720	649
Panel C: High excess leverage LDRs					
All	1.23	0.17	0.24	0.04	0.00
N	1,779	2,028	2,231	1,940	1,674
Public	1.72	0.46	0.39	-0.01	-0.04
N	789	884	986	896	786
Panel D: Covenant violating LDRs					
All	1.56	0.06	0.24	0.01	0.00
N	157	186	202	201	172

Table 11: **Stock price run-ups and abnormal returns: cross-sectional evidence**

The table presents results when estimating cross-sectional return regressions (Fama and MacBeth, 1973) testing whether monthly stock returns in year t are higher when the firm performs a LDR next year $(t+1)$. That is, the following cross-sectional regression

$$(r_i - r_f) = cons + \beta_1 LDR_i + \beta_2 NEI_i^0 + \gamma X_i + \epsilon_i$$

is estimated each month and average coefficient estimates are reported below. The variable $(r_i - r_f)$ denotes a firm's total return in excess of the risk-free rate, *cons* is the regression intercept, LDRs are periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. The variable NEI^0 denotes all NEIs except for LDRs. Control variables include book-to-market (precisely its logarithm), size (logarithm of total market value of equity), two momentum factors, profitability, asset growth and R&D expenses. Panel A presents results for the full sample of firms, Panel B conditions on on highly levered firms (those for which the lagged market leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms). Exact variable definitions are given in Appendix Table 2. Total sample of 13,179 firms and 1,479,533 firm-months.

	(1)	(2)	(3)	(4)	(5)
Panel A: Full Sample					
LDR	0.010**	0.013**	0.014**	0.015**	0.015**
EI^0	0.009**	0.012**	0.014**	0.016**	0.015**
$log(BM)$		0.005**	0.005**	0.004**	0.005**
$log(EV)$		-0.001*	-0.001**	-0.001**	-0.001**
$Mom_{12,2}$		0.003	0.002	0.002	0.002
$Mom_{1,0}$		-0.058**	-0.059**	-0.060**	-0.061**
$Prof$			0.012**	0.016**	0.024**
ga				-0.013**	-0.012**
$R\&D$					0.045**
$cons$	0.008**	0.012**	0.013**	0.013**	0.011**
$R2$	0.001	0.001	0.001	0.002	0.003
N	1,479,533	1,472,790	1,472,790	1,472,790	1,472,790
Panel B: Highly levered firms					
LDR	0.017**	0.019**	0.019**	0.020**	0.020**
EI^0	0.010**	0.011**	0.012**	0.013**	0.013**
$log(BM)$		0.005**	0.005**	0.004**	0.004**
$log(EV)$		-0.002**	-0.002**	-0.002**	-0.001**
$Mom_{12,2}$		0.002	0.002	0.002	0.002
$Mom_{1,0}$		-0.059**	-0.060**	-0.061**	-0.061**
$Prof$			0.003	0.008	0.010*
ga				-0.013**	-0.013**
$R\&D$					0.029*
$cons$	0.006*	0.012**	0.012**	0.012**	0.011**
$R2$	0.001	0.002	0.002	0.003	0.003
N	651,265	647,427	647,427	647,427	647,427

Table 12: **Stock price run-ups and abnormal returns: portfolio based evidence**

The table presents monthly abnormal returns (α) of a strategy investing into firms which perform a leverage decreasing recapitalizations (LDRs) in the next year. LDRs are defined as periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. Abnormal returns are estimated relative to the CAPM [includes the market excess return (r_m)], the Fama and French three factor model [includes r_m, the the size factor (SMB) and the value factor (HML)] and the five factor model [includes the 3 FF factors plus investment (INV) and profitability (PROF)]. The sample is based on merging the annual sample of Compustat data with monthly stock returns using the CRSP database and imposing a four month lag between the date of the fiscal year-end (reported in Compustat) and the first monthly stock return (used from Crsp). Monthly market returns, risk-free rates and returns of the size, value, investment and profitability factors are obtained from Ken French's data library.

	CAPM		3 Factor Model		5 Factor Model	
	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
Panel A: Equal weighted portfolios						
α	1.06***	3.87	0.89***	3.96	1.00***	4.28
r_m	1.44***	20.29	1.21***	18.57	1.20***	18.83
SMB			1.37***	13.20	1.25***	13.14
HML			-0.06	-0.51	-0.11	-0.78
INV					0.21	0.99
PROF					-0.45***	-3.51
N	528		528		528	
R^2	0.52		0.72		0.73	
Panel B: Value weighted portfolios						
α	0.28	1.23	0.16	0.75	0.07	0.28
r_m	1.20***	17.91	1.12***	17.21	1.15***	16.70
SMB			0.57***	5.18	0.61***	5.93
HML			0.06	0.66	-0.01	-0.11
INV					0.16	0.86
PROF					0.18	1.41
N	528		528		528	
R^2	0.53		0.58		0.59	

Table 13: **LDRs and subsequent abnormal returns: cross-sectional evidence**

The table presents results when estimating cross-sectional return regressions (Fama and MacBeth, 1973) testing whether monthly stock returns in year t are higher when the firm performed a LDR in the previous year $(t-1)$. That is, the following cross-sectional regression

$$(r_i - r_f) = cons + \beta_1 LDR_i + \beta_2 NEI_i^0 + \gamma X_i + \epsilon_i$$

is estimated each month and average coefficient estimates are reported below. The variable $(r_i - r_f)$ denotes a firm's total return in excess of the risk-free rate, *cons* is the regression intercept, LDRs are periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. The variable NEI^0 denotes all NEIs except for LDRs. Control variables include book-to-market (precisely its logarithm), size (logarithm of total market value of equity), two momentum factors, profitability, asset growth and R&D expenses. Panel A presents results for the full sample of firms, Panel B conditions on on highly levered firms (those for which the lagged market leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms). Exact variable definitions are given in Appendix Table 2. Total sample of 13,179 firms and 1,479,533 firm-months.

	(1)	(2)	(3)	(4)	(5)
Panel A: Full Sample					
LDR	-0.003	-0.003*	-0.003*	-0.002	-0.002
EI^0	-0.010**	-0.009**	-0.009**	-0.004**	-0.005**
$log(BM)$		0.003**	0.003**	0.002**	0.003**
$log(EV)$		-0.001**	-0.001**	-0.001**	-0.001**
$Mom_{12,2}$		0.003	0.003	0.003	0.003
$Mom_{1,0}$		-0.057**	-0.058**	-0.059**	-0.060**
$Prof$			0.001	0.006	0.016**
ga				-0.010**	-0.009**
$R\&D$					0.051**
$cons$	0.011**	0.017**	0.016**	0.016**	0.014**
$R2$	0.000	0.001	0.001	0.001	0.002
N	1,479,533	1,472,790	1,472,790	1,472,790	1,472,790
Panel B: Highly levered firms					
LDR	-0.003	-0.003	-0.004	-0.003	-0.004
EI^0	-0.011**	-0.010**	-0.009**	-0.005**	-0.005**
$log(BM)$		0.003**	0.003**	0.003**	0.003**
$log(EV)$		-0.001**	-0.002**	-0.001**	-0.001**
$Mom_{12,2}$		0.004*	0.004	0.004	0.004
$Mom_{1,0}$		-0.054**	-0.054**	-0.055**	-0.055**
$Prof$			0.013*	0.018**	0.024**
ga				-0.012**	-0.011**
$R\&D$					0.074**
$cons$	0.011**	0.015**	0.015**	0.014**	0.012**
$R2$	0.000	0.001	0.001	0.001	0.002
N	582,620	577,958	577,958	577,958	577,958

Table 14: **LDRs and subsequent abnormal returns: portfolio based evidence**

The table presents monthly abnormal returns (α) of a strategy investing into firms which performed a leverage decreasing recapitalizations (LDRs) in the past fiscal year. LDRs are defined as periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are common and preferred stock issues net of dividends and repurchases, NDRs are short and long term debt retirement net of debt issues, both measured in excess of 5% of book assets. Abnormal returns are estimated relative to the CAPM [includes the market excess return (r_m)], the Fama and French three factor model [includes r_m, the the size factor (SMB) and the value factor (HML)] and the five factor model [includes the 3 FF factors plus investment (INV) and profitability (PROF)]. The sample is based on merging the annual sample of Compustat data with monthly stock returns using the CRSP database and imposing a four month lag between the date of the fiscal year-end (reported in Compustat) and the first monthly stock return (used from Crsp). Monthly market returns, risk-free rates and returns of the size, value, investment and profitability factors are obtained from Ken French's data library.

	CAPM		3 Factor Model		5 Factor Model	
	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
Panel A: Equally weighted portfolios						
α	-0.04	-0.18	-0.17	-0.83	-0.03	-0.15
r_m	1.46***	23.21	1.24***	21.64	1.20***	19.85
SMB			1.23***	14.50	1.14***	13.67
HML			-0.12	-1.20	-0.06	-0.47
INV					-0.09	-0.43
PROF					-0.34**	-3.18
N	527		527		527	
R^2	0.56		0.73		0.74	
Panel B: Value weighted portfolios						
α	0.00	0.01	0.12	0.57	0.20	0.92
r_m	1.23***	17.28	1.08***	13.22	1.06***	12.91
SMB			0.46***	3.42	0.42***	3.53
HML			-0.39**	-2.89	-0.34	-1.91
INV					-0.08	-0.42
PROF					-0.16	-1.04
N	527		527		527	
R^2	0.54		0.60		0.60	

Table 15: **Predicting LDRs**

The table presents estimates of a logit regression predicting a LDR in period t based on

$$LDR_{i,t} = \alpha + \beta_1 runup_{i,t-v} + \beta_2 \frac{dInv_{t+v}}{A_t} + \gamma X_{i,t} + \epsilon_{i,t},$$

where $LDR_{i,t}$ takes a value of one if firm i undertakes at least a LDR in year t, $runup_{i,t-v}$ is the total abnormal stock return measured from $t-v$ to t and $dInv_{t+v} = Inv_{t+v} - Inv_t$ is the change in physical investment following the LDR period. The vector X of controls contains a standard choice of firm characteristics (market leverage, L, $Prof$, $Capex$, $R\&D$, Q, $Size$ which are explained in Appendix Table 2. All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	$v=1$		$v=2$		$v=3$	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Full Sample						
$runup_{t-v}$	0.196**	0.157**	0.099**	0.114**	0.015**	0.015**
	(12.415)	(9.987)	(9.140)	(10.461)	(5.857)	(5.954)
$dInv_{t+v}$	1.021**	0.782**	0.821**	0.555**	0.748**	0.514**
	(18.374)	(14.243)	(16.447)	(10.988)	(16.255)	(10.811)
L_{t-1}		1.759**		1.788**		1.791**
		(21.908)		(19.589)		(17.228)
$Prof_{t-1}$		-1.047**		-1.266**		-1.248**
		(-11.498)		(-11.665)		(-9.568)
$Capex_{t-1}$		1.278**		1.606**		1.989**
		(5.750)		(6.179)		(6.526)
$R\&D_{t-1}$		0.539**		0.503*		0.409
		(2.770)		(2.194)		(1.469)
Q_{t-1}		0.092**		0.073**		0.096**
		(9.258)		(6.050)		(6.798)
$Size_{t-1}$		-0.174**		-0.179**		-0.171**
		(-16.415)		(-14.918)		(-12.584)
N	124,408	124,408	102,208	102,208	84,999	84,999
Panel B: High leverage firms						
$runup_{t-v}$	0.248**	0.216**	0.149**	0.162**	0.030**	0.030**
	(10.518)	(8.923)	(7.623)	(8.249)	(4.841)	(4.705)
$dInv_{t+v}$	1.282**	1.066**	0.954**	0.695**	0.915**	0.700**
	(15.174)	(12.516)	(12.722)	(8.848)	(13.798)	(9.938)
L_{t-1}		0.603**		0.778**		0.655**
		(3.750)		(4.335)		(3.245)
$Prof_{t-1}$		-1.168**		-1.363**		-1.361**
		(-6.037)		(-5.932)		(-4.999)
$Capex_{t-1}$		-0.315		-0.279		-0.214
		(-0.888)		(-0.684)		(-0.450)
$R\&D_{t-1}$		1.999**		2.324**		2.299**
		(4.408)		(4.510)		(3.894)
Q_{t-1}		0.764**		0.776**		0.793**
		(14.746)		(12.808)		(11.721)
$Size_{t-1}$		-0.121**		-0.121**		-0.103**
		(-8.443)		(-7.567)		(-5.771)
N	49,112	49,112	41,326	41,326	34,820	34,820

Appendix Table 1: Sample selection

Sample restriction	Observations	Firms
Annual CRSP/Compustat (CCM) sample, 1971-2016		
Initial CCM sample	272,438	24,419
U.S. domiciled firms only	-24,275	-2,433
Nongovernmental, industrial firms only[a]	-72,473	-5,930
No multiple annual observations	-479	-18
No missing information on book value of assets	-1,739	0
Consistent cash-flow statement data[b]	-1,472	-289
Consistent other financial statement data[c]	-3,490	-95
Lagged information	-16,867	-1,127
Merge CRSP and SDC	-8,831	-610
Twelve months trailing stock returns	-2,745	-118
Final Sample	140,067	13,799

[a] Eliminates utilities (SIC codes 4899-5000), financial firms (SIC codes 5999-7000), and government entities (SIC codes greater than 8999).

[b] For cash-flow data consistency, we first set missing entries for items in the cash flow statement to zero and then drop observations in case total sources or uses of funds equal zero or deviate by more than 1% from each other.

[c] For balance sheet data consistency, we require non-missing data for the market value of the firm's equity, Tobin's Q, total debt, cash holdings, property plant and equipment, operating profits and book equity.

[d] We require availability on stock return data, that the firm is listed on the NYSE, AMEX or Nasdaq (requiring that exchange codes equal either 1, 2 or 3) or dropping firms for which the share code does not equal 10 or 11.

Appendix Table 2: Variable construction using database mnemonics

The table displays the definition of the variables employed in this paper using the original database mnemonics. Panel A refers to the Crisp/Compusted merged database (CCM), Panel B to CRSP and Panel C to the data library of Kenneth French.

Variable Name	Description
A: Compustat variables	
L	*Market leverage*: (dlcc + dlt)/(prcc$_f * csho + dlcc + dlt$)
BL	*Book leverage*: (dlcc + dlt)/at
C	*Cash ratio*: che/at
$Size$	log(at)
$Prof$	*Profitability*: (oibdp)/at
Tan	*Tangibility*: ppent/at
Q	*Tobin's Q*: (prcc$_f * csho + dlcc + dlt)/at$
Q^E	*Excess Q*: $Q - 1$
R&D	xrd/at
Capex	capx/at
NI	ib/lag(at)
$TACC$	(ca - che - lag(ca - che) - (lct - dlc - lag(lct - dlc)) - dp)/lag(at)
OFF	NI - TACC
$DACC$	Dechow et al. (1995): residuals from cross-sectional regressions for each industry year of TACC on 1/lag(at), (sale -lag(sale) - rect - lag(rect))/lag(at)and ppegt/lag(at)
I_{CX}	capx/lag(at)
I_{CF}	(inv_total + ivstch)/lag(at)
I_{FA}	(fa - lag(fa) + dpc + esubc + sppiv + fopo + (xidoc - xido))/lag(at)
g_a	(at - lag(at))/lag(at)
EI	*Equity Issues*: sstk
ER	*Distributions to equity-holders*: dv + prstkc
ndi	dltis + dlcch - dltr
nei	*Equity issue minus equity distributions*: EI - ER
$C - Score$	Estimation of the variable follows Kahn and Watts (2009), see page 135
Restructuring costs	rca/seq
Goodwill impairment	gdwlia/seq
Write downs	wda/seq
Special items	spi/seq
Discontinued operations	do/seq
B: CRSP variables	
r_i	*Stock return*: ret - rf
$Mom_{12,2}$	Total return from month $s - 12$ to $s - 2$
$Mom_{1,0}$	Total return from month $s - 1$ to s
C **B: Ken French data library**	
r_f	*risk-free rate*: rf
r_m	*market factor*: mktrf
SMB	*size factor*: smb
HML	*value factor*: hml
INV	*investment factor*: inv
$PROF$	*profitability factor*: prof

Appendix Table 3: **(H1) LDRs and market timing patterns: two-year horizon**

The table presents estimates of the correlation between LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in columns 1 to 3) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in columns 4 to 6). Hypothesis H1 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$. The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+2}) denotes the two year lag (lead) change for the three variables $prof$, rd and $capex$. Finally, BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity and retires net debt for at least 5% of assets. Estimation is based on OLS regression (columns 1 and 4), firm fixed effects (columns 2 and 5) and cross-sectional Fama-MacBeth regressions (column 4 and 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	$Y_t^1 = Q_t^E$			$Y_t^2 = \Delta Q_t^E$		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
$Prof$	-0.983**	-0.297**	-0.575	0.354**	0.323**	0.229
	(0.061)	(0.104)	(0.309)	(0.044)	(0.055)	(0.159)
$R\&D$	4.474**	4.481**	5.231**	0.268**	0.146	-0.206
	(0.109)	(0.217)	(0.253)	(0.087)	(0.117)	(0.257)
$Capex$	1.917**	2.358**	1.895**	-0.797**	-1.247**	-0.801**
	(0.076)	(0.138)	(0.184)	(0.059)	(0.085)	(0.138)
BL	-0.678**	-0.322**	-0.612**	0.306**	0.314**	0.287**
	(0.025)	(0.049)	(0.060)	(0.019)	(0.027)	(0.043)
LDR	0.452**	0.337**	0.468**	-0.283**	-0.278**	-0.243**
	(0.037)	(0.031)	(0.054)	(0.029)	(0.030)	(0.043)
ΔX_t	yes	yes	yes	yes	yes	yes
ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	2,683	2,683	2,683	2,683	2,683	2,683
R^2	0.30	0.14	0.26	0.10	0.10	0.05
N	111,645	111,645	111,645	111,645	111,645	111,645

Appendix Table 4: (H2) LDRs and market timing patterns for firms with excess industry leverage

The table presents estimates of the correlation between LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in Panel A) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in Panel B). Hypothesis H2 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$ for financially distressed firms which we define as those for which the lagged excess industry leverage ratio is placed in the upper two quintiles of the leverage ratio distribution for the entire sample of firms (Panel B, Table 5). The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity, retires net debt for at least 5% of assets (Panel A) or a public LDR (additionally requires the equity issue to be public, Panel B). Estimation is based on OLS regression (columns 1, 4), firm fixed effects (columns 2, 5) and cross-sectional Fama-MacBeth regressions (column 3, 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	All LDRs			Public LDRs		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Contemporaneous valuation level ($Y_t^1 = Q_t^E$)						
$Prof$	-0.627**	-0.001	-0.322*	-0.675**	-0.024	-0.359**
	(0.088)	(0.042)	(0.128)	(0.088)	(0.042)	(0.131)
$R\&D$	5.080**	3.920**	4.498**	5.108**	3.953**	4.540**
	(0.142)	(0.113)	(0.275)	(0.142)	(0.114)	(0.276)
$Capex$	0.944**	1.944**	0.878**	0.954**	1.949**	0.883**
	(0.069)	(0.091)	(0.131)	(0.070)	(0.091)	(0.133)
BL	0.946**	0.784**	0.901**	0.969**	0.820**	0.924**
	(0.031)	(0.027)	(0.039)	(0.031)	(0.027)	(0.039)
LDR	0.364**	0.266**	0.320**	0.240**	0.212**	0.240**
	(0.035)	(0.016)	(0.039)	(0.044)	(0.023)	(0.039)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,874	1,874	1,874	873	873	873
R^2	0.36	0.16	0.31	0.36	0.15	0.31
N	48,667	48,667	48,667	48,667	48,667	48,667
Panel B: Subsequent valuation change ($Y_t^2 = \Delta Q_t^E$)						
$Prof$	0.106	0.125**	0.064	0.119*	0.138**	0.074
	(0.059)	(0.041)	(0.066)	(0.059)	(0.041)	(0.067)
$R\&D$	0.236*	-0.132	0.137	0.233*	-0.147	0.129
	(0.104)	(0.110)	(0.174)	(0.104)	(0.110)	(0.176)
$Capex$	-0.296**	-0.888**	-0.272**	-0.296**	-0.888**	-0.267**
	(0.055)	(0.088)	(0.086)	(0.055)	(0.088)	(0.087)
BL	-0.074**	-0.161**	-0.057**	-0.079**	-0.176**	-0.061**
	(0.021)	(0.026)	(0.020)	(0.021)	(0.026)	(0.020)
LDR	-0.124**	-0.150**	-0.098**	-0.153**	-0.176**	-0.064
	(0.026)	(0.016)	(0.029)	(0.033)	(0.022)	(0.048)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,874	1,874	1,874	873	873	873
R^2	0.07	0.08	0.02	0.07	0.08	0.02
N	48,667	48,667	48,667	48,667	48,667	48,667

Appendix Table 5: (H2) LDRs and market timing patterns for firms with excess target leverage

The table presents estimates of the correlation between LDRs and equity valuations and is based on

$$Y_t^j = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \epsilon$$

where the superscript j distinguishes between the level regression ($Y_t^1 = Q_t^E$ in Panel A) and the changes regression ($Y_t^2 = \Delta Q_t^E$ in Panel B). Hypothesis H2 predicts that $\delta_1 \leq 0$ and $\delta_2 \geq 0$ for financially distressed firms which we define as those for which the deviation from a leverage target L^* is positive. The target L^* is estimated using a rolling window regression of market leverage on lagged values of size, $Prof$, Q, the ratio of cash-to-assets, asset tangibility, $R\&D$, $Capex$, industry median leverage, time and firm fixed effects.The variables $Prof$, RD, $Capex$ denote the ratios of $prof$, rd and $capex$ to book assets (A). The compact notation dX_t (dX_{t+1}) denotes the one year lag (lead) change for the three variables $prof$, rd and $capex$. BL is the book leverage ratio and LDR equals one in case the firm simultaneously issues net equity, retires net debt for at least 5% of assets (Panel A) or a public LDR (additionally requires the equity issue to be public, Panel B). Estimation is based on OLS regression (columns 1, 4), firm fixed effects (columns 2, 5) and cross-sectional Fama-MacBeth regressions (column 3, 6). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Appendix Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively. Total sample of 13,799 firms and 140,067 firm-years.

	All LDRs			Public LDRs		
	OLS	FE	FMB	OLS	FE	FMB
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Contemporaneous valuation level ($Y_t^1 = Q_t^E$)						
$Prof$	-0.881**	0.005	-0.669**	-0.903**	-0.002	-0.691**
	(0.089)	(0.050)	(0.188)	(0.089)	(0.050)	(0.188)
$R\&D$	5.227**	4.747**	5.711**	5.248**	4.761**	5.790**
	(0.150)	(0.124)	(0.278)	(0.150)	(0.124)	(0.290)
$Capex$	1.728**	2.414**	1.739**	1.746**	2.423**	1.752**
	(0.098)	(0.131)	(0.166)	(0.098)	(0.131)	(0.167)
BL	-0.385**	0.209**	-0.334**	-0.359**	0.237**	-0.310**
	(0.036)	(0.037)	(0.072)	(0.036)	(0.037)	(0.071)
LDR	0.277**	0.195**	0.291**	0.049	0.104**	0.088
	(0.044)	(0.027)	(0.062)	(0.048)	(0.038)	(0.060)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,495	1,495	1,495	687	687	687
R^2	0.32	0.14	0.29	0.32	0.13	0.28
N	50,642	50,642	50,642	50,642	50,642	50,642
Panel B: Subsequent valuation change ($Y_t^2 = \Delta Q_t^E$)						
$Prof$	0.249**	0.141**	0.231**	0.258**	0.146**	0.240**
	(0.052)	(0.043)	(0.054)	(0.052)	(0.043)	(0.054)
$R\&D$	0.111	-0.333**	-0.016	0.106	-0.343**	-0.039
	(0.098)	(0.105)	(0.205)	(0.098)	(0.105)	(0.211)
$Capex$	-0.497**	-1.333**	-0.567**	-0.499**	-1.338**	-0.565**
	(0.062)	(0.111)	(0.088)	(0.062)	(0.111)	(0.088)
BL	0.116**	-0.008	0.113**	0.108**	-0.027	0.107**
	(0.021)	(0.032)	(0.032)	(0.021)	(0.032)	(0.032)
LDR	-0.121**	-0.150**	-0.110**	-0.095*	-0.114**	-0.065
	(0.030)	(0.023)	(0.040)	(0.037)	(0.032)	(0.048)
ΔX_t, ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	no	yes	yes	no	yes	yes
LDR	1,495	1,495	1,495	687	687	687
R^2	0.08	0.08	0.03	0.08	0.08	0.03
N	50,642	50,642	50,642	50,642	50,642	50,642