Equity issues, creditor control and market timing patterns: evidence from leverage decreasing recapitalizations*

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Abstract

We contribute to the literature on "market timing" by exploring periods of simultaneous equity issues and debt retirements (a leverage decreasing recapitalization, LDR). Contrary to traditional equity issues, LDRs are predicted by measures of creditor control whereas capital investment has no such predictive power. Nevertheless, LDRs occur after stock price run-ups and in periods of high valuation which subsequently decrease. The valuation dynamics are robust and also obtain for subsamples of LDR firms violating financial covenants. A comparison to debt retirements financed by illiquid asset sales and an analysis of discretionary cost items further corroborates the interpretation that LDR firms successfully "time the market" to finance the debt retirement.

Keywords: equity issue; market timing; creditor control; financial reporting conservatism; covenants; pro-forma cash holdings

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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 seasoned equity offerings (SEOs) 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 interpretation of these "valuation patterns".

In particular the literature is heavily split between two alternative explanations. The market timing view asserts that equity issues are driven by managerial attempts to exploit temporary overvaluation of stocks (Baker and Wurgler, 2002; Bradshaw et al., 2006; Kim and Weisbach, 2008; Dong et al., 2012; Lewis and Tan, 2016; Baker and Xuan, 2016; Huang and Ritter, 2019). On the other hand, the patterns described above can also arise when market participants are rational as the exercise of growth opportunities (capital investment) can rationalize such stock price dynamics (Carlson et al., 2004, 2006, 2010; Leary and Roberts, 2005; DeAngelo et al., 2010; Butler et al., 2011).

We contribute to this debate by exploring valuation patterns of firms which issue equity and use a significant amount of the proceeds to actively retire debt (a so-called leverage decreasing recapitalization, LDR). LDRs are interesting transactions as they are typically rationalized by the exercise of creditor control rights (Smith and Warner, 1979; Aghion and Bolton, 1992; Dewatripont and Tirole, 1994; Nini et al., 2009).[1] For example, covenants may stipulate maximum leverage ratios and may allocate state contingent control rights to creditors. Hence, covenant violations result in a sharp reduction of corporate leverage (Roberts and Sufi, 2009), an increase in financial

[1]While the pecking order theory of Myers and Majluf (1984) predicts debt retirements to restore debt capacity, such a debt retirement would never be financed with a costly equity issue. Also, dynamic trade-off theory of capital structure does not predict LDRs outside of bankruptcy or strategic debt renegotiation as the transaction transfers wealth from shareholders to bondholders (Fischer et al., 1989; Admati et al., 2018). Financial flexibility based theories of capital structure are also unlikely behind the decision to do a LDR. Exploring a large sample of ∼10,000 U.S. publicly listed corporations over the period 1950-2012, DeAngelo et al. (2018) show that most firms deleverage from their historical peak leverage to almost zero debt. These leverage reductions occur in small steps over multiyear horizons and "decisions to issue shares typically make a small direct contribution to reducing (leverage) ratios in the deleveraging episodes we study" (pg. 3135).

reporting conservatism (Tan, 2013) and a decline of capital investment (Chava and Roberts, 2008).

The focus on creditor control achieves two objectives which are important for our contribution to the literature. First, it breaks the link between capital investment and the underlying equity issue. Thus, whatever the valuation pattern surrounding LDRs - it unlikely reflects variations in capital investment. Second, since financial contracts may specify maximum leverage ratios but are silent as to how firms should delever, our research design does not preclude a market timing motive for the underlying equity issue. For example, upon breach of a contract, firms can finance a debt retirement by selling assets or issuing equity. Hence, exploring valuation patterns of LDR firms allows for a clean test of the market timing ability of these firms.

The first hypothesis (H1) which we test is based on the intuitive notion that LDRs reflect the presence of creditor control (as opposed to capital investment). In general, creditors can exercise control in different ways. First, there is a direct channel as the violation of covenants transfers control rights to creditors (Nini et al., 2009). Second, creditors can exert control indirectly by demanding financial reporting conservatism. The latter effect is particularly relevant for firms with excessive leverage since the corresponding agency costs lead to misaligned incentives of shareholders and creditors (Jensen and Meckling, 1976; Myers, 1977). Hence, creditors may require verifiable lower bounds for accounting numbers (used in covenants) which translates into a higher contracting demand for financial reporting conservatism (Watts, 2003; Khan and Watts, 2009).

Our empirical analysis therefore employs financial reporting conservatism and excessive leverage as an indirect measure of creditor control and uses covenant violations as a direct measure to isolate periods when creditors precisely obtain such control. Consistent with H1, we then show that both measures predict LDRs, whereas capital investment has no such predictive power. Moreover, and reassuringly, average capital investment is close to zero for over-leveraged LDR firms exhibiting high financial reporting conservatism or LDR firms violating financial covenants. These findings suggest that LDRs differ from the average equity issue which typically raises significant amounts to finance future investment.

Theoretically, investment financing helps explain why equity issues occur after stock-price run-

ups and are subject to subsequent underperformance. Using real option theory, Carlson et al. (2004, 2006, 2010) show that firms optimally exercise growth options only after these options sufficiently move into the money. As a consequence, the optimal time to invest (and raise external equity) coincides with a recent increase in the firm's stock price. Moreover, the exercise of the growth option translates into physical investment by the firm which in turn reduces its risk (since risky growth options are now replaced with less risky assets-in-place). Empirically, it follows that equity issues financing investment should naturally occur after stock price run-ups and are subject to subsequent underperformance.

The second hypothesis (H2) of our paper therefore postulates that LDRs should not occur after stock price run-ups or in periods of high valuation which subsequently decrease (henceforth referred to as market timing patterns). Theoretically, H2 exploits the missing link of the LDR to investment which was established in H1. Since creditor control (as opposed to investment) drives the LDR, our null hypothesis is that managers have no systematic ability to time the financing decision of the underlying debt retirement.

However, the empirical evidence strongly rejects H2 as we provide detailed evidence that LDR periods do exhibit market timing patterns. These findings occur both when exploring annual dynamics of the market-to-book ratio (Fama and French, 1998) or when investigating monthly stock return dynamics (Fama and MacBeth, 1973; Fama and French, 1993, 2015). The former measure has the advantage of reflecting firm value and is therefore unaffected by a potential wealth transfer from stock- to bondholders (Eberhart and Siddique, 2002), while the latter allows us to specifically control for leverage and other risk factors known to affect equity issuer returns (Lewis and Tan, 2016). Importantly, similar valuation patterns also exist among subsamples of over-leveraged LDR firms exhibiting a high degree of financial reporting conservatism or LDR firms violating financial covenants.

Exploring the reason behind the rejection of H2, we compare LDRs to debt retirements which are financed using asset sales and further discuss the role of discretionary expenditures. Following Eckbo and Kisser (2021b), we focus on illiquid asset sales during periods of net debt retirements

and show that these events generate significant funding and occur roughly at the same yearly frequency as LDRs. The common time trend aside, however, several firm characteristics suggest that these asset sales reflect a high level of financial distress (Lang et al., 1995). Relatedly, they occur during periods of low valuation ratios and downward trending stock returns.

To further corroborate the notion that LDR firms choose to issue equity to capitalize on the recent stock price performance, we compute pro-forma cash holdings assuming LDR firms rely on alternative sources of funding for the debt retirement.[2] In particular, we focus on the potential role of asset sales as well as a potential reduction in discretionary expenditures. The latter is motivated by empirical evidence suggesting management views R&D and advertising expenditures as discretionary costs they are willing to reduce in order to meet earnings targets (Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010). Our analysis suggests that decreasing discretionary costs or selling assets would have allowed LDR firms to perform the net debt retirement and continue operations with significant cash holdings. While not a formal proof, these findings support the market timing interpretation following the robust empirical rejection of H2.

Our paper makes two important contributions to the literature. First, it adds to prior market timing studies conditioning on the use of equity issue proceeds. For example, Autore et al. (2009) investigate the relation between the stated use of proceeds and the subsequent long-term stock and operating performance of the issuer. Exploring a sample of 257 issuers over the period from 1997 to 2003, they find significant negative performance if a seasoned equity offering (SEO) finances a recapitalization. Hertzel and Li (2010) decompose a firm's market-to-book ratio into components reflecting over-valuation and growth opportunities and show that debt reductions are more likely to follow SEOs in case the firm was estimated to be overvalued. The main contribution of our paper is to link LDRs to measures of creditor control. This allows us to identify subsamples for which contemporaneous investment financing is empirically absent, as is the case for over-leveraged LDRs

[2]Our analysis shares the same spirit as the pro-forma cash balance analysis in DeAngelo et al. (2010). However, since the computation of pro-forma cash balances is a standard textbook tool we do not replicate the former paper but instead adapt the general analysis to our setting.

exhibiting high financial reporting conservatism or those during periods of covenant violations. Hence, our analysis of valuation ratios and abnormal stock returns adds to the literature as it is not confounded by investment financing effects which have plagued the literature (Carlson et al., 2004, 2006, 2010).

Second, we add to the literature on covenant violations. A main finding of this literature is that, on average, covenant violating firms exhibit inferior operating and stock price performance during the periods leading up to the violation (Nini et al., 2009; Roberts and Sufi, 2009). Our main contribution to this literature is to provide systematic evidence that covenant violating firms which choose to do a LDR exhibit market timing patterns. These findings are entirely new to the literature and show that not all covenant violations follow periods of declining stock price performance. Relatedly, we further corroborate the market timing interpretation of our results by comparing LDRs to a sample of debt retirements financed by asset sales.

The paper proceeds as follows. Section 2 summarizes the literature and develops the hypotheses. Section 3 presents the sample and provides descriptive evidence on LDRs. Section 4 establishes the link between creditor control and the LDR (H1), whereas Section 5 investigates whether LDRs exhibit market timing patterns (H2). Section 6 compares LDRs to debt retirements financed by asset sales and discusses whether those patterns are in fact evidence of market timing. Section 7 concludes the paper.

2 Related Literature and Hypothesis Development

2.1 Creditor control, capital investment and recapitalizations

Agency conflicts between shareholders and lenders are particularly important when firms are highly levered. In this case, shareholders have an incentive to increase firm risk and "gamble for resurrection", to underinvest in profitable (low-risk) investment projects or to avoid pro-active debt retirements outside of bankruptcy or strategic debt renegotiation (Jensen and Meckling,

1976; Myers, 1977; Admati et al., 2018).[3] These costs can be mitigated through the ex-ante use of financial contracts and conservative financial reporting (Smith and Warner, 1979; Hart, 2001; Watts, 2003).

Put differently, financial contracting theory rationalizes active leverage decreasing rebalancings (simultaneous equity issues and debt retirements). For example, bond covenants or agreements with private creditors can induce shareholders to credibly commit to and execute active leverage reductions. Relatedly, Roberts and Sufi (2009) provide important evidence that covenant violations are followed by a decrease in corporate leverage. Moreover, the allocation or exercise of creditor control rights also impacts capital investment. Nini et al. (2009) find that creditors impose investment restrictions when the borrower's credit quality deteriorates and Chava and Roberts (2008) show that investment declines sharply after covenant violations.

Financial contracting also generates demand for financial reporting conservatism (Watts, 2003), in particular when agency costs of leverage are high. This is because reporting conservatism generates verifiable lower bounds for accounting numbers used in debt contracts (Khan and Watts, 2009) and, thus, should help constrain opportunistic diversion of resources. Moreover, creditors have an additional need for information and verification in case contracts are not upheld (Townsend, 1979; Tirole, 2006) and Tan (2013) provides corresponding evidence that financial reporting conservatism increases following covenant violations.

2.2 Market Timing versus Growth Opportunities

The empirical literature has produced ample evidence that equity issues occur after stock price run-ups which level off or decrease following a seasoned equity offering (Asquith and Mullins, 1986; Masulis and Korwar, 1986; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Eckbo

[3]The increase in firm risk is optimal because equity holders capture the full upside potential, whereas the downside risk is fully born by the firm's creditors (Jensen and Meckling, 1976). The underinvestment problem arises if equity holders bear the cost of the investment while the benefits are shared with debtholders (Myers, 1977). The reluctance to actively rebalance capital structure to a lower leverage ratio exists because the transaction transfers wealth from equityholders to debtholders (Fischer et al., 1989; Goldstein et al., 2001; Admati et al., 2018). Relatedly, equity financed debt retirements are not predicted by the pecking order or dynamic financing and investment models (Danis et al., 2014; Eckbo and Kisser, 2021a). Similarly, the long-term leverage reductions under flexibility based capital structure theories tend not to be financed with external equity (DeAngelo et al., 2018).

et al., 2007). However, the literature vividly disagrees as to whether market timing or capital investment explains these patterns.

For example, Baker and Wurgler (2002) suggest that market timing efforts drive equity issues and thereby have a long-lasting impact on corporate capital structures. Leary and Roberts (2005), on the other hand, conclude that the high valuations reflect growth opportunities and 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 behaviour is consistent with market timing efforts. DeAngelo et al. (2010) instead suggest that the increase in cash reflects investment needs and that - without the SEO - firms would have quickly run out of funds. Finally, Dong et al. (2012) control for both growth opportunities and a computed overvaluation measure and suggest again that mispricing drives financing decisions.[4]

Empirical studies of stock returns are equally subject to disagreement. Bradshaw et al. (2006) show that external financing correlates negatively with future stock returns and positively with overoptimism in analyst forecast. On the other hand, Butler et al. (2011) find that investment based factor models explain the negative stock return of firms doing SEOs. Lewis and Tan (2016) again show that managers are more likely to issue equity when analysts are optimistic about long-term growth prospects and that abnormal stock returns become negative after controlling for research and development expenses. Finally, Huang and Ritter (2019) show that the frequency and size of equity (and debt) issues are negatively correlated with future abnormal stock returns, suggesting again a market timing story.

In sum, the literature agrees on the valuation patterns but almost every single empirical paper supporting one particular interpretation (market timing or growth opportunities) is followed by another study providing supporting evidence of the alternative view (growth opportunities or market timing). Theoretical real-option models further reinforce this tension. Carlson et al.

[4]Relatedly, Baker and Xuan (2016) provide evidence suggesting that the likelihood to issue equity in response to past stock return performance is higher when those returns are generated during the current tenure of the chief executive officer.

(2004, 2006, 2010) show that firms optimally exercise growth options only after these options sufficiently move into the money. As a consequence, the optimal time to invest (and raise external equity) coincides with a recent increase in the firm's stock price. Moreover, the exercise of the growth option translates into physical investment by the firm which in turn reduces its risk (since risky growth options are now replaced with less risky assets-in-place). Regression analysis based on simulated data further corroborate the argument.

2.3 Hypothesis Development

The empirical analysis below will define leverage decreasing recapitalizations (LDRs), estimate measures of financial reporting conservatism, define excess leverage and explore the frequency of financial covenant violations. Based on the discussion above, the paper then tests two main hypotheses which share the intuition that the equity issue reflects the presence of creditor control.

The first hypothesis (H1) relies on the theoretical relation between creditor control, LDRs and capital investment (discussed in detail in the preceding subsection 2.1). Creditors require reliable accounting information and thus have a natural demand for conservative financial reporting, in particular for firms subject to significant agency cost of leverage. We refer to this channel as an indirect measure of creditor control. Financial contracts between creditors and the firm are, in turn, based on such accounting information and further allocate state contingent control rights to creditors. The transfer of control rights to creditors is triggered by covenant violations and constitutes a direct measure of creditor control which helps rationalize LDRs. For example, covenants may specify maximum leverage ratios and thereby push firms to pro-actively reduce leverage.

Hence, we hypothesize that these measures of creditor control significantly predict LDRs. Moreover, the exercise of creditor control rights negatively impacts capital investment and we therefore argue that capital investment should not predict a LDR. H1 will be explored for both direct and indirect measures of creditor control which are formally defined in Section 4.

H1 (LDR Prediction): *Relative to standard equity issues, we expect that (i) empirical measures of creditor control predict LDRs whereas (ii) capital investment has no such positive predictive*

power.

The second hypothesis (H2) exploits H1 and the missing relation between investment financing and LDRs. In other words, we expect managers to have no systematic ability to time the financing decision of the underlying debt retirement. Hence, there is no reason to expect that valuations (abnormal returns) increase ahead of the rebalancing and are negative ex-post (a dynamic we refer to as market timing pattern). Note that H2 will be explored for two different measures of valuation dynamics: the market-to-book ratio (Section 5.1) and stock return dynamics (Section 5.2).

H2 (LDR Valuation): *We expect that LDRs do <u>not</u> exhibit valuation dynamics that are consistent with a market timing interpretation. In particular, such market timing patterns should be absent for subsamples of LDR firms with high measures of creditor control.*

3 Data and LDR definition

3.1 Sample construction

Our sample consists of U.S. public industrial corporations listed on CRSP/Compustat (CCM) over the period from 1971 to 2016. Panel A of Table 1 summarizes the main sample cleaning steps which are applied to the raw data. 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 Table 1. The final CCM sample consists of 13,799 firms and 140,067 firm-years.

Panel B further displays information on the subsample of firms violating financial covenants. It is based on merging our final CCM sample with data on covenant violations obtained from Becher et al. (2018). This dataset is based on quarterly SEC filings for public U.S. corporations over the period from 1996 to 2015. 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 63,559 firm-years out of which financial covenants are violated in 11% of the cases (or 7,163 violations).

3.2 Defining LDRs

We focus on leverage decreasing recapitalizations (LDRs) which we define as periods during which firms issue equity and use a significant amount of the proceeds to retire debt. Following Eckbo and Kisser (2021a), 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 retirements):

$$\text{Leverage decreasing recapitalization: } LDR_t = 1 \text{ if } Nei > s \text{ and } Ndr > s \tag{1}$$

where Nei are common and preferred stock issues net of dividends and share repurchases, Ndr are short and long-term debt retirement in excess of issues and net of changes in convertible debt. Both variables are scaled by the book value of assets. Exact definitions of all variables are found in Table 2. The variable s is a size threshold which is set equal to 5% (Hovakimian et al., 2001; Leary and Roberts, 2005; Danis et al., 2014).[5] Since the LDR definition also includes private equity issues, our stock return analysis in Section 5.2 will focus on LDRs that are financed by public equity issues (information obtained from SDC, henceforth referred to as public LDRs).

We occasionally compare LDRs to either the full sample of net equity issues (NEI), net debt retirements (NDR) or orthogonalized subsamples of net equity issues (NEI^0) and net debt retirements (NDR^0) which are not classified as LDRs. Equations 2 to 5 summarize the corresponding definitions:

[5]We have also verified that our main results are robust to using a higher size threshold of 10% of assets. These additional robustness checks are untabulated but available upon request.

$$NEI_t = 1 \text{ if } Nei > s \quad (2)$$

$$NDR_t = 1 \text{ if } Ndr > s \quad (3)$$

$$NEI_t^0 = 1 \text{ if } NEI_t = 1 \text{ and } LDR_t = 0 \quad (4)$$

$$NDR_t^0 = 1 \text{ if } NDR_t = 1 \text{ and } LDR_t = 0 \quad (5)$$

Table 3 displays annual values for the number 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 for 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 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 suggest that LDRs become relatively less frequent during periods of high net equity issue activity. These patterns highlight the possibility that LDRs are driven by other factors than the average net equity issue.

Figure 1 displays the evolution of leverage around the capital structure rebalancing. Specifically, Panel A shows average leverage (market and book) over a five-year window surrounding the year of the LDR. It reveals that leverage increases significantly ahead of the capital structure rebalancing, for then to decrease substantially from 29% (37%) to 19% (25%) when market (book) leverage is used. After the LDR, leverage exhibits a modest upward trend. Panel B displays the corresponding leverage dynamics for all other net equity issuers (NEI^0). Compared to LDRs, leverage is much lower and does not increase in the year of the NEI^0 (it stays flat around 13% (19%) for market (book) leverage). Afterwards, leverage increases slightly over the remaining event window.

4 (H1) Creditor control, capital investment and LDRs

Hypothesis H1 postulates that - relative to traditional equity issues - measures of creditor control predict LDRs, whereas capital investment has no such predictive power. In other words, it attempts to demonstrate that LDRs are fundamentally different from the average equity issue studied in the extant literature. Below, we introduce direct and indirect measures of creditor control, provide descriptive evidence on the missing importance of capital investment and conclude with a formal test of H1.

4.1 Financial reporting conservatism, excessive leverage and covenant violations

Table 4 compares LDR firms to all other net equity issuers (NEIs^0) along different dimensions of financial reporting conservatism (Panel A) and excess leverage (Panel B). Panel A begins with the firm's $Cscore$ reflecting the sensitivity of earnings to negative stock returns. It is estimated using the cross-sectional regression framework of Khan and Watts (2009) and varies with firm size, growth opportunities and leverage.[6] The $Cscore$ is built on the intuition that a stronger sensitivity of reported earnings to negative stock returns reflects more conservative financial reporting decisions (which in turn is captured by higher $Cscore$ values). Rows 2 to 6 of Panel A present alternative accrual measures of reporting conservatism. Each of the five variables reflects a discretionary (and unpopular) financial reporting decision raising costs and decreasing net income (Tan, 2013).[7] Row 7 presents the sum of those costs. Panel B displays several measures of excess leverage. Row 1 shows average excess leverage at the beginning of the fiscal year and relative to an estimated target leverage ratio ($L_{t-1} - L^*_{t-1}(X_{t-2})$) where the leverage target L^* is estimated on a rolling basis to avoid capturing mechanical mean reversion effects introduced by the LDR

[6] Details on the variable construction are provided in Table 2, Panel C. For more intuition and background, see page 136 of Khan and Watts (2009).

[7] Note that costs are recorded with negative values.

itself (Eckbo and Kisser, 2021b).[8] The second row displays the fraction of over-leveraged firms (i.e. those for which excess leverage is positive). Rows 3 and 4 recompute excess leverage relative to a yearly industry median leverage ratio.

Columns 1 and 2 provide the comparison for the full sample of LDR firms and all other net equity issuers (NEI^0). Results show that LDR firms report more conservative financial statements and are more highly levered. For example, Panel A shows that the estimated $Cscore$ is 0.16 for LDR firms and 0.13 for NEI^0 firms. Also, LDR firms record more costs in connection with special items or discontinued operations and the overall impact of these reporting decisions is 7% for LDRs (5% for NEI^0 firms). Turning to excess leverage in Panel B, the average deviation to an estimated leverage target equals +3 percentage points (pp.) for LDR firms, compared to -2 pp. for the remaining sample of equity issuers. These differences increase when computing excess leverage relative to the industry median leverage ratio.

Columns 3 and 4 further explore differences between LDRs and $NEIs^0$ for conservative firms only. We define conservative firms by using the estimated $Cscore$, assigning firms into quintiles (based on the $Cscore$ distribution for the full sample of firms) and defining them as *conservative* in case their $Cscore$ is placed in the the upper two quintiles of the underlying distribution.[9] Panel A reveals that estimated $Cscore$ values increase (now equal to 0.3 for both groups) as do recognized extraordinary expenses (equal to 9% and 5% for LDR and NEI^0 firms, respectively). Most importantly, Panel B suggests that excess leverage (relative to an estimated target) increases to +5 pp. for LDR firms (71% of have positive excess leverage) whereas NEI^0 firms are approximately at the leverage target.

Columns 5 and 6 focus on firms which are over-leveraged relative to their estimated target and who report conservative financial statements. As shown, measures of financial reporting conservatism increase for LDR firms. The $Cscore$ value now equals 0.32 and the sum of all costs

[8]The vector of control variables X includes standard variables associated with the capital structure choice, such as size, profitability, Q, cash ratio, tangibility, R&D expenses, capital expenditures, median industry market leverage, year and firm-fixed effects.

[9]We have verified that our results are robust to using alternative thresholds such as defining conservative firm years using the the top tercile of the $Cscore$ distribution. These results are untabulated but available upon request.

equal 8%, both of which are larger than for all other net equity issuers. Finally, excess leverage increases to +14 pp. for LDR firms (relative to +9 pp for NEIs^0). As before, differences in leverage increase when computing excess leverage relative to the industry median leverage ratio.

Based on the sample of 63,559 firm-years for which covenant violation data is available, we find that the average firm in the sample violates covenants in 11% of the cases. For LDRs and NEIs^0, the corresponding violation frequencies are 19% (324 out of 1,674 cases) and 10% (771 out of 8,007 cases), respectively. Thus, LDR firms violate covenants twice as frequently as the average equity issuing firm. Columns 7 and 8 further show that - when conditioning on covenant violations - LDR firms exhibit higher $Cscores$ (0.22 versus 0.2), recognize higher extraordinary costs (0.14 versus 0.12) and are more highly levered than all other net equity issuers.

Taken together, the descriptive evidence suggests that LDR firms report more conservative financial statements and are more highly levered than the typical equity issuing firm.

4.2 Sources and uses of funds

We next explore the relative importance of capital investment for LDRs by decomposing a firm's cash flow statement identity as follows:

$$Nei + Ndi + Ocf + Oth = \underbrace{(Ch - Ivstch)}_{\Delta Cash} + Inv \tag{6}$$

where Ndi are short and long-term debt issues in excess of debt retirement, Ocf is operating cash flow, Oth are other (generally small) financing cash flows, $\Delta Cash$ is the change of the firm's cash holdings (either a change in physical cash holdings Ch, or a change in short-term marketable securities, $-Ivstch$) and Inv is total net investment outlays (capital investment). All variables are scaled by the book value of total assets (the exact variable definitions using Compustat mnemonics are given in Table 2 below).

Panel A of Table 5 displays sources and uses of funds for firms performing a capital structure rebalancing and all other net equity issuers. Focusing first on LDR firms, we can see that the net

equity issue is large and, on average, equal to 36% of book assets. These funds are used to retire debt for 16% of book assets and cover negative operating cash flows of 16%. Reassuringly, the items on the right-hand side of Eq. (6) are relatively small. The LDR firm draws down cash (2%) and invests for 6% of book assets. The remaining net equity issuers (NEI^0) are only similar with regards to the average size of the net equity issue (which equals 35% of assets). Contrary to LDR firms, operating cash flows are more negative (24%) and, more importantly, these firms also raise some debt (6%) and invest significantly (13%).[10]

Panel B shows that the difference between LDR and NEI^0 firms increases when constraining the sample to firms exhibiting high financial reporting conservatism. Conservative LDR firms issue equity for 43% of assets and draw-down cash for 7%. These funds are used to retire debt (19%) and cover cash flow shortfalls (29%). Importantly, investment of those firms is small (3%). Again, this is different from all other net equity issuers which raise equity for 38% and debt for 8%. The generated cash covers negative operating cash flows (37%) and corporate investment outlays (10%).

Panel C decomposes the cash flow identity for firms that are both over-leveraged and report conservatively. LDR firms use the equity issue proceeds (34%) and cash draw-downs (8%) to retire debt (21%) and cover cash flow shortfalls (20%). Net investment and other financing flows are both close to zero (1% each). As before, the picture is different for all other net equity issuers. They raise 37% of assets through net equity issues and another 9% from the net sale of debt, both of which are used to cover cash flow shortfalls (38%) and investment (8%).

Finally, Panel D decomposes the cash flow identity for firms violating financial covenants. LDR firms use the equity issue proceeds (28%) to retire debt (16%) and cover cash flow shortfalls (12%). Net investment is again small and equals 2% of assets. All other net equity issuers, on the other hand, raise 24% of assets through net equity issues and another 7% from the net sale of debt, both of which are used to cover cash flow shortfalls (20%) and investment (12%).

[10] In seven out of ten LDRs, the net equity issue (Nei) exceeds the net debt retirement (Ndr). For the remaining cases, net equity issue size remains economically significant (equal to 14% of book assets). Focusing only on public LDRs, the fraction for which $Nei > Ndr$ increases to 75% (and net equity issues size when $Nei < Ndr$ remains at an economically significant 14% of book assets).

4.3 Does creditor control predict the LDR (Test of H1)?

H1 postulates that - relative to standard equity issues (NEI^0) - measures of creditor control predict LDRs whereas capital investment has no such positive predictive power. While the descriptive evidence above seems consistent with this intuition, we now proceed to a formal estimation using the following logit regression model

$$Y^*_{i,t} = \alpha + \beta CreditorControl_{i,t} + \gamma Investment_{i,t} + \delta Controls_{i,t-1} + \epsilon_{i,t} \tag{7}$$

where $Y^*_{i,t}$ denotes the latent variable for the probability that firm i undertakes a LDR (as opposed to another net equity issue, NEI^0). Consistent with the analysis above, the variable $CreditorControl$ is either the firm's $CScore$, the interaction between $Cscore$ and an indicator variable equal to one (zero otherwise) in case the firm is estimated to be over-leveraged at the end of the previous year ($OverL$) or an indicator variable equal to one (zero otherwise) in case the firm violates a financial covenant ($Viol$). We refer to the first two specifications as indirect measures of creditor control, whereas the violation of covenants is a direct measure reflecting the transfer of control rights. Finally, we measure capital investment (Inv) as the firm's total net investment and further control for lagged values of the firm's cash ratio (C), operating profitability ($Prof$), capital expenditures scaled by assets ($Capex$), Tobin's Q, or the natural logarithm of assets ($Size$). Industry dummies are based on the 48 Fama-French (FF48) industries.

Summing up, H1 predicts that creditor control drives the LDR ($\beta > 0$) and that capital investment has no such predictive power ($\gamma \leq 0$). Table 6 displays corresponding results for the full sample of LDRs and other net equity issues (columns 1 to 4) or the subsample for which data on covenant violations is available. Irrespective of the exact measure being used, the variable $CreditorControl$ strongly predicts LDRs and thus provides evidence consistent with H1. $Investment$, on the other hand, has no such positive predictive power.

Taken together, two important results emerge from the analysis in this section. First, empirical measures of creditor control significantly predict LDRs. Second, LDR firms invest significantly less

than all other net equity issuers and hence capital investment does not predict LDRs. Moreover, investment of LDR firms is also low on an absolute basis, in particular for the subsamples of over-leveraged firms with high financial reporting conservatism or LDR firms violating financial covenants. These patterns make it unlikely that the optimal exercise of growth options is behind the decision to undertake the LDR (Carlson et al., 2004, 2006, 2010).

Reflecting these findings, we next turn to an exploration of H2. Going forward, we use two measures of creditor control. The indirect measure focuses on over-leveraged firms with high financial reporting conservatism whereas the direct measure relies on observable covenant violations.

5 (H2) Do LDRs exhibit market timing patterns?

We now explore whether LDRs exhibit market timing patterns. To ensure comparability to existing studies, we investigate both dynamics in the market-to-book ratio as well as stock returns. The former has the advantage of reflecting firm value and should therefore not be mechanically affected by the rebalancing. The latter in turn allows us to focus on public LDRs and thereby to control for the actual filing date of the equity issue with the Securities and Exchange Commission (SEC). Moreover, by focusing on stock returns we are further able to control for leverage and other well-known risk factors.

5.1 Dynamics in market-to-book ratios

5.1.1 Methodology

We use a fundamental valuation model that was first applied by Fama and French (1998) in the context of dividend payments and later employed when estimating the market value of corporate cash holdings (Pinkowitz and Williamson, 2004; Pinkowitz et al., 2006; Kisser, 2013). The model decomposes levered firm value (V^L) into the value of the firm's unlevered assets (V_U) and the net financing benefit associated with debt financing (γD):

$$V^L = \underbrace{V_A + V_G}_{V_U} + \gamma D$$

where unlevered firm value consists of both assets in place (V_A) and growth options (V_G). Using the book value of assets (A) as an approximation for the value of assets in place, leads to the following regression specification

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

To implement the estimation, 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. All variables are standardized by book assets and we further decompose leverage (D/A) into the lagged leverage ratio and indicator variables denoting a LDR, NEI^0 or NDR^0:

$$\begin{aligned} Q_t^E &= \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \\ &\quad \gamma BL_{t-1} + \delta^L LDR_t + \theta_1 NEI_t^0 + \theta_2 NDR_t^0 + \epsilon_t \end{aligned} \tag{8}$$

where Q_t^E is $(V_t^L - A_t)/A_t$ and the compact notation dX_t (dX_{t+1}) denotes the lagged one year (future 1-year) change in the variable of interest ($prof$, rd or $capex$).[11] Relatedly, we also investigate whether the period of the LDR is followed by a decrease in valuation ratios

$$\begin{aligned} \Delta Q_t^E &= \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+1}}{A_t} + \\ &\quad \gamma BL_{t-1} + \delta^\Delta LDR_t + \theta_1 NEI_t^0 + \theta_2 NDR_t^0 + \epsilon_t \end{aligned} \tag{9}$$

where $\Delta Q_t^E = Q_{t+1}^E - Q_t^E$.

[11] Specifically, $dX_t = (X_t - X_{t-1})/A_t$ and $dX_{t+1} = (X_{t+1} - X_t)/A_t$.

Taken together, the coefficient estimates δ^L (level regression) and δ^Δ (changes regression) allow us to test the previously presented hypotheses of the paper. That is, we do not expect to find valuation patterns that are consistent with a market timing interpretation ([H2:] $\delta^L = 0$ and $\delta^\Delta = 0$).

5.1.2 Test of H2

Table 7 displays estimates of the relation between LDRs and the adjusted market-to-book ratio. Specifically, columns 1 to 3 test whether LDRs occur during periods of high valuations and present estimates of equation 8. Next, columns 4 to 6 investigate whether valuations decrease in the fiscal year following the LDR (equation 9). Columns 1 and 4 present results for the full sample of firms, columns 2 and 5 for over-levered firms reporting conservative financial statements, columns 3 and 6 for firms which violate financial covenants. Results are shown under firm-fixed effect estimation and we compute standard errors according to Discroll and Kraay (1998) to account for possible cross-sectional and temporal interdependence among the error terms (Petersen, 2009).

Focusing on the coefficient of the LDR indicator variable in columns 1 to 3, we can see that the existence of a LDR is associated with significantly higher valuation ratios. The magnitude of the effect is statistically significant across the three samples and the increase in excess Q ranges between 0.18 for over-leveraged LDR firms with conservative reporting and 0.41 for the full sample of LDR firms. This suggests that firms undertaking a LDR have a market-to-book ratio that is 0.18-0.41 units higher than for the average sample firm. For all other net equity issues (NEI^0) the effect is even stronger, while for net debt retirements (other than LDRs) the effect is either slightly negative or statistically insignificant from zero.

Investigating the period after the LDR, columns 4 to 6 provide strong evidence that the transaction is followed by a decrease in valuation ratios. This effect obtains again for all three samples. For the full sample as well as over-leveraged LDR firms with conservative reporting, the decrease in excess Q is between -0.12 and -0.17 units whereas the effect is much stronger for the covenant violation sample (-0.37 units). The pattern is again similar for all other net equity issues, whereas

valuation ratios increase for all other net debt retirements.[12]

5.2 Dynamics in stock returns

Recall that our annual sample of 140,067 firm-years (13,799 firms) was obtained by merging the CCM database with SDC and it already identifies 1,605 LDRs which are financed by public equity issues (see Table 3). All of those public LDRs have information on the actual equity issue date and 1,206 further contain information on when the intended equity issue was filed with the SEC.

To perform the event study below, we define event date $t = 0$ as the month of the firm's filing date with the SDC or, if missing, the month during which the equity issue occurred. We further require that the filing date occurred within the last 11 months of the current fiscal year-end and then merge the annual sample with the monthly CRSP database.[13] The resulting sample is only marginally reduced from 13,799 to 13,694 firms and results in 1,518,695 monthly observations and 1,335 public LDRs, see also Panel C of Table 1.

Figure 2 visualizes the stock return performance surrounding public LDRs. Returns (r_i) include capital gains and dividends and are computed in excess of the market return ($r_i - r_m$). Panel A displays cumulative returns during the runup period (cumulative returns are standardized to one twelve months ahead of the LDR and are shown until one month prior to the event date). Panel B shows cumulative returns during the post issue period (cumulative returns are standardized to one in the month of the LDR and for a subsequent eleven month period). Returns are shown separately for the full sample of public LDRs, for over-leveraged LDR firms reporting conservatively or those violating financial covenants. Focusing first on the runup period, we can see significant market-adjusted returns for all types of LDRs which equal +73% for the full sample of LDRs, +57% for over-leveraged LDR firms with conservative reporting and +45% for those violating financial covenants. In the post issue period, returns are -3% for all LDRs, -13% for over-leveraged LDR

[12]Our results are similar when alternatively using OLS regression or to estimating yearly cross-sectional regressions (Fama and MacBeth, 1973). These findings are untabulated but available upon request.

[13]After merging, we drop observations in case the one month lagged market capitalization is missing or the book value of equity is negative. Finally, monthly market returns, risk-free rates and returns of the book-to-market, size, investment and profitability factors are obtained from Ken French's data library.

firms with conservative financial reporting and -18% for those violating financial covenants.

Below, we investigate the economic and statistical significance of excess returns after controlling for several systematic risk factors and firm characteristics.

5.2.1 Methodology

We estimate standard cross-sectional return regressions (Fama and MacBeth, 1973; Fama and French, 1992; Butler et al., 2011; Novy-Marx, 2013) to investigate whether abnormal returns exist before or after a public LDR.[14]

To detect whether there is a stock-price run-up prior to the rebalancing, we estimate

$$(r_{i,t-s} - r_{f,t-s}) = c + \beta^R LDR_{i,t} + \gamma_1 NEI^0_{i,t} + \gamma_2 NDR^0_{i,t} + \delta_1 X_{i,t-} + \epsilon_{i,t-s} \tag{10}$$

where t denotes the month of the LDR, NEI^0 or NDR^0 and $(r_{i,t-s} - r_{f,t-s})$ is the firm's total return in excess of the risk-free rate during month $t-s$. The run-up regression is estimated over a twelve months period ($0 < s \leq 12$) and thus measures the stock-price performance preceding the financing event.[15] Finally, c is the regression intercept and $X_{i,t-}$ denotes a set of control variables which are all measured ahead of the financing decision. These variables include book-to-market (precisely its logarithm), size (logarithm of total market value of equity), two momentum factors, profitability, asset growth, R&D expenses, lagged market leverage and the change in market leverage.[16]

Relatedly, to investigate the post LDR performance we estimate

$$(r_{i,t+s} - r_{f,t+s}) = c + \beta^P LDR_{i,t} + \gamma_1 NEI^0_{i,t} + \gamma_1 NDR^0_{i,t} + \delta X_{i,t} + \epsilon_{i,t+s} \tag{11}$$

where the only difference to equation 10 concerns the timing of the dependent variable and the

[14] Following Petersen (2009), we compute and report Fama-MacBeth standard errors.

[15] As explained above, event month t is the month the public equity issue was filed with the SEC or, if missing, the month the equity issue occurred. For NDR^0, month t is the month of the financial reporting date.

[16] All accounting variables are measured in the fiscal year preceding the financing decision (with the exception of lagged leverage which uses a two-year lag relative to the event). The variables book-to-market, size and the two momentum factors are updated each month to reflect changes in the market value of equity.

controls. The post issue regression is estimated over a twelve month period ($0 \leq s < 12$) and all accounting variables (in X) are now measured using fiscal year values of the financing decision.

Taken together, the coefficient estimates β^R (run-up regression) and β^P (post return regression) allow us to test the previously presented hypotheses of the paper. That is, for all three samples we do not expect to find valuation patterns that are consistent with a market timing interpretation ([H2:] $\beta^R = 0$ and $\beta^P = 0$).

5.2.2 Test of H2

Table 8 displays estimates of the relation between LDRs and stock returns for the full sample of firms (columns 1 and 2), over-leveraged firms reporting conservatively (columns 3 and 4) and firms violating financial covenants (columns 5 and 6). Applying the Fama-MacBeth framework, we estimate monthly cross-sectional regressions and report the corresponding average cross-sectional regression coefficients in the table. Panel A displays the runup regression and Panel B the post issue regression.

The runup regression in Panel A shows that the coefficient estimate for the LDR is positive and statistically significant across all of the six columns. For example, column 1 displays coefficient estimates when regressing monthly excess returns on a constant and three indicator variables denoting either the presence of a public LDR, all other public net equity issues and all other net debt retirements. The average monthly stock price runup for LDRs equals 2.9 percentage points (pp). This effect is slightly smaller than for all other public net equity issues (3.6 pp), whereas the effect of future net debt retirements is insignificant. Column 2 accounts for control variables used in the extant literature and shows that - after controlling for book-to-market, size, momentum, profitability, investment, R&D and leverage - the effect of the LDR increases to an economically and statistically significant 3.2 pp.

Perhaps most surprisingly, columns 3 to 6 demonstrate that the magnitude of the stock-price runup is similar when focusing on subsamples of over-leveraged firms with conservative financial statements (columns 3 and 4) or those violating financial covenants (columns 5 and 6). These

findings differ from the extant literature which typically report that covenant violating firms suffer from inferior operating and stock price performance during the periods leading up to the violation (Nini et al., 2009; Roberts and Sufi, 2009). Instead, our findings suggest that covenant violating firms which choose to do a LDR may do so in response to the stock-price runup.

Panel B evaluates the subsequent stock price performance. All six coefficient estimates of the public LDR indicator variable are negative and five are also statistically significant at the 1% level. The magnitude of the effects range between -0.9 pp. (full sample, column 2) and -2.3 pp for covenant violating firms (column 6). A similar pattern is found for all other public equity issues (NEI^0) whereas stock returns typically increase following all other net debt retirements.

6 Discussion

The valuation patterns presented in Tables 7 and 8 of Section 5 strongly reject H2: LDRs occur during periods of high valuation which subsequently decrease. This finding obtains independently of whether dynamics in market-to-book ratios or stock returns are being analyzed. Most importantly, subsamples such as over-leveraged LDR firms with high financial reporting conservatism or those violating financial covenants exhibit similar valuation patterns. This is particularly surprising given that these firms do not invest during the period of the LDR and it makes it unlikely that the patterns can be attributed to the exercise of growth options (Carlson et al., 2004, 2006, 2010).

To further corroborate a market timing interpretation of our findings, we next discuss the potential role of asset sales and a reduction in discretionary expenses as alternative sources of funds for the debt retirement.

6.1 Asset sales

We now compare LDR firms to another interesting subsample: firms selling a significant amount of illiquid assets and simultaneously performing a significant net debt retirement. We subsequently

refer to these transactions as asset-financed debt retirements (AFDs), which we identify precisely as follows

$$\text{Asset-financed debt retirement: } AFD_t = 1 \text{ if } Ias > s \text{ and } Ndr > s \text{ and } LDR = 0 \quad (12)$$

where Ias are illiquid asset sales which are defined as the sum of sale of property, plant and equipment, divestitures and other disinvesting activities (exact variable definition is given in Table 2), scaled by the book value of assets (Eckbo and Kisser, 2021b). The definition also requires that the debt retirement is not simultaneously classified as a LDR which ensures that the only common aspect of AFDs and LDRs are that they both finance a major debt retirement. If LDRs reflect market timing abilities, we would expect that valuation patterns of firms performing AFDs are different.

Setting the issue size threshold (s) equal to five percent, we document a total number of 4,053 AFDs (compared to 3,514 LDRs) for our sample period. Figure 3 further compares the relative frequency of LDRs and AFDs over the entire sample period. On average, relative frequencies are similar at 2.9% (AFDs) and 2.5%, respectively. Moreover, the figure reveals strong co-movement of LDRs and AFDs over time. This suggests that the differential financing decision of the debt retirement (asset sales versus equity issues) does not seem to be driven by aggregate market conditions.

However, while LDRs and AFDs share a common time trend, the evidence presented in Table 9 is consistent with the idea that AFDs reflect a higher level of financial distress (Lang et al., 1995). In particular, Panel A compares AFDs and LDRs across selected components of the firm's cash flow statement, Panel B displays measures of creditor control, Panel C valuation ratios and stock returns and Panel D discretionary expenditures. Beginning with Panel A, the average net investment (the previously introduced variable Inv, obtained from the cash flow statement) of firms performing AFDs is negative and economically highly significant. On average, AFD firms

sell assets equal to 14% of book value. This, of course, is reassuring and suggests that the illiquid asset sales (underlying our definition of AFDs) are indeed used to finance debt retirement.[17] Also, AFD firms do not issue equity: on average, net equity issues (Nei) are negative and equal to 2% of book assets. Thus, AFD firms raise funds by selling assets whereas LDR firms do so by raising external equity. Finally, the average net debt retirement is similar for AFD and LDR firms (19% and 16% of book assets, respectively).[18]

Panel B suggests that AFD firms score somewhat higher on measures of creditor control than the sample of LDRs. To wit, $Cscore$ equals 0.20 for AFDs (compared to 0.16 for LDRs) and the fraction of firms with excess leverage equals 72% (compared to 63% for LDRs). Relatedly, 23% of all AFD observations occur during periods of covenant violations which is slightly higher than for LDRs (19%). Panel C further demonstrates that the strong differences between AFDs and LDRs also translate into different valuations and stock return dynamics. For example, the market valuation of AFD firms is modest with a market-to-book ratio equal to 1.13 (compared to 2.36 for LDR firms). Contrary to LDRs, excess Q increases following the AFD. Similarly, market adjusted stock returns are negative during the period leading up to the financial reporting date of the AFD and they increase in the post AFD period. All of these empirical findings further corroborate the previously established notion that LDR firms successfully time their equity issue to finance a major debt retirement.

6.2 Discretionary expenditures

Previous research documents that management likely views R&D and advertising expenditures as discretionary costs they are willing to reduce if necessary (Graham et al., 2005; Roychowdhury, 2006; Cohen and Zarowin, 2010). Surveying around 400 Chief Financial Officers (CFOs) of public and private U.S. corporations, Graham et al. (2005) report that "80% of the survey participants

[17] To see why, suppose that AFD firms used illiquid asset sales to co-finance significant capital expenditures and cash acquisitions. If this were the case, the net investment variable Inv would turn positive (which the empirical evidence rejects).

[18] The average debt retirement of AFD firms equals 19% of book assets and is financed with asset sales (14%) and operating cash flow (5%).

would consider decreasing discretionary spending on R&D, advertising and maintenance to meet an earnings target" (pg. 35, Figure 5).

Panel D of Table 9 lists discretionary expenditures for LDR and AFD firms. During periods of LDRs, R&D and advertising are economically significant and equal to 14% of book assets. For AFDs, on the other hand, these costs equal 5%. To put these magnitudes further into perspective, we also compute the median level of discretionary expenditures for firms in the same industry (based on three-digit SIC code) and find it equals 6% (not shown). Untabulated results further suggest that the difference in discretionary expenses between LDRs and AFDs is even larger during periods of over-leverage and financial reporting conservatism (18% versus 5%, respectively) and similar during periods of covenant violations (11% versus 5%).

The empirical evidence suggests that LDR firms do not view discretionary expenditures as a potential source of funds and instead issue external equity. Per se, this finding alone is not sufficient to support the market timing interpretation. However, recall that our tests of H2 specifically control for R&D expenses (and several other firm characteristics) and Table 8 reveals negative and statistically significant risk-adjusted returns following the (different types of) LDRs. In other words, the negative risk-adjusted returns and the observed reluctance to reduce discretionary expenditures further corroborate the market timing interpretation.

6.3 Pro-forma cash balances

We conclude the discussion by showing that the combination of asset sales and a reduction in discretionary expenditures would have allowed the LDR firm to finance its debt retirement. To illustrate this point, Table 10 computes pro-forma cash holdings of LDR firms. Panel A displays internal funds (IF) which we define here as the sum of last period's cash holdings and the current period's operating cash flow before discretionary costs. As shown in the Table, internal funds equal 19% for the full sample of LDRs, 24% for over-leveraged LDR firms reporting conservatively and 15% for those violating financial covenants.

Panel B displays alternative actions the LDR firm could have taken in the year of the LDR.

Linking to the preceding discussion, it shows discretionary expenditures and net investment during periods of AFDs. Recording expenditures with a negative sign, the difference between the two components reflects the corresponding potential net source of funds which equals 10% for full sample of LDRs, 14% for over-leveraged LDRs reporting conservatively and 16% for LDR firms violating financing covenants.[19]

Panel C computes pro-forma cash balances by computing the sum of rows (3) and (6) above. As shown, implied cash holdings equal 28% for the full sample of LDRs, 38% for over-leveraged LDRs reporting conservatively and 31% for those violating financial covenants. Importantly, these values substantially exceed actual net debt retirements of 16% for the full sample of LDRs, 20% for over-leveraged LDRs reporting conservatively and 16% for those violating financial covenants. In other words, implied cash holdings under the alternative financing strategy would have been sufficient to allow for a similar net debt retirement and maintain significant cash going forward.

We conclude with a word of caution and stress that the evidence in Table 10 is illustrative in nature. That is, it is not a formal proof but should be viewed as additional evidence corroborating our market timing interpretation in light of the robust empirical rejection of H2 which was documented in Section 5.

7 Conclusion

This paper investigates whether valuation dynamics surrounding leverage decreasing recapitalizations (LDRs) exhibit market timing patterns. Our research design focuses on equity issues which use a significant amount of the proceeds to actively retire debt (a leverage decreasing recapitalization, LDR). LDRs are interesting transactions as they are not predicted by classical theories of capital structure but instead are rationalized by the exercise of creditor control rights.

The focus on creditor control achieves two objectives which are important for our contribution to the literature. First, it breaks the link between capital investment and the underlying equity

[19]Recall that the magnitude of discretionary expenditures of AFD firms is almost identical to the median cost of firms in the same three-digit industry in the year of the LDR.

issue. Thus, whatever the valuation pattern surrounding LDRs - it is unlikely to reflect variations in capital investment. Second, since financial contracts may specify maximum leverage ratios but are silent as to how firms should delever, our research design does not preclude a market timing motive for the underlying equity issue. For example, upon breach of a contract, firms can finance a debt retirement by selling assets or issuing equity. Hence, exploring valuation patterns of LDR firms allows for a clean test of the market timing ability of these firms.

We formulate and test two corresponding hypotheses: Hypothesis 1 (H1) suggests that LDRs are rationalized by creditors exercising control rights whereas investment financing considerations should have no positive predictive power. H2 states that valuation ratios and stock returns should not reflect market timing patterns. In other words, the LDR should not occur after periods of increasing valuations (returns) and should not be followed by decreasing valuations (returns).

Contrary to traditional equity issues, the empirical test of H1 shows that empirical measures of creditor control predict LDRs whereas capital investment has no such positive predictive power. However, rejecting H2, we provide systematic evidence that LDRs reflect many valuation patterns that are frequently interpreted as being consistent with market timing efforts: they occur during periods of high valuations, and are followed by a subsequent decrease in valuation ratios. These findings are robust and obtain when using valuation ratios or stock returns and after controlling for several risk factors.

Most surprisingly, even LDRs occurring during periods of covenant violations exhibit stock price runups and subsequent negative returns. To further corroborate the market timing interpretation of our results, we conclude the paper with an empirical comparison to debt retirements that are financed by illiquid asset sales. While the frequency of such events is similar to that of LDRs, our evidence suggests that these asset sales are likely to occur during periods of financial distress. A pro-forma cash balance analysis further suggests that LDR firms could have reduced discretionary expenses or sold assets to fund the actual net debt retirement. All of these descriptive facts support the market timing interpretation of our results following the robust empirical rejection of H2.

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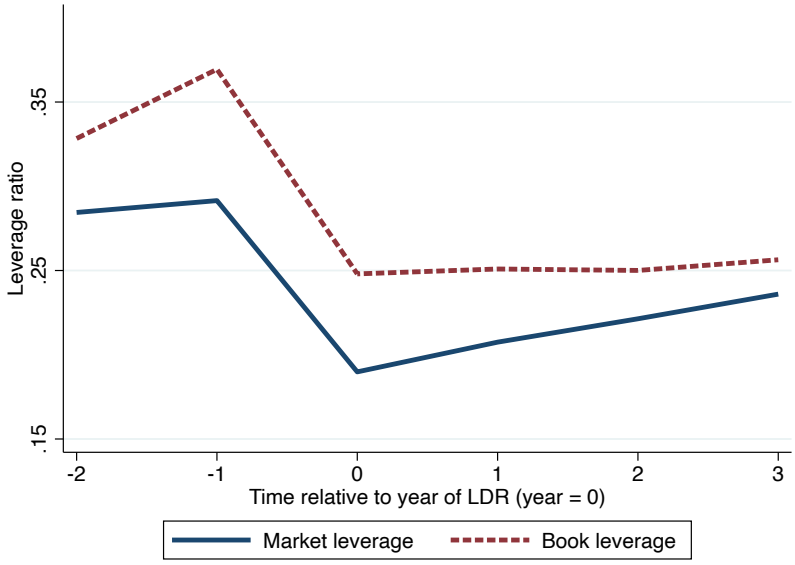
Figure 1: **Leverage dynamics surrounding the financing event**

The figure displays average leverage (market and book) surrounding the year of the leverage decreasing recapitalization (LDR, $t = 0$ in Panel A) or all other net equity issues (NEI^0, $t = 0$ in Panel B). LDRs are periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. NDRs are short and long term debt retirements net of issues and net of changes in convertible debt (also in excess of 5% of assets). Variable definitions are in Table 2. Sample of 3,514 LDRs.

A: Leverage decreasing recapitalizations (LDR)



B: All other net equity issues (NEI^0)

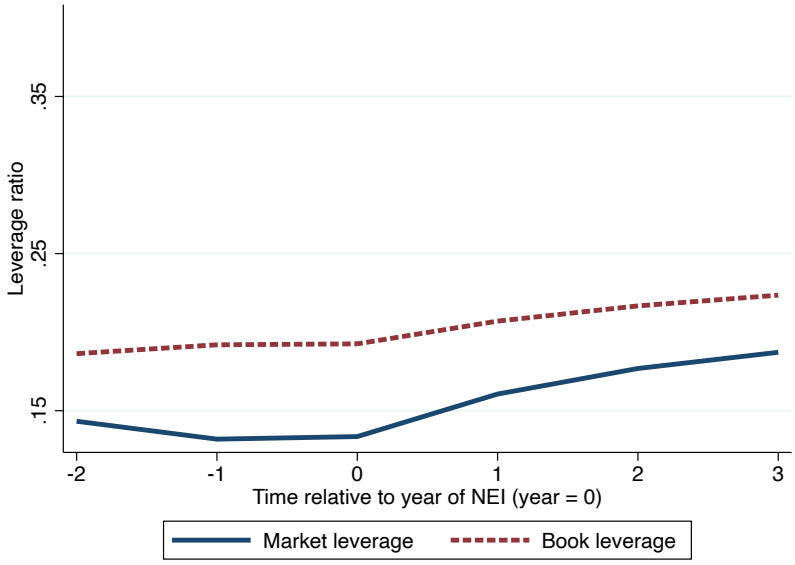
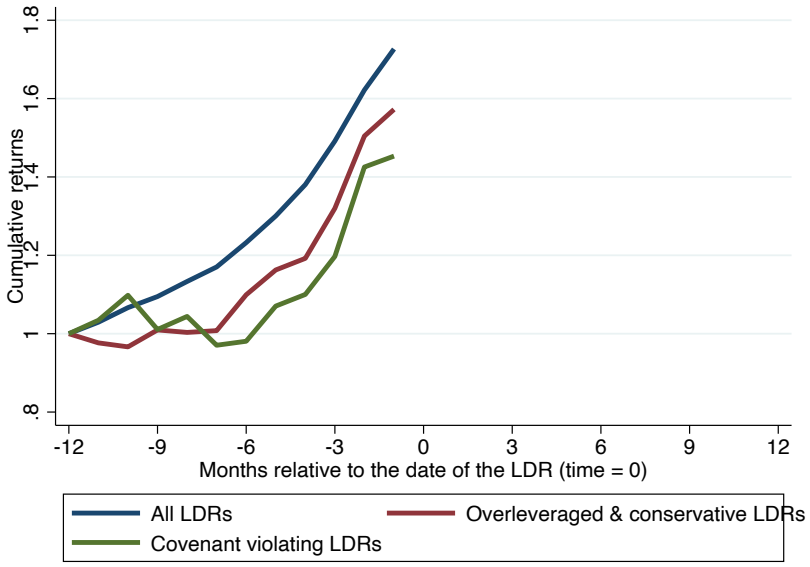


Figure 2: **Stock return dynamics of firms performing public LDRs**

The figure displays cumulative market-adjusted returns of firms performing public LDRs. Event date $t = 0$ is the month of the firm's filing date of the public equity issue with the Securities and Exchange Commission (SEC) or, if missing, the month in which the public equity issue occurred. Stock returns (r_i) include capital gains and dividends and are measured relative to the market return ($r_i - r_m$). Panel A displays cumulative returns during the runup period (cumulative returns are standardized to one twelve months ahead of the LDR and are shown until one month prior to the event date). Panel B displays cumulative returns during the post issue period (cumulative returns are standardized to one in the month of the LDR and for a subsequent eleven month period). LDRs as periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. NDRs are short and long term debt retirements net of issues and net of changes in convertible debt (also in excess of 5% of assets). Public NEIs or LDRs additionally impose a simultaneous public equity issue (identified through SDC). Variable definitions are in Table 2. Sample of 1,337 public LDRs.

A: Runup period



B: Post issue period

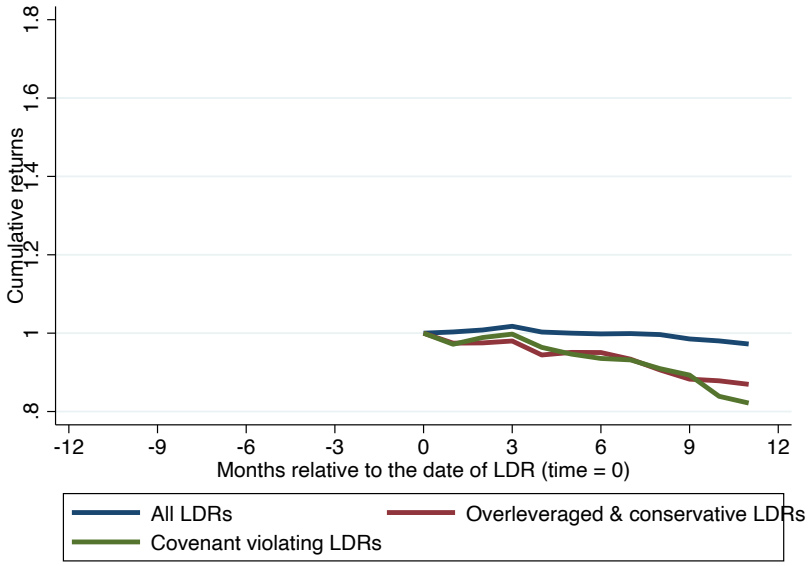


Figure 3: **Frequencies of LDRs and AFDs**

The figure compares the relative frequencies of LDRs and AFDs over the entire sample period. LDRs are periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. NDRs are short and long term debt retirements net of issues and net of changes in convertible debt (also in excess of 5% of assets). AFDs are periods of simultaneous illiquid asset sales (IAS) and net debt retirements (NDRs) and which are not simultaneously classified as LDRs. IAS are periods when the sum of sale of property, plant and equipment, divestitures and other disinvesting activities exceed 5% of book assets. Variable definitions are in Table 2. Sample of 3,514 LDRs and 4,053 AFDs.

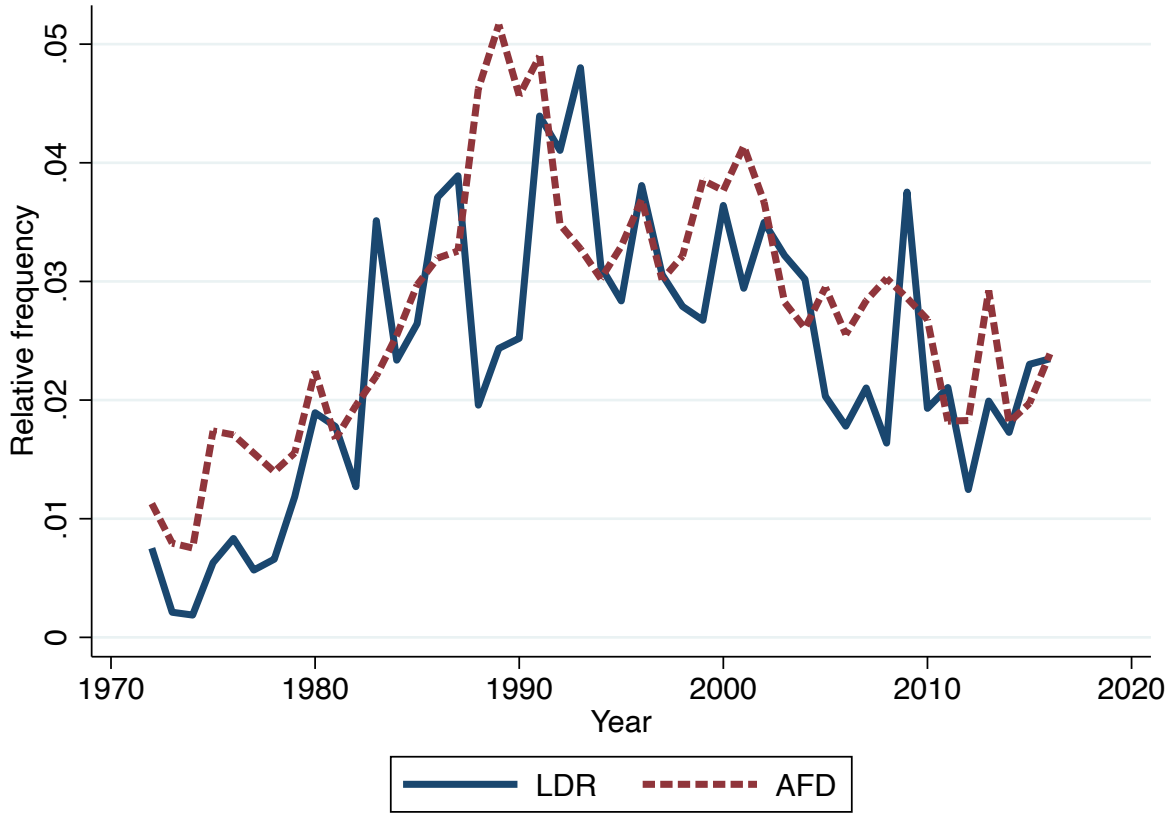


Table 1: **Sample selection**

Sample restriction	Observations	Firms
A: 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
No missing information on lagged variables[d]	-16,867	-1,127
Merge CRSP[e] and SDC[f]	-8,831	-610
No missing information on twelve months trailing stock returns	-2,745	-118
Final Sample	140,067	13,799
B: Annual CCM & Covenant violation sample, 1995-2016		
Merge of Final Sample (Panel A) with covenant violation data[g]	63,559	8,324
C: Annual CCM & Monthly stock returns (Crsp), 1971-2016		
Merge of Final Sample (Panel A) with monthly CRSP returns	1,518,695	13,694

[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. Total sources are the sum of gross equity issues, gross debt issues, cash balance drawdowns, asset sales, reduction of net working capital, positive OCF, and other financing inflows. Total uses of funds are dividends, share repurchases, debt retirement, build-up of cash balances, investment, increase in net working capital, negative OCF, and other financing outflows.

[c] For other financial statement data items, we require non-missing data on the book value of total debt, cash holdings, the market value of the firm's equity, Tobin's Q, property plant and equipment, operating profits, book equity, goodwill impairment and the logarithm of the market value of equity.

[d] We require non-missing data on lagged market leverage.

[e] For the CRSP data file, 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) and that the share code equals 10 or 11. Merging the CRSP data with the CCM database results in 1,708,003 firm-months for 13,922 different firms.

[f] For the SDC Global Issues Data, we define a public equity issue to take place in case the security type registered in the SDC Global Issue Database equals "Class A Ord Shs", "Class A Shares", "Class B Ord Shs", "Class B Pfd Stk", "Class B Shares", "Class D Shares", "Common R-Series", "Common Shares", "Ord/Common Shs.", "Ordinary Shares", "Pfd Stk,Com Stk", "Preference Shs" or "Preferred Shs ". Merging the monthly CRSP/CCM database with SDC identifies 17,377 monthly public equity issues. Retaining one observation for each fiscal year, the merged sample identifies 142,812 firm-years, 13,917 firms and 12,731 public equity issues.

[g] The covenant violation data are obained from Becher et al. (2018).

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 CRSP/Compusted merged database (CCM), Panel B to CRSP and Panel C explains the computation of the $CScore$ variable.

Variable Name	Description
A: CCM variables	
L	*Market leverage*: (dlcc + dlt)/(prcc_f*csho + dlcc + dlt)
BL	*Book leverage*: (dlcc + dlt)/at
$Prof$	*Profitability*: (oibdp)/at
Q	*Tobin's Q*: $(\text{prcc}_f * csho + dlcc + dlt)/at$
Q^E	*Excess Q*: $Q - 1$
$R\&D$	*R&D expenditures*: xrd/at
$Capex$	*Capital expenditures*: capx/at
C	*Cash ratio*: che/at
$Size$	log(at)
Nei	*Net equity issue*: (sstk - dv - prstkc)/at
Ndi	*Net debt issue*: (dltis - dltr + dlcch)/at
Ndr	*Net debt retirement, net of changes in convertible debt*: (dltr - (dltis + dlcch - (dcvt - lag(dcvt)))/at
Oth	*Other financing cash flow*: (fiao + txbcof)/at
Ocf	*Operating cash flow*: (oancf + exre)/at
Ch	*Change in physical cash*: chech/at
$Ivstch$	*Change in short-term investments*: -ivstch/at
Inv	*Net investment*: (capx + aqc + ivch - siv - sppe - ivaco)/at
Ias	*Illiquid asset sales*: (siv + sppe + max[ivaco,0])/at
Ocf^{ND}	*Non-discretionary operating cash flow*: (oancf + exre - xrd - xad)/at
$Cost^D$	*Discretionary cost*: (xrd + xad)/at
LDR	*Leverage decreasing recapitalization*: $= 1$ if $Nei > 0.05$ and $Ndr > 0.05$
NEI	$= 1$ if $Nei > 0.05$
NEI^0	$= 1$ if $Nei > 0.05$ and $LDR = 0$
NDR	$= 1$ if $Ndr > 0.05$
NDR^0	1 if $Ndr > 0.05$ and $LDR = 0$
AFD	*Asset financed debt retirement*: $= 1$ if $Ias > 0.05$ and $Ndr > 0.05$ and $LDR = 0$
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
$mcap$	*Market capitalization* (prc × shrout)/1,000
BM	*Book-to-market* E/mcap(4-months lag)
EV	*Equity value* mcap (1-months lag)
C: $Cscore$ **variable**	
	Obtained by estimating the following annual cross-sectional regression[a]
	$X_i = \beta_1 + \beta_2 D_i + \beta_3 R_i + \beta_3 D_i R_i + \epsilon_i$, where
	$\beta_3 = \mu_1 + \mu_2 Size_i + \mu_3 MBE_i + \mu_4 Lev_i$, and
	$\beta_4 = \lambda_1 + \lambda_2 Size_i + \lambda_3 MBE_i + \lambda_4 Lev_i$, where
R	annual stock return
$Size$	ln(prcc_f*csho)
MBE	(prcc_f*csho)/(seq + txditc + pstkr)
Lev	D/(prcc_f*csho)
$Cscore$	$\hat{\lambda_1} + \hat{\lambda_2} Size_i + \hat{\lambda_3} MBE_i + \hat{\lambda_4} Lev_i$

[a] Details in Khan and Watts 2009, page 135.

Table 3: **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 in excess of issues and net of changes in convertible debt, 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 in 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	12	6	0.14	0.12
1973	1,889	39	16	4	1	0.10	0.06
1974	2,655	38	10	5	1	0.13	0.10
1975	2,701	60	23	17	5	0.28	0.22
1976	2,519	81	44	21	14	0.26	0.32
1977	2,642	78	14	15	2	0.19	0.14
1978	2,578	107	40	17	8	0.16	0.20
1979	2,701	130	44	32	15	0.25	0.34
1980	2,852	274	128	54	30	0.20	0.23
1981	2,870	311	159	51	25	0.16	0.16
1982	3,070	280	110	39	16	0.14	0.15
1983	3,132	623	346	110	68	0.18	0.20
1984	3,338	330	78	78	19	0.24	0.24
1985	3,366	414	135	89	23	0.21	0.17
1986	3,316	531	160	123	34	0.23	0.21
1987	3,470	478	130	135	33	0.28	0.25
1988	3,525	275	53	69	11	0.25	0.21
1989	3,408	325	84	83	27	0.26	0.32
1990	3,372	319	75	85	22	0.27	0.29
1991	3,368	462	190	148	78	0.32	0.41
1992	3,362	503	192	138	63	0.27	0.33
1993	3,603	646	242	173	70	0.27	0.29
1994	3,904	581	196	122	36	0.21	0.18
1995	4,125	731	242	117	46	0.16	0.19
1996	4,306	873	334	164	67	0.19	0.20
1997	4,611	808	280	141	56	0.17	0.20
1998	4,480	690	172	125	38	0.18	0.22
1999	4,153	718	181	111	36	0.15	0.20
2000	3,983	857	250	145	33	0.17	0.13
2001	3,840	582	303	113	64	0.19	0.21
2002	3,545	444	281	124	79	0.28	0.28
2003	3,293	537	344	106	69	0.20	0.20
2004	3,147	553	391	95	63	0.17	0.16
2005	3,051	461	267	62	40	0.13	0.15
2006	2,977	430	268	53	32	0.12	0.12
2007	2,854	395	244	60	33	0.15	0.14
2008	2,809	228	140	46	27	0.20	0.19
2009	2,691	346	254	101	81	0.29	0.32
2010	2,538	302	218	49	39	0.16	0.18
2011	2,469	301	195	52	32	0.17	0.16
2012	2,407	261	193	30	20	0.11	0.10
2013	2,360	324	232	47	38	0.15	0.16
2014	2,373	333	238	41	29	0.12	0.12
2015	2,433	401	276	56	40	0.14	0.14
2016	2,385	365	244	56	36	0.15	0.15
Avg.	3,254	436	187	86	38	0.20	0.20
Total	13,799	17,913	8,068	3,514	1,605		

Table 4: **Financial reporting conservatism and excess leverage for LDR firms**

The table displays measures of financial reporting conservatism (Panel A) and excess leverage (Panel B). The measures of financial conservatism include a firm's $Cscore$ (Khan and Watts (2009)) and the ratios of special items, discontinued operations, restructuring costs, goodwill impairment and write downs to book equity. Total costs are defined as the sum of these extraordinary costs (i.e. the sum of rows 2 to 6 in Panel A). Panel B displays different measures of excess leverage: the average excess leverage at the beginning of the fiscal year and relative to an estimated target leverage ratio ($L_{t-1} - L^*_{t-1}(X_{t-2})$) where the leverage target L^* is estimated on a rolling basis using lagged values of control variables X (which include size, profitability, Q, cash ratio, tangibility, R&D expenses, capital expenditures, median industry market leverage, year and firm-fixed effects). The second row of Panel B shows the fraction of over-leveraged firms. Rows 3 and 4 of Panel B recompute excess leverage relative to a yearly industry median leverage ratio. 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 and net of changes in convertible debt, also in excess of 5% of assets). NEI^{0}s are periods of net equity issues which are not classified as LDRs. Conservative firms are defined as those in the two upper quintiles of the $Cscore$ distribution for the full sample of firms. Over-leveraged firms have positive excess leverage (based on regression model). Covenant violating firms as those violating at least one quarterly covenant in the same fiscal year. *, ** indicate significance at the 5% and 1% level, respectively. Sample period 1972-2016.

		Sample											
		All			Conservative			Conservative & Over-leveraged			Covenant Violations		
		LDR	NEI^0		LDR	NEI^0		LDR	NEI^0		LDR	NEI^0	
	(Observations)	(3,514)	(14,399)		(1,583)	(5,492)		(865)	(2,084)		(324)	(771)	
Row	Variable	(1)	(2)	(1)-(2)	(3)	(4)	(3)-(4)	(5)	(6)	(5)-(6)	(7)	(8)	(7)-(8)
Panel A: Financial reporting conservatism													
(1)	$Cscore$	0.16	0.13	0.03**	0.30	0.30	0.01*	0.32	0.30	0.01**	0.22	0.20	0.02
(2)	Special items	-0.06	-0.04	-0.02**	-0.07	-0.04	-0.03**	-0.07	-0.04	-0.02*	-0.11	-0.10	-0.01
(3)	Discontinued Operations	-0.01	0.00	0.00*	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.01	-0.01	0.00
(4)	Restructuring Costs	0.00	0.00	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00
(5)	Goodwill Impairment	0.00	0.00	0.00**	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00
(6)	Write-down	0.00	0.00	0.00*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(7)	Total Costs	-0.07	-0.05	-0.02**	-0.09	-0.05	-0.03**	-0.08	-0.05	-0.03*	-0.14	-0.12	-0.02
Panel B: Excess leverage													
(1)	$\Delta L^*_{t-1} = L_{t-1} - L^*_{t-1}(X_{t-2})$	0.03	-0.02	0.05**	0.05	0.00	0.06**	0.14	0.09	0.05**	0.07	0.00	0.07**
(2)	Fraction $\Delta L^*_{t-1} > 0$	0.63	0.47	0.16**	0.70	0.52	0.18**	1.00	1.00	0.00	0.71	0.52	0.19**
(3)	$\Delta L^{IND}_{t-1} = L_{t-1} - L^{IND}_{t-1}$	0.11	0.00	0.11**	0.15	0.03	0.12**	0.23	0.09	0.14**	0.18	0.07	0.11**
(4)	Fraction $\Delta L^{IND}_{t-1} > 0$	0.69	0.37	0.33**	0.76	0.43	0.33**	0.86	0.55	0.31**	0.83	0.60	0.22**

Table 5: **Sources and uses of funds of firms undertaking LDRs**

The table displays components of a firm's cash flow identity conditional on either a leverage decreasing recapitalization (LDR) or all other net equity issues (NEI^0). In Panel A, the two financing decisions are drawn from the full sample of firms, Panel B focuses on conservative firms, Panel C on conservative and over-leveraged firms, and Panel D on those violating financial covenants. Specifically, the table decomposes a firm's cash flow identity as follows:

$$Nei + Ndi + Ocf + Oth = \underbrace{(Ch - Ivstch)}_{\Delta \text{ Cash}} + Inv$$

where Nei are equity issues net of repurchases and dividends, Ndi are debt issues net of retirements, Ocf is operating cash flow, Oth are other (generally small) financing cash flows, ΔC is change of the firm's cash holdings (either a change in physical cash holdings Ch, or a change in short-term marketable securities, $-Ivstch$) and Inv is total net investment outlays. 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 and net of changes in convertible debt, also in excess of 5% of assets). NEI^{0}s are periods of net equity issues which are not classified as LDRs. Conservative firms are defined as those in the two upper quintiles of the $Cscore$ distribution for the full sample of firms. Over-leveraged firms have positive excess leverage (based on regression model). Covenant violating firms as those violating at least one quarterly covenant in the same fiscal year. All variables are scaled by the book value of total assets. Exact variable definitions using Compustat mnemonics are in Table 2 below. *, ** indicate significance at the 5% and 1% level, respectively. Sample period 1972-2016.

	Nei (1)	Ndi (2)	Ocf (3)	Oth (4)	ΔC (5)	Inv (6)	Obs (7)
Panel A: Full sample							
LDR	0.36	-0.16	-0.16	0.00	-0.02	0.06	3,514
NEI^0	0.35	0.06	-0.24	0.00	0.03	0.13	14,399
(LDR - NEI^0)	0.016	-0.215**	0.074**	0.003	-0.051**	-0.070**	
Panel B: Conservative firms							
LDR	0.43	-0.19	-0.29	0.00	-0.07	0.03	1,583
NEI^0	0.38	0.08	-0.37	0.00	-0.01	0.10	5,492
(LDR - NEI^0)	0.054	-0.264**	0.077	0.002	-0.059**	-0.072**	
Panel C: Conservative & over-leveraged firms							
LDR	0.34	-0.21	-0.20	0.01	-0.08	0.01	865
NEI^0	0.37	0.09	-0.38	0.00	-0.01	0.08	2,084
(LDR - NEI^0)	-0.027	-0.303**	0.179**	0.011**	-0.067*	-0.073**	
Panel D: Covenant violating firms							
LDR	0.28	-0.16	-0.12	0.00	-0.02	0.02	324
NEI^0	0.24	0.07	-0.20	0.00	-0.01	0.12	771
(LDR - NEI^0)	0.043*	-0.233**	0.079**	0.005	-0.008	-0.098**	

Table 6: **(H1) Creditor control and the likelihood of LDRs**

The table presents coefficient estimates from the following logit regression:

$$Y^*_{i,t} = \alpha + \beta CreditorControl_{i,t} + \gamma Investment_{i,t} + \delta Controls_{i,t-1} + \epsilon_{i,t},$$

where $Y^*_{i,t}$ denotes the latent variable for the probability that firm i undertakes a LDR (as opposed to another net equity issue, NEI^0). The variable *CreditorControl* is either the firm's $Cscore$ (columns 1 and 2), the interaction between $Cscore$ and an indicator variable equal to one (zero otherwise) in case the firm is estimated to be over-leveraged at the end of the previous year ($OverL$, columns 3 and 4) or an indicator variable equal to one (zero otherwise) in case the firm violates a financial covenant ($Viol$, columns 5 and 6). *Investment* is the firm's total net investment as in Table 5. Control variables include the firm's cash ratio (C), operating profitability ($Prof$), capital expenditures scaled by assets ($Capex$), Tobin's Q, or the natural logarithm of assets ($Size$). In column 4 we also control for $Cscore$ and $OverL$ individually. Industry dummies are based on the 48 Fama-French (FF48) industries. Exact variable definitions using Compustat mnemonics are in Table 2 below. *, ** indicate significance at the 5% and 1% level, respectively. Sample period 1972-2016.

	$CreditorControl_{i,t}$ equals					
	$Cscore_{i,t}$		$Cscore_{i,t} \times OverL_{i,t-1}$		$Viol_{i,t}$	
	(2)	(2)	(3)	(6)	(5)	(6)
Hypothesis H1: $\beta > 0$ **and** $\gamma \leq 0$						
$CreditorControl_{i,t}$	0.492**	0.316*	1.391**	0.666*	0.816**	0.335**
$Investment_{i,t}$	-2.738**	-3.852**	-2.818**	-4.315**	-2.614**	-3.815**
CR_{t-1}		-2.322**		-2.646**		-2.205**
$Prof_{t-1}$		0.050		0.348**		0.059
$Capex_{t-1}$		-0.089		0.099		0.160
Q_{t-1}		-0.058**		-0.054**		-0.054**
$Size_{t-1}$		0.059**		0.044*		0.083**
$Cscore_{i,t}$				-0.307		
$OverL_{i,t-1}$				0.484**		
Year FE	yes	yes	yes	yes	yes	yes
Industry FE	yes	yes	yes	yes	yes	yes
Observations	17,913	17,911	12,676	12,667	9,681	9,674
Pseudo R^2	0.03	0.12	0.04	0.15	0.03	0.12

Table 7: **(H2) LDRs and dynamics in market-to-book ratios**

The table presents estimates of the relation between leverage decreasing recapitalizations (LDRs) and market-to-book ratios and is based on

$$Y_t = \alpha + \beta_1 Prof_t + \beta_2 RD_t + \beta_3 Capex_t + \eta_L \frac{dX_t}{A_t} + \eta_F \frac{dX_{t+v}}{A_t} + \gamma BL_{t-1} + \delta^j LDR_t + \theta_1 NEI_t^0 + \theta_2 NDR_t^0 + \epsilon_t$$

where the Y_t estimates the level regression ($Y_t = Q_t^E$ in columns 1 to 3) and the changes regression ($Y_t = \Delta Q_t^E = Q_{t+1}^E - Q_t^E$ in columns 4 to 6). Columns 1 and 4 present results for the full sample of LDR firms, columns 2 and 5 for over-levered LDR firms reporting conservative financial statements, columns 3 and 6 for LDR firms which violate financial covenants. Conservative firms are defined as those in the two upper quintiles of the *Cscore* distribution for the full sample of firms. Over-leveraged firms have positive excess leverage (based on regression model). Covenant violating firms violate at least one quarterly covenant in the same fiscal year. Hypothesis H2 predicts that $\delta^L = 0$ and $\delta^\Delta = 0$. 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, LDR equals one in case the firm simultaneously issues net equity and retires net debt for at least 5% of assets and NEI^0 (NDR^0) denote all other net equity issues (net debt retirements). Regressions are estimated accounting for firm-fixed effect standard errors are computed according to Discroll and Kraay (1998). All variables are winsorized at the 1(99) percent level or must lie between zero and one (leverage). Variable definitions are in Table 2 in the paper. *, ** indicate significance at the 5% and 1% level, respectively.

	$Y_t^1 = Q_t^E$			$Y_t^2 = \Delta Q_t^E$		
	All Firms (1)	Conservative & Overleveraged (2)	Covenant Violations (3)	All Firms (4)	Conservative & Overleveraged (5)	Covenant Violations (6)
$Prof$	0.295*	-0.498**	0.124	0.124	0.155	0.366
	(0.137)	(0.094)	(0.543)	(0.070)	(0.096)	(0.327)
$R\&D$	4.624**	3.369**	2.553**	0.002	-0.373	0.933
	(0.196)	(0.376)	(0.705)	(0.268)	(0.263)	(0.627)
$Capex$	2.850**	1.730**	3.208**	-1.386**	-0.744**	-0.971*
	(0.162)	(0.239)	(0.502)	(0.138)	(0.202)	(0.414)
BL	-0.167*	0.793**	-0.075	0.128**	-0.161	-0.071
	(0.064)	(0.069)	(0.128)	(0.041)	(0.086)	(0.091)
LDR	**0.410****	**0.182****	**0.376****	**-0.179****	**-0.120****	**-0.370****
	(0.042)	(0.062)	(0.078)	(0.026)	(0.038)	(0.066)
NEI^0	0.653**	0.309**	0.450**	-0.316**	-0.107	-0.311**
	(0.065)	(0.062)	(0.041)	(0.048)	(0.066)	(0.058)
NDR^0	0.001	-0.062**	0.012	0.025**	0.043**	0.014
	(0.010)	(0.011)	(0.025)	(0.008)	(0.012)	(0.039)
ΔX_t	yes	yes	yes	yes	yes	yes
ΔX_{t+1}	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
LDR	2,983	692	254	2,983	692	254
R^2	0.17	0.18	0.17	0.10	0.07	0.15
N	124,408	22,227	5,706	124,408	22,227	5,706

Table 8: **(H2) LDRs and stock returns: cross-sectional evidence**

The table presents estimates of the relation between leverage decreasing recapitalizations (LDRs) and stock returns and is based on the following cross-sectional regressions

$$\text{[runup]} \quad r_{i,t-s} - r_{f,t-s} = c + \beta^R LDR_{i,t} + \gamma_1 NEI^0_{i,t} + \gamma_2 NDR^0_{i,t} + \delta X_{i,t-} + \epsilon_{i,t-s}$$

$$\text{[post]} \quad r_{i,t+s} - r_{f,t+s} = c + \beta^P LDR_{i,t} + \gamma_1 NEI^0_{i,t} + \gamma_1 NDR^0_{i,t} + \delta X_{i,t} + \epsilon_{i,t+s}$$

where t denotes the month of the LDR, NEI^0 or NDR^0. In particular, event month t is the month the public equity issue was filed with the SEC or, if missing, the month the equity issue occurred. For NDR^0, month t is the month of the financial reporting date. The subscript s captures the event period around which return effects are estimated. In the run-up regression (Panel A), returns are estimated over a twelve months period prior to the financing decision ($0 < s \leq 12$). In the post-regression (Panel B) returns are estimated over a twelve month period following the financing decision ($0 \leq s < 12$). Finally, $(r_{i,t} - r_{f,t})$ is the firm's total return in excess of the risk-free rate during month t, c is the regression intercept and X denotes a set of control variables which includes book-to-market (precisely its logarithm), size (logarithm of total market value of equity), two momentum factors, profitability, asset growth, R&D expenses, lagged market leverage and the change in leverage. The variables book-to-market, size and the two momentum factors are updated each month to reflect changes in the market value of equity. In Panel A, all accounting variables are measured at the fiscal year preceding the financing decision (with the exception of lagged leverage which uses a two-year lag relative to the event). Columns 1-2 present results for the full sample, columns 3-4 for over-leveraged firms exhibiting high financial reporting conservatism and columns 5-6 for firms violating financial covenants. Hypothesis H2 predicts that $\beta^R = 0$ and $\beta^P = 0$. Variable definitions are in Table 2.

	All Firms		Conservative & Overleveraged		Covenant Violations	
	(1)	(2)	(3)	(4)	(5)	(6)
A: Stock price run-up						
LDR	**0.029****	**0.032****	**0.027****	**0.033****	**0.026****	**0.034****
NEI^0	0.036**	0.037**	0.028**	0.039**	0.020**	0.023**
NDR^0	0	0.002*	0.001	-0.001	-0.003	-0.003
$log(BM)$		0.007**		0.010**		0.008**
$log(EV)$		-0.002*		-0.012**		-0.005*
$Mom_{12,2}$		-0.001		-0.012**		-0.01
$Mom_{1,0}$		-0.059**		-0.089**		-0.053**
$Prof$		0.026**		0.033**		0.016
ga		0.004**		0.005*		-0.007
$R\&D$		0.040**		0.056**		0.044*
$L(lag)$		-0.011		0.014**		-0.018*
ΔL		-0.057**		-0.030**		-0.036**
$R2$	0.002	0.004	0.002	0.009	0.001	0.006
N	1,518,695	1,510,623	281,918	281,857	65,091	64,837
B: Post event performance						
LDR	**-0.004**	**-0.009****	**-0.017****	**-0.017****	**-0.018****	**-0.023****
NEI^0	-0.003	-0.003*	-0.020**	-0.017**	-0.010*	-0.009*
NDR^0	0.005**	0.001	0.007**	0.006**	0.012**	0.005
$log(BM)$		0.006**		0.007**		0.008**
$log(EV)$		-0.002**		-0.006**		-0.004**
$Mom_{12,2}$		0		-0.004*		-0.006
$Mom_{1,0}$		-0.062**		-0.071**		-0.051**
$Prof$		0.024**		0.036**		0.049**
ga		0.005**		0.008**		0.004
$R\&D$		0.049**		0.077**		0.127**
$L(lag)$		-0.006**		-0.012**		-0.018**
ΔL		-0.059**		-0.043**		-0.075**
$R2$	0	0.002	0	0.005	0.001	0.005
N	1,518,695	1,510,623	269,665	268,726	70,605	70,390

Table 9: **Comparison of AFDs and LDRs**

The tables compares asset financed debt retirements (AFDs) and leverage decreasing recapitalizations (LDRs) across different dimensions. Panel A includes selected components of the cash flow statement: the net investment cash flow (Inv), net equity issues (Nei) and net debt issues (Ndi). Panel B shows measures of creditor control such as the firm's estimated $Cscore$, the fraction of over-leveraged firms ($L_{t-1} - L^*_{t-1}(X_{t-2}) > 0$) and the fraction of firms violating financial covenants. Panel C displays measures of valuation such as current Q, its subsequent change, the average stock price runup and post return (both of which are measured in excess of the market return). Finally, Panel D shows discretionary expenditures (the sum of R&D and advertising expenses). LDRs are periods of simultaneous net equity issues (NEIs) and net debt retirements (NDRs). NEIs are periods when common and preferred stock issues net of dividends and repurchases exceed 5% of book assets. NDRs are short and long term debt retirements net of issues and net of changes in convertible debt (also in excess of 5% of assets). AFDs are periods of simultaneous illiquid asset sales (IAS) and net debt retirements (NDRs) and which are not simultaneously classified as LDRs. IAS are the sum of sale of property, plant and equipment, divestitures and other disinvesting activities, measured in excess of 5% of book assets. Variable definitions are in Table 2. Sample of 3,514 LDRs and 4,053 AFDs. Sample period 1972-2016.

	AFD	LDR
A: Cash flow statement components		
Inv	-0.14	0.06
Nei	-0.02	0.36
Ndi	-0.19	-0.16
B: Measures of creditor control		
$Cscore$	0.20	0.16
Fraction $\Delta L^*_{t-1} > 0$	0.72	0.63
$Viol$	0.22	0.19
C: Measures of valuation		
Q	1.13	2.36
$Q_{t+1} - Q_t$	0.08	-0.19
$Runup$	-0.02	0.73
$Post$	0.10	-0.03
D: Discretionary expenses		
$RD + Adv$	0.05	0.14

Table 10: **Discretionary choices and pro-forma cash holdings**

The table computes pro-forma cash holdings for firms rebalancing capital structure for the full sample of LDRs, over-leveraged LDRs with conservative financial reporting or LDRs during periods of covenant violations. Panel A shows components of internal funds consisting of the available cash at the beginning of the LDR period (C_{t-1}) and the firm's operating cash flow net of R&D and advertising expenditures (OCF_t^{ND}). Panel B shows alternative actions the LDR firm could have taken in the year of the LDR and displays discretionary expenditures ($Cost$, the sum R&D and advertising expenditures) and net investment (Inv) during periods of AFDs. Panel C computes pro-forma cash holdings (PFC) and actual net debt issues (Ndi). 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). AFDs are periods of simultaneous illiquid asset sales (IAS) and net debt retirements (NDRs) and which are not simultaneously classified as LDRs. IAS are the sum of sale of property, plant and equipment, divestitures and other disinvesting activities, measured in excess of 5% of book assets. All variables are scaled by the book value of total assets. Variable definitions are in Table 2. Sample period 1972-2016.

Row	Variable	All Firms	Conservative & Overleveraged	Covenant Violations
A: Internal Funds				
1	C_{t-1}	0.21	0.31	0.16
2	OCF_t^{ND}	-0.03	-0.07	-0.01
3	IF_t = (1) + (2)	0.19	0.24	0.15
B: Hypothetical alternative actions				
4	$Cost_t$	-0.05	-0.05	-0.06
5	Inv_t	-0.14	-0.19	-0.22
6	AA_t= (4) - (5)	0.10	0.14	0.16
C: Pro-forma cash and actual net debt retirements				
7	PFC_t = 3 + 6	0.28	0.38	0.31
8	Ndi	-0.16	-0.20	-0.16
	= 7+8	0.12	0.18	0.15