Credit Rating Targets

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Abstract

Credit ratings can be viewed as a summary statistic that captures various elements of a firm's capital structure. They incorporate a firm's debt ratio, the maturity and priority structure of its debt, as well as the volatility of its cash flows. However, regressions of credit ratings on firm characteristics provide inferences that are not always consistent with the interpretations of extant regressions that include various debt ratios as independent variables. In particular, we find that coefficients of variables that have been viewed as proxies for the uniqueness and the extent that assets can be redeployed, e.g., R&D expenses and asset tangibility, have different effects in the credit rating regressions than in the debt ratio regressions. In addition, we find that after controlling for whether or not firms have debt ratings, the extant evidence of a positive relation between debt ratios and size is reversed. Finally, using regression-based proxies for target ratings and debt ratios, we find that deviations from rating targets as well as debt ratio targets influence subsequent corporate finance choices. When observed ratings are below (above) the target, firms tend to make security issuance and repurchase decisions that reduce (increase) leverage. In addition, firms are more likely to decrease (increase) dividend payouts when they have below (above) target ratings and make more (fewer) acquisitions when they have above (below) target ratings.

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Abstract

Credit ratings can be viewed as a summary statistic that captures various elements of a firm's capital structure. They incorporate a firm's debt ratio, the maturity and priority structure of its debt, as well as the volatility of its cash flows. However, regressions of credit ratings on firm characteristics provide inferences that are not always consistent with the interpretations of extant regressions that include various debt ratios as independent variables. In particular, we find that coefficients of variables that have been viewed as proxies for the uniqueness and the extent that assets can be redeployed, e.g., R&D expenses and asset tangibility, have different effects in the credit rating regressions than in the debt ratio regressions. In addition, we find that after controlling for whether or not firms have debt ratings, the extant evidence of a positive relation between debt ratios and size is reversed. Finally, using regression-based proxies for target ratings and debt ratios, we find that deviations from rating targets as well as debt ratio targets influence subsequent corporate finance choices. When observed ratings are below (above) the target, firms tend to make security issuance and repurchase decisions that reduce (increase) leverage. In addition, firms are more likely to decrease (increase) dividend payouts when they have below (above) target ratings and make more (fewer) acquisitions when they have above (below) target ratings.

The credit worthiness of most large U.S. firms are evaluated by agencies like S&P, Moody's, and Fitch, which assign credit ratings based on their perceptions of the firm's credit quality.[1] Anecdotal evidence suggests that managers generally describe their capital structure policy in terms of target credit ratings and tend to make a variety of financing, hedging, and investment choices that allow them achieve their desired rating. Indeed, Graham and Harvey's (2001) survey evidence reveals that managers focus on their credit ratings when they make their capital structure choices. For example, a firm with an S&P BB rating but a target rating of BBB may choose to issue equity and/or retire debt in order to achieve its target. The specifics of how they engineer their financial structure to achieve their credit rating targets at the lowest possible cost of capital are of course important, but this is of secondary importance relative to the credit rating they wish to target.

This paper extends existing capital structure research by examining how firms target their credit ratings and how the ratings targets influence their corporate decisions. As a measure of capital structure the firm's credit rating has the advantage over various debt ratios because it provides a single measure of financial leverage that aggregates the different aspects of the firm's capital structure, such as the maturity and seniority structure of its debt, unfunded pension liabilities, and the amount of debt that is on- versus off-balance sheet. Presumably, the rating agencies can sort through the intricacies of a firm's balance sheet and come up with an assessment of the extent to which its capital structure puts the firm at risk of bankruptcy, which plays a central role in most theories of capital structure. However, there are also reasons to believe that ratings may not provide the best measure of the firm's current financial condition. On one hand the ratings agencies are known to be slow about updating their ratings (e.g., Altman and Rijken (2004) and Fons, Cantor, and Mahoney (2002)). On the other hand, the ratings

[1] In 2004, 85.4% of the largest 500 U.S. firms in the Compustat files we analyze have credit ratings.

agencies use information about management's future intentions. In other words, in some way ratings can be stale, but on other dimensions the ratings can be forward looking relative to the financial ratios that measure the firm's current leverage.

Our first set of regressions replicate existing tests of the cross-sectional determinants of capital structure, using credit ratings along with traditional debt ratio measures as dependent variables.[2] These regressions have two motivations. The first is that a regression with the credit rating dependent variable can potentially generate insights that are somewhat different from the insights of the more traditional regressions with debt ratio dependent variables. The second is that regressions along these lines can be used to estimate proxies for target credit ratings and debt ratios. These target proxies are used in our second set of tests that examine how credit ratings and debt ratios influence future corporate finance choices.[3]

Consistent with existing research we find that firms with more tangible assets and lower R&D expenses have higher debt ratios. The traditional explanation for this finding is that firms with these characteristics have more debt because their assets can be more easily redeployed and that they are subject to less severe financial distress and bankruptcy costs. An alternative explanation is that these firms are simply less risky, and thus have greater access to debt financing. Unfortunately, one cannot distinguish between these alternative explanations from regressions that feature a debt ratio as the dependent variable. However, if the main reason that firms with more tangible assets and less R&D expenses have more debt is that they are willing to be exposed to greater financial distress risk, then their credit ratings should be lower. Our credit

[2] In these analyses, the credit rating is used as an alternative to the debt ratio as a measure of capital structure. Therefore, unlike in traditional studies of credit ratings, these credit rating regressions do not include the debt ratio as one of the explanatory variables.

[3] In this sense our analysis is similar to Hovakimian, Opler and Titman (2001), Leary and Roberts (2005) and Flannery and Rangan (2006), which examine how firms react to deviations from target debt ratios. Our analysis has also similarities to Kisgen (2006) who reports that firms with a plus or a minus rating tend to reduce their leverage, and Kisgen (2008) who finds that a rating downgrade predicts a subsequent reduction in leverage.

rating regression estimates are inconsistent with this hypothesis.

It should also be noted that existing evidence indicates that larger firms have higher debt ratios (e.g., Rajan and Zingales (1995). The usual interpretation is that larger firms are less risky, have lower proportional financial distress costs, and have better access to debt markets. If the motivation for a higher debt ratio is lower distress costs, then we might expect large firms to choose to have higher distress probability, i.e., lower credit ratings. However, we find that, despite having higher debt ratios, larger firms have higher ratings. To better understand this relationship, we examine the relation between size and debt ratios in subsamples of firms both with and without debt ratings. We find that within each of these subsamples, the relationship between debt ratios and size are actually negative. Hence, the evidence of a positive relation between size and debt ratios is generated because rated firms (that tend to be large) have higher debt ratios than unrated firms (that tend to be smaller). This evidence is consistent with the evidence in Faulkender and Petersen (2006) who find that larger firms have more debt because of their greater access to debt markets.

Note that our interpretation of regressions of capital structure on firm characteristics implicitly assumes that observed debt ratios and credit ratings represent the firm's target capital structures. But this is clearly not the case. Although firms may choose the debt ratios and ratings they wish to target, exogenous shocks to their profitability, risk, and other factors can result in deviations from these targets. For example, firms may experience a negative shock that leaves them over-levered and underrated. Firms may be slow to offset the negative shocks because of debt overhang issues and transaction costs, and may be slow to offset positive shocks that lead them to be under-levered and over-rated because of the private benefits associated with the added prestige and financial flexibility that arise from higher ratings.

Our second set of regressions examines how deviations from target capital structure, estimated from regressions of observed debt ratios and ratings on firm characteristics, affect a variety of corporate choices. Consistent with the target ratings hypothesis, we find that below-target firms tend to make financing, payout, and acquisition choices that decrease their leverage whereas above-target firms tend to make choices that increase their leverage. For example, below-target firms tend to issue equity rather than debt, tend to retire debt rather than repurchase equity, and tend to temper their growth through acquisitions. In contrast, above-target firms tend to repurchase equity rather than retire debt and tend to increase their dividends. These effects are significant even after controlling for the deviation from the target debt ratio and other determinants of corporate financing choices identified in the earlier literature.

Differences in firm choices when they are below versus above the target ratings also provide insights on the relative importance of debt overhang and managerial incentives. If managers have preferences for high ratings we might not expect firms with above target ratings to take actions that decrease their ratings, but we would expect to see firms with below target ratings to take actions that increase their ratings.[4] In contrast, if debt overhang is important, we might expect to observe the opposite. Our results indicate that firms react stronger to offset the deviation from the target rating when their rating is below the target than when the rating is above the target, which suggests that on average, the effect of managerial incentives is stronger.

Overall, our results show that firms make financing, dividend, and acquisition decisions that tend to adjust their debt ratios and ratings toward their targets. These findings are consistent with the tradeoff theory of capital structure. We find no evidence, however, that firms with higher

[4] Jensen (1986) argues that interest payments reduce resources under managers' control, thereby increasing the monitoring by the capital markets when firms seek to finance new investments. Hart and Moore (1995) and Zwiebel (1996) argue that debt limits managers' ability to finance future investment. Recent survey evidence of Graham and Harvey (2001) indicates that managers regard financial flexibility as the most important factor in their capital structure decisions.

costs of financial distress have target capital structures associated with lower probability of default. Our direct tests show that none of the variables hypothesized by prior research to proxy for bankruptcy costs exhibit a negative relation to the probability of default. These results are troubling for the tradeoff theory.

The rest of the paper is organized as follows. Section I describes the rating process. Section II reports our data. Section III presents the results for our target rating and target debt models. Section IV presents our results on the deviations from target ratings and their effects on corporate decisions. Section V summarizes our conclusions.

I. Rating Process

Rating agencies claim that they provide accurate "relative" ratings of credit risk at each point in time without reference to an explicit time horizon. In their Corporate Ratings Criteria (2006) manual Standard & Poor's states that its *"credit ratings are meant to be forward-looking, and their time horizon extends as far as is analytically foreseeable. Accordingly, the anticipated ups and downs of business cycles – whether industry-specific or related to the general economy – should be factored into the credit rating all along. Ratings should never be a mere snapshot of the present situation. Accordingly, ratings are held constant throughout the cycle, or, alternatively, the rating does vary – but within a relatively narrow band* (page 33)*."* What this means is that although credit ratings provide an ordinal ranking of default risk across firms, depending on the business cycle, the mapping between ratings and default probabilities may change.

It should also be noted that, in addition to using information from a firm's accounting statements, the ratings agencies consider financial projections that are not available to the financial economists who study ratings assignments. Standard and Poor's states that

"*[M]anagement's financial projections are a valuable tool in the rating process, because they indicate management's plans, how management assesses the company's challenges, and how it intends to deal with problems. Projections also depict the company's financial strategy in terms of anticipated reliance on internal cash flow or outside funds, and they help articulate management's financial objectives and policies* (Corporate Ratings Criteria, page 16)." By incorporating these financial projections, management plans, and the credibility and the quality of management, credit rating agencies create ratings that are forward looking.

If rating agencies fully incorporated the expected future corporate financing behavior so that ratings would reflect the true long-run probability of default, future changes in ratings would not be predictable using public information. However, credit rating changes are predictable.[5] There are two reasons why this is the case. First, although the ratings agencies use management projections in the ratings process, they are unlikely to put much weight on a firm's intention to raise equity in the future, and will not adjust their ratings until the equity is actually issued. In other words, credit ratings primarily reflect long-term probabilities of default given the firm's current financial structure.

Rating agencies also tend to be slow about updating their ratings, which adds to the predictability of ratings changes. Ratings are updated only when agencies are confident that observed changes in a company's risk profile are likely to be permanent (they call this prudent rating migration policy).[6] Rating agencies aim at maintaining stability by rating through-the-cycle, which lowers the sensitivity of ratings to short-term fluctuations in credit quality, and

[5] See, for example, Amato and Furfine (2004) and Altman and Rijken (2004).

[6] Altman and Rijken (2004) quantify the impact of the long-term default horizon and the prudent migration policy on rating stability. They show that, in contrast to one-year default prediction models, agency ratings place less weight on short-term indicators of credit quality, which is consistent with the idea that rating agencies are focused on the long term. They also show that, prudent migration policy is an even more important factor underlying the stability of agency ratings. Their evidence indicates that rating migrations are triggered when the difference between the actual agency rating and the model predicted rating exceeds a certain threshold level and that the trigger leads to only partial adjustment.

respond to investors' desire to keep their portfolio rebalancing as low as possible. The ratings agencies may smooth their ratings changes because their clients (institutions holding bonds) do not want to see ratings change with each small change in the firm's prospects. In their published report over their meetings with the issuer organizations, investors, asset management firms, regulators and other market participants, Moody's note that "*Market participants desire ratings stability. They want ratings to be a view of an issuer's fundamental credit risk, which they perceive to be a relatively stable measure of intrinsic financial capacity compared with other, more market-sensitive measures* (Fons et al., (2002))."

II. Data

Our measure of credit rating is the S&P long-term issuer level rating extracted from Compustat.[7] The letter ratings are transformed into numerical equivalents using an ordinal scale ranging from 1 for the lowest rated firms (CCC-) to 19 for the highest rated firms (AAA).[8] The financial statement data are also from Compustat. The stock return data are from CRSP.

As in other studies of capital structure, we exclude financial firms (SIC codes 6000-6999) from the sample. In addition, we restrict the sample to include firms with book value of assets and sales above $1 million. To limit the influence of outliers, all ratio variables are trimmed at the top one percent and, for variables that take on negative values, bottom one percent of their values.[9] The resulting sample consists of 84,051 firm-year observations between 1985 and 2006, including 15,642 observations with credit ratings.[10] Table I presents the distribution of our sample firms by rating and year. Overall, the number of rated firms increases over time during

[7] The Compustat data item for credit rating is 280, which defined as the Standard & Poor's current opinion of an issuer's overall creditworthiness, apart from its ability to repay individual obligations, and it focuses on the obligor's capacity and willingness to meet its long-term financial commitments.
[8] Observations with credit ratings indicating default are excluded from our analysis.
[9] The exception is the book debt ratio, which is trimmed to exclude observations with book debt ratios of one or higher.
[10] Compustat coverage of credit ratings starts in 1985.

our sample period. In addition the overall credit quality of sample firms declines during the sample period.[11]

Table II presents the distribution of firm characteristics important for our subsequent analysis for the subsamples of firms with and without credit ratings. Rated firms tend to be larger, older, more profitable, and tend to have more tangible assets and higher book and market leverage ratios.[12] About 27 (2) percent of rated (unrated) firms are in the S&P 500 index and about 70 (18) percent are traded on the NYSE exchange. Unrated firms tend to have larger R&D and selling expenses, and somewhat higher market-to-book ratios.[13]

III. Target Capital Structure

This section examines how the characteristics of a firm's business determine its capital structure choice. Specifically, we follow the approach of the earlier studies that examine the determinants of the target debt ratios using regressions of observed debt ratios of the following form.

$$Debt\ Ratio_{it} = \alpha_j + Z_{it}\beta + \varepsilon_{it}. \quad (1)$$

The set of independent variables, *Z*, consists of variables such as firm size, asset tangibility, market-to-book, research and development (R&D) expenses, selling expenses, and profitability.

[11] In a recent report, Standard & Poor's Credit Rating Services documents that industrial firms display a steady decline in average credit quality over the past decade from a median rating of A in 1980, to BBB- in 1997, to BB- in 2007.

[12] Size is the natural log of sales (data 12), adjusted for inflation. Tangibility is the property, plant, and equipment (data 8) scaled by total assets. Profitability is operating income (data 13) scaled by lagged total assets. Book leverage is the sum of long-term and short-term debt scaled by total assets. Market leverage is the sum of long-term and short-term debt scaled by market value of assets. Market value of assets is (total assets – book equity + market equity). Book equity is the book value of stockholders' equity, plus balance sheet deferred taxes and investment tax credit if available (data 35), minus the book value of preferred stock. Depending on availability, we use the redemption (data 56), liquidation (data 10), or par value (data 130) to estimate the book value of preferred stock. Stockholders' equity is (data 216), if it is available. If not, we measure stockholders' equity as the book value of common equity (data 60) plus the par value of preferred stock, or the book value of assets minus total liabilities (data 181).

[13] R&D is the research and development expense (data 46) scaled by sales. Selling expense is selling, general, and administrative expense (data 189) scaled by sales. Market-to-book is market value of assets/total assets.

These firm characteristics proxy for important determinants of the target as predicted by the tradeoff theory.[14] Industry indicators are included to control for fixed industry factors, α_j.

In addition to estimating the traditional debt ratio regressions, we also estimate regressions of the firm's credit ratings on the same set of firm characteristics as in target leverage regression (1).

$$Credit\ Rating_{it} = \alpha_j + Z_{it}\beta + \varepsilon_{it}. \quad (2)$$

The main difference between the target rating model (2) and the analysis in earlier studies of the determinants of credit ratings (Pogue and Soldofsky (1969), Pinches and Mingo (1973), and Kaplan and Urwitz (1979), Ederington (1985), Bhojraj and Sengupta (2003), Molina (2005)) is the exclusion of the leverage ratio from the rating choice model. Our premise is that leverage is an endogenous choice variable that allows the firm to achieve its target rating, but does not determine what rating the firm wants to target. As a result, the interpretation of the coefficient estimates in regression (2) is different from the earlier studies, which examine the direct effects of firm characteristics on credit ratings while holding the debt ratio constant. In contrast, the estimates from regression (2) reflect both the direct effects of the firm characteristics on ratings and their indirect effects passed on via the debt ratios.[15] For example, holding the debt ratio constant, the rating may increase with firm size as larger firms may be considered less risky. However, larger firms may tend to choose higher debt ratios, which will tend to reduce the rating. The coefficient estimates in regression (2) reflect the combination of these two effects.

There are two benefits of using credit ratings in addition to the traditionally used debt ratios

[14] These variables have been previously considered by Titman and Wessels (1988), Rajan and Zingales (1995), and others.

[15] In regressions with debt ratio controls, the coefficients represent the partial derivatives $\partial Rating / \partial Debt$, whereas in regression (2) the coefficients represent the full derivatives $\partial Rating / \partial X + \partial Rating / \partial Debt \times \partial Debt / \partial X$.

in these regressions. The first is that the credit rating aggregates the different aspects of the firm's capital structure, such as the maturity and seniority structure of its debt, unfunded pension liabilities, and the amount of debt that is on- versus off- its balance sheet. As a result, it might provide a better overall measure of financial leverage than the debt ratios used in the prior research. In addition, because credit ratings provide a more direct measure of the firm's probability of default, they can provide a more direct test of the theories in which firms design their capital structures to avoid financial distress and bankruptcy costs.

To understand this, consider firm characteristics, like tangible assets/total assets and R&D and selling expenses that have been used in past research to measure the extent to which a firm has unique assets and products. This research assumes that firms with more tangible assets and lower R&D and selling expenses tend to have less specialized assets and products, which in turn suggests that they will have lower costs of financial distress and bankruptcy. Hence, firms with these characteristics should be better able to bear the increased bankruptcy risk associated with higher debt ratios. In addition, given the economies of scale in the bankruptcy process, larger firms should also be able to bear more bankruptcy risk.

Existing debt ratio regressions confirm that firms with these characteristics do indeed have higher debt ratios. But if these characteristics are also related to risk, it does not necessarily follow that firms with these characteristics have higher default probabilities as the theories suggest. By considering the relation between these characteristics and credit ratings, we more directly measure the extent to which firms that are likely to have higher bankruptcy costs select capital structures that generate lower probabilities of default.

A. Self-Selection

It is important to note that not all firms have ratings and that firms that self-select to issue rated debt are likely to be inherently different than firms that do not.[16] The comparison of the characteristics of rated and unrated firms in Table II confirms this intuition. To the extent that there are unobservable determinants of both the target capital structure and the access to the bond market, the coefficients from capital structure models (1) and (2) estimated on the sample of rated firms may be biased.

We address the self-selection problem by explicitly modeling the access to the public debt market with a set of instruments that are unrelated to the level of rating and the amount of debt.[17] The selection equation has the following form:

$$Rated_{it} = \alpha + \beta Instruments_{it} + X_{it}\gamma + \xi_{it} . \quad (3)$$

In equation (3), "Rated" takes the value of one if a firm has a rating and zero otherwise. We use five instruments for modeling the selection decision. Following Faulkender and Petersen (2006), we use proxies to measure the firms' visibility; the idea is that firms that are well known, familiar, and widely followed are likely to face lower costs of introducing public debt issues to the market and hence are more likely to get rated. Our visibility proxies include an indicator variable for firms traded on NYSE and two indicator variables for the presence of the firm in the large-cap and the mid-cap S&P indexes. Firms that belong to these indexes are likely to be more visible than otherwise similar firms. A firm's age may also influence its visibility, as older firms

[16] In their hand-collected sample of 5,529 observations, Cantillo and Wright (2000) find only 18 observations where a firm had a bond rating but no public debt and only 135 observations where a firm had public debt but no bond rating.

[17] Maddalla (1983) provides an in-depth discussion of models with self-selectivity.

are likely to be better known by the market participants. We include an indicator variable for whether the firm is three years old or younger to capture the effect of age.[18]

Another way to gauge the accessibility of the public debt markets is to see whether other firms in the same industry have rated debt. If there are comparable firms with outstanding public debt, it may be easier for a firm to participate in the bond market. We, therefore, include a variable measuring the percentage of firms in the same industry that have rated debt as the fifth instrument in our selection model.[19]

The selection model also includes firm characteristics that proxy for a firm's propensity to participate in public debt markets. Some firms may have access to the (public) debt market but may choose not to issue long-term bonds. We may, therefore, only observe firms that find long-term debt more valuable due to greater tax shields or contracting benefits and/or lower financial distress costs. For example, large firms and firms with tangible assets are expected to have lower financial distress costs and hence are more likely to have long-term debt. In contrast, firms with high growth opportunities and significant intangible assets may prefer to avoid the debt markets as they face higher costs of financial distress. Our proxies for these factors are R&D intensity, selling expenses, and the market-to-book ratio. The effect of profitability on a firm's propensity to use long-term debt is theoretically ambiguous. While debt may be used less by more profitable firms as a result of their lower external financing needs, such firms may benefit from significant debt tax shields, which should make debt financing more attractive.

We present the results for regression (3) in Table III. The results show that firms that have rated debt are indeed different from the ones that do not have a rating. Consistent with Faulkender and Petersen (2006), the probability of being rated increases with visibility, NYSE

[18] We measure firm age from the point it first appeared on Compustat.
[19] Following Faulkender and Petersen (2006), this variable is calculated as ln(1+fraction rated), where fraction rated is the fraction of rated firms in the industry, which we define based on the 49-industry classification.

traded firms and firms from the S&P500 large-cap index are more likely to be rated, whereas younger firms and firms with higher market-to-book ratios are less likely to be rated. The probability of being rated increases with the fraction of rated firms in the industry. Larger firms and firms with more tangible assets are also more likely to be rated as they are more likely to have issued long-term debt given their lower information asymmetry and lower costs of financial distress. These results mirror the unconditional differences in characteristics of rated and unrated firms in Table II. In contrast, although unconditionally the probability of being rated declines with R&D, selling expenses, and profitability (Table II), the signs of these coefficients reverse in Table III when we control for other firm characteristics. The effect of the S&P400 indicator is insignificant.

B. Capital Structure Choice Results

Our estimation results for the target capital structure models (1) and (2) are presented in Table IV. The first set of results in Table IV is for the target rating model (2). The second and the third sets of results are for the book and the market specifications of the target debt ratio model (1). Each of these target capital structure models is estimated simultaneously with the selection equation (3) using maximum likelihood.[20] Due to the categorical and ordered nature of credit ratings, the target rating model (2) is estimated using an ordered probit specification that takes into account the fact that the "distances" between the adjacent ratings are not necessarily equal.[21] The reported z- and t-statistics reflect standard errors adjusted for heteroskedasticity and firm-level clustering.

[20] In all cases, the selection equation results are qualitatively similar to those reported in Table III and are not reported for brevity.

[21] The number of firms with CCC-, CCC, or CCC+ ratings is very small in our sample and in some years there are no firms with some of these ratings. Therefore, when we estimate our ordered probit regressions we combine the lowest three ratings (CCC-, CCC, or CCC+) into a single class.

Consistent with prior studies, we find that firms with more tangible assets and low R&D expenses tend to choose high debt ratios. The standard interpretation of this result is that high collateral value of tangible assets reduces the costs of financial distress and allows these firms to choose more levered capital structures. However, we find that high asset tangibility and low R&D expense are positively related to credit ratings. This suggests that firms with these characteristics default less often, which is inconsistent with the argument that firms with low bankruptcy and distress costs choose capital structures with higher probability of default. Instead, the results suggest that firms with more tangible assets are less risky, and although these firms tend to use more debt financing, the higher use of debt is relatively modest relative to their lower risk, resulting in a capital structure with a lower risk of default.

The results in Table IV also indicate that small firms tend to have lower ratings. This result is consistent with the observation that smaller firms are considered riskier and, as such, can achieve a given rating only with substantially lower debt ratios, thus, making their costs of having a high rating prohibitively high. Somewhat surprisingly, given the results in most earlier studies, we find that firm size is negatively related to both book and market debt ratios. Since this last result is inconsistent with existing evidence, we estimate a number of additional (unreported) regressions to better understand this phenomenon. We find that in our sample period the relation between firm size and leverage is indeed significantly positive when all firms, both rated and unrated, are included in the sample. However, the relation between size and leverage is significantly negative in the rated subsample and statistically insignificantly negative in the unrated subsample.[22] These results suggest that the positive effect of size on leverage documented in earlier studies is driven by the fact that rated firms tend to be larger and more

[22] Among rated firms the negative effect of size on leverage is concentrated among firms with speculative grade ratings (less than BBB).

levered. In other words, the earlier evidence should be viewed as evidence of a ratings effect, (as described by Faulkender and. Petersen (2006)), rather than a size effect.

For the other firm characteristics, the interpretation of the ratings regression and the debt ratio regressions are very similar. For example, the coefficient estimate of the market-to-book ratio is negative in the debt ratio regressions and positive in the credit rating regressions, both of which are consistent with the hypothesis that firms with significant growth opportunities (high market-to-book) target high ratings because of either high financial distress costs or to maintain financial flexibility.

Similarly, the effect of profitability on the capital structure choice is consistent across the rating and the leverage regressions where higher profitability is associated with lower book and market debt ratios and higher credit ratings. This result is generally interpreted as indicating that asymmetric information (Myers and Majluf (1984)) and personal taxation (Auerbach (1979)) considerations induce firms to retain their profits, which reduces their debt ratios. The above arguments imply that inside equity is a less expensive form of capital than outsider equity, which in turn suggests that the costs of achieving a higher rating are lower for more profitable firms. Consistent with this view, we observe a positive relation between profitability and ratings.

We also find that ratings increase with selling expenses. This result is consistent with the hypothesis that firms with more unique products (high selling expenses) target higher ratings (low probabilities of default) because they face high financial distress costs (Titman (1984) and Titman and Wessels (1988)). However, in the sample of rated firms, we do not find a reliable relation between debt ratios and selling expenses.

IV. Deviations from Target Ratings and Corporate Decisions

Up to this point our discussion implicitly assumes that the debt ratios and credit ratings that we observe reflect the capital structures that firms choose to target. This argument, however, does not take into account that exogenous shocks to profitability, risk, and other factors can result in deviations from the firms' target capital structures. Because of debt overhang issues, transaction costs, and managerial preferences firms may be rather slow about making capital structure choices that offset these deviations. As a result, the observed capital structures reflect not only the firm's target, but also the deviation from the target.

In this section we explicitly consider the possibility that observed capital structures deviate from their targets and measure the extent to which their choices move them back towards their targets. The idea is that if managers take their capital structure targets seriously, the deviation between their current and their target capital structures are likely to influence future investment and financing choices. Indeed prior literature has shown that deviations of observed debt ratios from the estimated targets do predict future corporate financing behavior.

Our analysis extends this literature by examining target ratings as well as target debt ratios. By directly comparing how firms respond to deviations from our measures of target debt ratios and target ratings, we can gauge the relative importance of these alternative measures of capital structure. In particular, we examine how deviations from target ratings and debt ratios influence corporate issuance and repurchase choices as well as dividend choices and acquisition choices.

A. Construction of target rating and target debt proxies

We construct our proxies for the target debt ratios and the target credit ratings using regressions similar to those reported in Table IV, with a few modifications. To make sure we do

not introduce a look-ahead bias in our analysis, the target capital structures are estimated using annual cross-sectional regressions.[23] That is, the target debt ratio (rating) of firm *i* in year *t* is estimated as the predicted value of the regression of debt ratios (ratings) of all firms observed in year *t*. The residual of this regression represents the estimated deviation from the target, which is used to predict the corporate choices in year *t+1*.[24, 25]

Earlier studies argue that debt ratios are very persistent (Lemmon, Roberts, and Zender (2008)) and that accounting for such persistence produces sharper estimates of the target capital structure. To account for strong persistence in firms' debt ratios, in addition to the independent variables reported in Table IV, we use the historical average debt ratio as an additional predictor of the target debt ratio. Similarly, we add the historical average credit rating as a predictor of the target credit rating.[26]

Before proceeding, it should be noted that the tests in this section are tests of the joint hypothesis that (1) firms have target capital structures to which they adjust and (2) our regression-based proxy for the target is a reasonably good measure of the true target. Thus, to the extent that the results in this section are consistent with the hypothesis that firms adjust to their target capital structures, they also validate our approach for estimating the proxy for the target.

It should also be noted that the estimated deviations from target ratings and deviations from target debt ratios are not highly correlated in our sample.[27] This indicates that deviations from target ratings and target debt ratios contain different information, and, thus, may independently

[23] These results are not reported for brevity but are available from the authors upon request.
[24] Our predicted rating is a continuous variable generated by mapping the fitted value from the ordered probit model (2) into a continuous set of values matching the range of actual ratings in our sample.
[25] To make sure that the predicted targets effects are independently significant, we also estimate versions of our regressions with both the deviations from targets and the observed ratings or debt ratios included in the regressions. The results for the deviations from targets remain qualitatively similar to those reported in the paper.
[26] Depending on availability, the historical average debt ratio or rating is calculated using two to five years of historical data.
[27] The correlation between the deviation from book leverage target and the deviation from target rating is –0.28. The correlation between the deviation from market leverage target and the deviation from target rating is –0.27.

influence corporate financing choices.

As we mentioned earlier, on one hand, the deviation from target rating may provide a better predictor of corporate choices because it implicitly incorporates information about the maturity and seniority structure of the firm's debt, the riskiness of the firm's collateral, its unfunded pension liabilities, and off-balance sheet debt. However, ratings may not be updated on a timely basis, and may reflect both the management's future intentions and the firm's current financial condition. The incorporation of future intentions will cause us to underestimate the influence of ratings on corporate decisions. For example, if the rating simply reflects the firm's current financial position, then firms with ratings that exceed their target should in theory make leverage increasing choices. If, however, the rating is forward looking, then the fact that its ratings is above its target may reflect the rating agency's expectation that the firm in fact plans to make choices that reduce its leverage.

B. Issuance and Repurchase Decisions

First, we examine how the estimated deviations from target ratings and leverage predict future issuance and repurchase decisions. Our analysis of the issuance and repurchase decisions considers the following two regression models:

$$DI_{it}^{*} = \beta_0 + \beta_1 (Target - Actual\ Rating)_{it-1}^{+} + \beta_2 (Actual - Target\ Rating)_{it-1}^{+} + X_{it-1}\gamma + \varepsilon_{it}. \quad (4)$$

$$ER_{it}^{*} = \beta_0 + \beta_1 (Target - Actual\ Rating)_{it-1}^{+} + \beta_2 (Actual - Target\ Rating)_{it-1}^{+} + X_{it-1}\gamma + \varepsilon_{it}. \quad (5)$$

In (4), the dependent variable, *DI**, is a latent continuous variable measuring the propensity to issue debt rather than equity. Its observable counterpart is a binary variable set to one if the firm issues debt and set to zero if it issues equity. In (5), the dependent variable, *ER**, is a latent continuous variable measuring the propensity to repurchase equity rather than retire debt. Its

observable counterpart is a binary variable set to one if the firm repurchases equity and set to zero if it retires debt.

If target ratings are important, then we expect firms with a rating deficit (surplus) to make financing decisions that reduce (increase) their leverage. Thus, our main variable of interest is the deviation of the observed rating from the target rating, for which we use two proxies. $(Target - Actual\ Rating)^{+}$, which we refer to as the rating deficit, is defined as the difference between the target and observed ratings with negative values set to zero. Similarly, $(Actual - Target\ Rating)^{+}$, which we refer to as the rating surplus, is defined as the difference between the observed and target ratings with negative values set to zero. By separately considering the rating and debt ratio deficits and surpluses, we account for the possibility that the response by firms to being over-levered and under-levered may not be symmetric. As we argued earlier, firms may be slow to react to being under-levered if managers enjoy private benefits or prestige from higher ratings and less debt. In contrast, firms managed in the interest of their equityholders may be reluctant to respond to being over-levered if reducing leverage results in wealth transfers from equity holders to debt holders.

We also estimate variants of equations (4) and (5) that include deviations from target debt ratios in place of deviations from target ratings, as well as specifications with both deviations from target ratings and target leverage included. Because regressions (4) and (5) are estimated on the sample of rated firms, we account for self-selection by estimating each of these regressions simultaneously with the selection equation (3) using maximum likelihood. Since most firms in our sample issue or repurchase debt or equity only occasionally and since aggregate financing activity shows substantial variation in time, the reported t-statistics reflect robust standard errors adjusted for clustering by year, as well as heteroskedasticity.

Finally, we address the caveat that some variables in the capital structure choice models (1) and (2) may be correlated with deviations from the target. Specifically, the negative relation between profitability and leverage is usually attributed to pecking order behavior where firms have no target debt ratios and prefer internal funds to external financing. Similarly, the negative relation between market-to-book and leverage is sometimes attributed to firms' attempts to time their equity issues to periods when their stock prices are relatively high. Incentives to engage in pecking order or market timing behavior could lead firms to deviate from their target capital structures, implying that these two variables may enter the target regression because they proxy for deviations from the target rather than being a determinant of the target.

We address these issues in two ways. First, we test for the robustness of our results by excluding profitability and market-to-book from the target model. The results reported in this and subsequent sections remain qualitatively the same whether or not these variables are included in the target regression. Second, although the results reported in the remaining tables are generated with market-to-book and profitability included in the target rating model, we control for their independent impact in regressions (4) and (5). We also include past stock returns as a control (in addition to market-to-book) for market timing of security issues and repurchases.

B1. Results

The estimation results of regression models (4) and (5) are presented in Table V. Panel A reports the estimates of the debt vs. equity issue choice model (4). Panel B reports the estimates of the equity vs. debt repurchase choice model (5).

Overall, the results suggest that firms make issuance and repurchase decisions that move them towards their target capital structures. In Panel A, we find that firms are more likely to issue equity rather than debt if their ratings are below their targets (positive values of (*Target* –

Actual Rating)$^{+}$) and if their debt ratios are above their targets (positive values of (*Actual – Target Leverage*)$^{+}$). We find that both measures of deviation from target capital structure explain the issuance choice somewhat similarly, with similar significance levels and similar log-likelihood values in specifications (1) and (2). In the horse race that includes both measures, both are significant, suggesting that one measure does not subsume the other. Furthermore, statistically significant likelihood ratio test statistics favor specification (3) that includes both measures of deviation from target capital structure over specifications (1) and (2) that include only one. The main difference across the regressions with the ratings deficits and surpluses versus the regressions with the debt ratio deficits and surpluses is that the effect of deviations from the debt ratio target is more symmetric, while deviations from the ratings target is not symmetric. Specifically, the results suggest that the deviations from rating targets influence issuance choices when they are below the target, but not when they are above the target.

The results for the Probit models of equity versus debt repurchases provide are reported in Panel B. The explanatory powers of debt ratio targets and ratings targets are again similar, and in the horse race we again find that neither measure subsumes the other. Furthermore, the effect of capital structure targets on repurchases is asymmetric for the regressions with the debt ratios as well as with the ratings targets. In both cases, we find that firms that are over-levered relative to their targets are less likely to repurchase shares, but that there is no relation between the repurchase choice and the extent to which firms are under-levered relative to their targets. These findings are consistent with the hypothesis that firms are slow to react to being under-levered because managers enjoy private benefits or prestige from higher ratings and less debt.

In both panels, specifications (4) and (5) show the effects of deviations from target leverage and target rating on corporate financing choice when both deviations agree on the financial

position of the firm. The coefficient estimates reported in these columns are for deviations from target leverage and target rating that are reset to zero when these deviation do not "agree" on the firm's financial position, i.e., when both the debt ratio and the rating are either above or below the respective targets. Comparisons of specifications (4) and (1) and specifications (5) and (2) suggest that the effects of deviations from target leverage and deviations from target ratings are stronger in magnitude and significance when the leverage and the rating indicators agree.[28]

C. Dividend and Acquisition Decisions

In addition to issuance and repurchase choices, deviations from capital structure targets are likely to influence dividend and investment choices. When firms increase/initiate dividends, other things equal, they face lower cash and higher leverage ratios as their equity declines. Similarly, cutting the dividend payments conserves cash and builds up equity and thus reduces leverage. Cash acquisitions tend to be financed with debt resulting in higher leverage ratios. Based on these arguments, we expect that when firms face rating deficits (surpluses) and leverage surpluses (deficits) they are less (more) likely to increase/initiate (cut) their dividends, and reduce (increase) the acquisition activity. To explore these effects, we estimate the following regressions that examine how a firm's deviation from its target capital structure affects its dividend and acquisition decisions.[29]

$$DIV_{it}^{*} = \beta_{0t} + \beta_1 (Target - Actual\ Rating)_{it-1}^{+} + \beta_2 (Actual - Target\ Rating)_{it-1}^{+} + X_{it-1}\gamma + \varepsilon_{it}. \quad (6)$$

$$ACQ_{it} = \beta_{0t} + \beta_1 (Target - Actual\ Rating)_{it-1}^{+} + \beta_2 (Actual - Target\ Rating)_{it-1}^{+} + X_{it-1}\gamma + \varepsilon_{it}. \quad (7)$$

[28] The conclusions are similar when we add to these regressions variables measuring the deviations from target leverage and target rating when these deviations do not "agree".

[29] Uysal (2008) finds that firms that are underleveraged relative to their target debt ratios are more likely to acquire, they tend to acquire larger targets, and their acquisition activities tend to be more frequent. In addition, his findings suggest that the fluctuations in the actual debt ratio rather than the movements in the target debt ratio influence the acquisition decisions.

In (6), the dependent variable, *DIV**, is a latent continuous variable measuring the propensity to change the dividend. Its observable counterpart, DIV, is set to one if the firm changes its dividend per share in the current fiscal year and is set to zero if the firm keeps the dividend unchanged.[30] We estimate separate specifications of regression model (6) for the cases of increases in existing dividends, dividend initiations, and decreases in dividends. In (7), the dependent variable, *ACQ*, measures funds used for acquisitions in the current fiscal year.[31]

Since regressions (6) and (7) are estimated on a sample of rated firms, we account for self-selection by estimating each of these regressions simultaneously with the selection equation (3) using maximum likelihood. The set of independent variables in both regressions includes the variables used in the issue and repurchase regression models (3) and (4). In addition, we control for firm size. Similar to the issuance and repurchase regressions, the reported t-statistics are based on robust standard errors adjusted for heteroskedasticity and clustering by year.

C1. Results

The results for the dividend and the acquisition regressions are presented in Tables VI and VII, respectively. Similar to our analysis in the preceding section, each table reports three different specifications using target leverage proxies (1), target rating proxies (2), and target rating and leverage proxies (3). In Table VI, the results for the decision to increase the dividend by firms that already pay dividends are reported in Panel A, the results for the decision to initiate a dividend are in Panel B, and the results for the decision to cut the dividend are in Panel C.

The results for the dividend regressions are quite similar to the results of the issuance and repurchase regressions. As in issuance and repurchase regressions, the impact of the deviations from target capital structure tends to be asymmetric in the dividend regressions. Over-levered

[30] Based on Compustat annual data item 26.
[31] Compustat annual data item 129, scaled by lagged total assets.

firms (those with excess leverage and/or rating deficit) are less likely to increase or initiate dividends and are more likely to decrease their dividend. Among these choices, however, only dividend increases are influenced by the extent to which a firm is below its target rating, with marginal significance. In all cases, the debt ratio targets and the ratings targets independently influence these choices. In Panel A, where the dependent variable is a dummy that equals one for dividend increases and zero otherwise, the deviations from target ratings has a much stronger effect than the deviations from the target debt ratio. In the other two dividend regressions, however, the two variables that measure deviations from target capital structure have very similar influences on the dividend choices.

Similar to our analysis in Table V, in all three panels, specifications (4) and (5) show the effects of deviations from target leverage and target rating on corporate financing choice when both deviations agree on the financial position of the firm. The coefficient estimates reported in these columns are for deviations from target leverage and target rating that are reset to zero when these deviation do not "agree" on the firm's financial position, i.e., when both the debt ratio and the rating are either above or below the respective targets. A comparison of specifications (4) and (1) shows that the effects of deviations from target leverage on dividend policy are stronger in magnitude and significance when the leverage and the rating indicators agree. A comparison of specifications (5) and (2) shows that the effects of deviations from target ratings on dividend policy are also stronger in magnitude and significance when the leverage and the rating indicators agree. [32]

The results presented in Table VII, which examines the acquisition activity, are consistent with the idea that deviations from firms' target capital structures influence their acquisition

[32] The conclusions are similar when we add to these regressions variables measuring the deviations from target leverage and target rating when these deviations do not "agree".

decisions. The results are again consistent with our previous findings that suggest that both measures of the deviation from target capital structure predict the corporate choice. While neither measure subsumes the other, overall, the deviations from target ratings have a much stronger effect than the deviations from the target debt ratio on firms' acquisition decisions, similar to our results in the regressions of dividend increases. The effects of deviations from targets are less asymmetric. Being over-levered seems to be more important than being under-levered, but we do estimate a significant relation between the extent by which firms are under-levered and their acquisition activity.

Similar to earlier analyses, specifications (4) and (5) in Table VII show the effects of deviations from target leverage and target rating on corporate financing choice when both deviations agree on the financial position of the firm. Compared to, respectively specifications (1) and (2), the results for specifications (4) and (5) show that the effects of deviations from target leverage and deviations from target ratings are stronger in magnitude and/or more significant statistically when these indicators of the firm's financial position match. [33]

V. Robustness

We carry out three sets of robustness tests for each corporate decision we have examined in the preceding section. First, we replace book leverage based variables with their market leverage based counterparts to confirm that our results are not driven by our measurement of the debt ratios. In Table VIII Panels A-C, we report the results for the issuance and repurchase regressions, dividend regressions, and acquisitions regressions using market value based debt ratios. The results are qualitatively similar to those reported in Tables V-VII. The most notable

[33] The conclusions are similar when we add to these regressions variables measuring the deviations from target leverage and target rating when these deviations do not "agree".

difference is in the acquisition regressions where the statistical significance of the leverage deficit measure rises. Importantly, the economic and statistical significance of the deviations from rating targets remain unchanged.

Second, we estimate the issuance and repurchase regressions on a restricted sample that includes only "pure" transactions (i.e., transactions where firms issue debt while repurchasing equity or where they issue equity while reducing their debt, are excluded). This robustness test is motivated by Hovakimian (2004) who reports that the effects of deviation from target leverage on debt vs. equity issue choice become insignificant when he considers only "pure" transactions.

The results reported in Table IX suggest that the effect of the deviation from target leverage on the choice between pure debt and pure equity issues is indeed insignificant for both positive and negative deviations from the leverage target. In contrast, firms with below-target ratings are significantly more likely to issue equity. In the repurchase regressions (columns (3) and (4)), both rating deficit (positive $(\textit{Target} - \textit{Actual Rating})^{+}$) and leverage surplus (positive $(\textit{Actual} - \textit{Target Leverage})^{+}$) are associated with a significantly higher likelihood of retiring debt. In unreported analysis, we obtain similar results when we repeat the analysis using market value based leverage measures.

Third, as we have articulated earlier, the deviation of the observed rating from the target estimated based on firm characteristics is likely to be affected by how stale or forward looking the observed ratings are. This leaves open the possibility of alternative interpretations of our results. For example, a stale downward biased rating may affect actions of a firm that is at its target capital structure with perfectly balanced benefits and costs of debt if the rating affects the behavior of its investors, customers, or other stakeholders. To isolate such effects from the behavior of targeting certain ratings, we introduce an additional control variable in regressions

(4) and (5). This variable measures the deviation of the actual rating from the predicted rating, which is estimated much the same way as the target rating, except it contains the firm's debt ratio as an additional independent variable. This deviation will predict corporate financing choices if the current ratings reflect the ratings agency's private information about the firms' future corporate finance choices or if firms make financing choices that take advantage of the rating agencies sluggishness.[34]

In Table X Panel A, we observe that the issuance and repurchase choices are related to the differences between firms' actual and predicted ratings. In particular, we find that firms that are overrated (high values of $(Actual - Predicted\ Rating)^{+}$) are more likely to issue equity. One interpretation of this result is that the actual rating is higher than expected based on the firm's observed characteristics and its debt ratio because the rating agency anticipates the future issuance of equity. Alternatively, the rating agency may simply be sluggish, which would give the firm extra time to issue equity and preempt a downgrade. The results are similar when firms are underrated. The dividend and acquisition regressions do not support the idea that rating agencies' potential delay in updating or their forward looking behavior in assigning ratings can predict the dividend and acquisition policies. Importantly, the directions of the effects of the deviations from target ratings remain similar to those reported in Tables V-VII, with somewhat higher levels of significance. Thus, the importance of the deviations from target ratings in predicting corporate financing, dividend, and acquisition behavior is unlikely to be driven by the extent to which the observed ratings are stale or forward looking.

[34] Kisgen (2006) reports that firms with plus and minus ratings are more likely to issue equity and less likely to issue debt. In additional robustness tests, we get statistically insignificant estimates for plus and minus ratings in regressions (4) and (5). These results are not reported to conserve space, but are available from the authors upon request.

VI. Conclusion

Most executives would agree that, ceteris paribus, it is better to have a good credit rating. Yet very few firms have either a "AAA" or a "AA" rating. The reason is that achieving a high rating requires a firm to include a substantial amount of equity in its capital structure, and this can be very costly. Hence, high credit ratings are observed only for firms that are likely to benefit the most from a higher credit rating, e.g., growth firms that expect to be raising substantial capital in the future. However, in contrast to what one might expect from a tradeoff theory, our evidence does not support the idea that firms with the lowest bankruptcy costs have the lowest ratings. Indeed, smaller firms, firms with greater R&D expenditures, and firms with less tangible assets tend to have lower ratings.

For a variety of reasons, firms are subject to shocks that lead them to deviate from their target ratings. If the concept of a target rating is empirically relevant, then we would expect firms to make corporate finance choices that at least partially offset these shocks and move the firm back towards their targets. However, there are a number of impediments to the readjustment process. For example, wealth transfers to existing debtholders are likely to be an impediment to the leverage decreasing choices that would move an overleveraged firm towards their targets. In addition, managerial preferences for higher ratings may be an impediment to leverage increasing choices that would move an underleveraged firm towards their targets.

Our analysis indicates that deviations from target leverage ratios as well as ratings targets influence debt versus equity issuance and repurchase choices, dividend changes and acquisition activities in ways that tend to move the firm towards their targets. We find that the deviations from target leverage ratios and target credit ratings have similar predictive abilities and neither effect subsumes the other. In addition, we find that the effect of the deviation from the targets

tends to be somewhat asymmetric. In particular, our regressions indicate that while these choices are strongly influenced by the extent to which firms are over-levered, the extent to which firms are under-levered does not seem to have much influence on these choices. These results suggest that managerial incentives provide a much more important impediment to moves towards the target capital structure than do debt holder wealth transfers.

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Table I
Ratings Sample

This table presents the number of firms with S&P issuer credit rating (Compustat data 281) across our sample period with non missing observations on variables that we use in our analysis. The letter ratings are transformed into numerical equivalents using an ordinal scale ranging from 1 for the lowest rated firms (CCC-) to 19 for the highest rated firms (AAA).

	1-3 CCC- CCC CCC+	4-6 B- B B+	7-9 BB- BB BB+	10-12 BBB- BBB BBB+	13-15 A- A A+	16-18 AA- AA AA+	19 AAA	Total
1985	2	93	94	84	120	56	11	460
1986	28	173	130	117	140	55	13	656
1987	20	185	139	108	135	55	14	656
1988	17	161	131	99	137	50	14	609
1989	15	133	121	109	125	51	14	568
1990	13	90	106	114	119	54	12	508
1991	14	79	112	121	128	51	12	517
1992	11	84	125	137	131	51	14	553
1993	4	105	160	150	131	49	12	611
1994	6	116	164	170	122	45	11	634
1995	7	140	167	181	137	44	11	687
1996	8	169	188	190	157	41	11	764
1997	8	181	217	210	160	37	10	823
1998	8	180	247	216	154	36	8	849
1999	9	189	255	230	139	28	8	858
2000	10	200	248	225	124	23	7	837
2001	16	179	253	220	120	22	6	816
2002	27	167	279	217	117	19	5	831
2003	19	181	303	207	120	18	5	853
2004	14	196	296	221	120	17	4	868
2005	17	199	285	209	122	14	4	850
2006	15	204	285	205	108	13	4	834
Total	288	3,404	4,305	3,740	2,866	829	210	15,642
Percent	1.8%	21.8%	27.5%	23.9%	18.3%	5.3%	1.3%	

Table II
Sample Statistics

The table presents the sample means for variables important for our analysis. S&P500 indicator is set to one for firms that belong to S&P500 index. S&P400 indicator is set to one for firms that belong to S&P400 mid-cap index. NYSE indicator is set to one for firms traded on NYSE. Probability rated is the percentage of rated firms in the firm's industry. Young indicator is set to one for firms that are three years old or younger. Market-to-book is (total assets – book equity + market equity)/total assets. Tangibility is the property, plant, and equipment scaled by total assets. R&D is the research and development expense scaled by sales. R&D indicator is coded one when R&D is not missing. Selling expense is selling, general, and administrative expense net of R&D over sales. Profitability is (operating income)/assets. Size is the natural log of sales, adjusted for inflation. Book leverage is (short-term debt + long-term debt)/assets. Market leverage is (short-term debt + long-term debt)/market value of assets. The statistical difference between the firm characteristics across rated and non-rated firms at 5% and 1% level are marked * and **, respectively.

	Not Rated	Rated
S&P500 indicator	0.022	0.271**
S&P400 indicator	0.038	0.110**
NYSE indicator	0.175	0.700**
Young indicator	0.139	0.035**
Probability rated	0.143	0.209**
Market-to-book	1.820	1.597**
Tangibility	0.268	0.360**
R&D	0.048	0.021**
Selling expense	0.329	0.204**
Profitability	0.101	0.152**
Size	3.820	6.884**
Market leverage	0.168	0.272**
Book leverage	0.214	0.353**
Observations	68,409	15,642

Table III
Determinants of public debt market access

The table presents maximum likelihood estimates for the probability of being rated (accessing public debt markets) using a probit specification. S&P500 indicator is set to one for firms that belong to S&P500 index. S&P400 indicator is set to one for firms that belong to S&P400 mid-cap index. NYSE indicator is set to one for firms traded on NYSE. Probability rated is the percentage of rated firms in the firm's industry. Young indicator is set to one for firms that are three years old or younger. Market-to-book is (total assets – book equity + market equity)/total assets. Tangibility is the property, plant, and equipment scaled by total assets. R&D is the research and development expense scaled by sales. R&D indicator is coded one when R&D is not missing. Selling expense is selling, general, and administrative expense net of R&D over sales. Profitability is (operating income)/assets. Size is the natural log of sales, adjusted for inflation. The dependent and the independent variables are measured contemporaneously. Industry indicators are included in the rating assignment model as control variables but are not reported. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and firm-level clustering. Coefficient estimates significantly different from zero at 5% and 1% level are marked * and **, respectively.

	Rated debt vs. no rated debt	
	Coeff.	z-stat.
S&P500 indicator	0.336**	4.7
S&P400 indicator	0.023	0.3
NYSE indicator	0.330**	8.3
Young indicator	-0.188**	-5.1
Probability rated	1.892**	10.0
Market-to-book	-0.110**	-6.7
Tangibility	0.657**	7.7
R&D	0.980**	4.3
R&D indicator	-0.234**	-6.4
Selling expense	0.300*	2.6
Profitability	-0.781**	-7.0
Size	0.603**	41.0
Pseudo-R^2	0.470	
Observations	84,051	

Table IV
Capital Structure Choice Models

The table presents maximum likelihood estimates of the ratings choice, book leverage choice, and market leverage choice models with sample selection correction. The rating choice is modeled using an ordered probit specification. The sample selection (i.e., the probability of being rated) is modeled using a binomial probit specification from Table III. Market-to-book is (total assets – book equity + market equity)/total assets. Tangibility is the property, plant, and equipment scaled by total assets. R&D is the research and development expense scaled by sales. R&D indicator is coded one when R&D is not missing. Selling expense is selling, general, and administrative expense net of R&D over sales. Profitability is (operating income)/assets. Size is the natural log of sales, adjusted for inflation. Book leverage is (short-term debt + long-term debt)/assets. Market leverage is (short-term debt + long-term debt)/market value of assets. The dependent and the independent variables are measured contemporaneously. Industry indicators are included in the rating assignment model as control variables but are not reported. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and firm-level clustering. Coefficient estimates significantly different from zero at 5% and 1% level are marked * and **, respectively.

	Rating choice (1)		Book leverage choice (2)		Market leverage choice (3)	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
Market-to-book	0.182**	7.8	-0.021**	-5.4	-0.084**	-18.2
Tangibility	0.530**	4.2	0.120**	5.8	0.109**	6.6
R&D	-1.501**	-4.2	-0.247**	-3.4	-0.148**	-3.0
R&D indicator	0.267**	5.3	-0.031**	-3.7	-0.029**	-4.4
Selling expense	0.819**	4.6	-0.001	-0.1	-0.038	-1.7
Profitability	2.803**	14.8	-0.163**	-5.9	-0.231**	-10.2
Size	0.350**	10.6	-0.020**	-4.7	-0.013**	-3.5
Log-Likelihood	-56,045.4		-14,776.9		-12,079.7	
Observations	15,642		15,642		15,642	

Table V
Target Capital Structure and Corporate Financing Decisions

The table presents the results of probit regressions predicting debt vs. equity issuance (Panel A) and equity repurchase vs. debt retirement choices (Panel B) with sample selection correction using maximum likelihood. Rating deficit, $(\text{Target} - \text{Actual Rating})^+$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, $(\text{Actual} - \text{Target Rating})^+$, is (Actual - Target Rating) when positive and zero otherwise. Leverage is book leverage defined as (short-term debt + long-term debt)/assets. Leverage deficit, $(\text{Target} - \text{Actual Leverage})^+$, is (Target – Actual Leverage) when positive and zero otherwise. Leverage surplus, $(\text{Actual} - \text{Target Leverage})^+$, is (Actual - Target Leverage) when positive and zero otherwise. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. In specifications (4) and (5), the values of all four measures of deviation from target capital structure are reset to zero when both the debt ratio and the rating are either above or below the target. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing specifications (1) and (2) to specification (3). Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

Panel A: Debt vs. equity issue choice regressions

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
$(\text{Target} - \text{Actual Rating})^+$			-0.307**	-5.5	-0.265**	-4.2			-0.297**	-6.0
$(\text{Actual} - \text{Target Rating})^+$			0.040	0.5	-0.005	-0.1			0.247**	2.9
$(\text{Target} - \text{Actual Leverage})^+$	1.933*	2.1			1.898*	2.0	3.293*	2.4		
$(\text{Actual} - \text{Target Leverage})^+$	-2.766**	-3.4			-2.060*	-2.2	-2.833**	-3.4		
Profitability	2.927**	3.9	2.779**	4.4	2.830**	4.1	2.982**	4.2	2.832**	4.3
Market-to-book	0.017	0.3	0.026	0.6	0.015	0.3	0.023	0.5	0.026	0.6
Stock return	-0.255*	-3.6	-0.247**	-4.8	-0.248*	-3.6	-0.251**	-3.9	-0.257**	-4.4
Log-likelihood	-3,865.2		-3,864.9		-3,851.4		-3865.9		-3864.4	
LR statistic	27.1**		27.6**							
Observations	2,396		2,396		2,396		2,396		2,396	

Panel B: Equity vs. debt repurchase choice regressions

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.522**	-6.7	-0.469**	-6.3			-0.576**	-5.8
(Actual – Target Rating)$^{+}$			-0.002	-0.0	-0.074	-1.0			0.187**	2.9
(Target – Actual Leverage)$^{+}$	1.035	1.3			1.170	1.4	2.909**	3.5		
(Actual – Target Leverage)$^{+}$	-5.670**	-8.5			-4.723**	-6.7	-5.741**	-5.9		
Profitability	2.955**	5.0	2.780**	5.4	3.013**	4.9	3.144**	5.2	2.821**	5.2
Market-to-book	0.598**	13.4	0.553**	13.2	0.566**	12.9	0.568**	12.5	0.556**	12.9
Stock return	-0.138**	-2.6	-0.053	-1.2	-0.104*	-2.1	-0.112*	-2.3	-0.084	-1.8
Log-likelihood	-3,901.4		-3,903.7		-3,865.5		-3902.4		-3905.4	
LR statistic	71.9**		76.6**							
Observations	2,363		2,363		2,363		2,363		2,363	

Table VI
Target Capital Structure and Dividend Decisions

The table presents the results of probit regressions predicting the likelihood of dividend increases (Panel A), dividend initiations (Panel B), and dividend decreases (Panel C) versus no action with sample selection correction using maximum likelihood. Rating deficit, $(\text{Target} - \text{Actual Rating})^+$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, $(\text{Actual} - \text{Target Rating})^+$, is (Actual - Target Rating) when positive and zero otherwise. Leverage is book leverage defined as (short-term debt + long-term debt)/assets. Leverage deficit, $(\text{Target} - \text{Actual Leverage})^+$, is (Target – Actual Leverage) when positive and zero otherwise. Leverage surplus, $(\text{Actual} - \text{Target Leverage})^+$, is (Actual - Target Leverage) when positive and zero otherwise. Firm size is natural log of CPI-adjusted sales. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. In specifications (4) and (5), the values of all four measures of deviation from target capital structure are reset to zero when both the debt ratio and the rating are either above or below the target. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing specifications (1) and (2) to specification (3). Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

Panel A: Dividend payers: Dividend increases vs. no change

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
$(\text{Target} - \text{Actual Rating})^+$			-0.356**	-12.7	-0.333**	-9.9			-0.279**	-11.5
$(\text{Actual} - \text{Target Rating})^+$			0.145*	2.1	0.144*	2.0			0.260**	4.7
$(\text{Target} - \text{Actual Leverage})^+$	0.181	0.4			-0.160	-0.3	2.453**	4.8		
$(\text{Actual} - \text{Target Leverage})^+$	-2.369**	-4.3			-1.169*	-2.0	-2.776**	-4.4		
Firm size	0.106**	4.2	0.117**	4.4	0.119**	4.5	0.111**	4.6	0.110**	4.4
Profitability	6.186**	8.8	6.249**	9.4	6.326**	9.2	6.326**	9.0	6.364**	9.6
Market-to-book	0.129**	2.7	0.123*	2.5	0.124*	2.5	0.125*	2.6	0.122*	2.4
Stock return	0.308**	5.0	0.387**	6.0	0.377**	6.0	0.316**	5.2	0.346**	5.5
Log-likelihood	-7,619.5		-7,556.4		-7,553.1		-7603.3		-7579.4	
LR statistic	132.8**		6.5*							
Observations	5,342		5,342		5,342		5,342		5,342	

Panel B: Dividend non-payers: Dividend initiations vs. no change

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.177**	-3.1	-0.136*	-2.5			-0.231*	-2.5
(Actual – Target Rating)$^{+}$			0.019	0.4	0.013	0.3			0.070	1.7
(Target – Actual Leverage)$^{+}$	-0.029	0.0			-0.111	-0.2	0.717	1.3		
(Actual – Target Leverage)$^{+}$	-2.907*	-2.5			-2.546*	-2.2	-3.028**	-2.7		
Firm size	-0.002	0.0	0.009	0.2	0.001	0.0	-0.004	-0.1	0.004	0.1
Profitability	1.671**	5.6	1.747**	6.0	1.721**	5.8	1.741**	5.7	1.714**	5.9
Market-to-book	-0.024	-0.5	-0.033	-0.7	-0.023	-0.5	-0.025	-0.5	-0.032	-0.7
Stock return	0.042	1.4	0.055	1.8	0.053	1.7	0.044	1.4	0.051	1.7
Log-likelihood	-8,041.8		-8,044.3		-8,038.7		-8042.3		-8043.3	
LR statistic	6.1*		11.2**							
Observations	4,050		4,050		4,050		4,050		4,050	

Panel C: Dividend payers: Dividend decreases vs. no change

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			0.130**	3.9	0.090*	2.4			0.160**	5.2
(Actual – Target Rating)$^{+}$			0.036	0.8	0.044	0.9			-0.027	-0.6
(Target – Actual Leverage)$^{+}$	-0.272	-0.6			-0.354	-0.7	-0.303	-0.5		
(Actual – Target Leverage)$^{+}$	2.202**	6.7			1.827**	4.5	2.325**	5.1		
Firm size	0.093*	2.6	0.087*	2.4	0.086*	2.4	0.095**	2.7	0.089*	2.5
Profitability	-0.895	-1.3	-0.641	-1.0	-0.787	-1.2	-0.877	-1.3	-0.728	-1.1
Market-to-book	0.264**	4.4	0.263**	4.5	0.263**	4.4	0.261**	4.4	0.264**	4.5
Stock return	0.130	1.0	0.106	0.9	0.136	1.0	0.124	0.9	0.120	0.9
Log-likelihood	-5,049.6		-5,055.5		-5,045.9		-5050.8		-5051.8	
LR statistic	7.5*		19.1**							
Observations	3,285		3,285		3,285		3,285		3,285	

Table VII
Target Capital Structure and Acquisition Decisions

The table presents the results of an OLS regression of funds used for acquisitions with sample selection correction using maximum likelihood. The dependent variable is acquisitions (Compustat annual data item 129) scaled by lagged total assets. Rating deficit, (Target – Actual Rating)$^{+}$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, (Actual – Target Rating)$^{+}$, is (Actual - Target Rating) when positive and zero otherwise. Leverage is book leverage defined as (short-term debt + long-term debt)/assets. Leverage deficit, (Target – Actual Leverage)$^{+}$, is (Target – Actual Leverage) when positive and zero otherwise. Leverage surplus, (Actual – Target Leverage)$^{+}$, is (Actual - Target Leverage) when positive and zero otherwise. Firm size is natural log of CPI-adjusted sales. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. In specifications (4) and (5), the values of all four measures of deviation from target capital structure are reset to zero when both the debt ratio and the rating are either above or below the target. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing specifications (1) and (2) to specification (3). Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

	(1)		(2)		(3)		(4)		(5)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.006**	-7.0	-0.005**	-5.9			-0.006**	-9.0
(Actual – Target Rating)$^{+}$			0.004**	2.7	0.003*	2.2			0.006**	5.1
(Target – Actual Leverage)$^{+}$	0.030*	2.3			0.024	1.7	0.092**	5.8		
(Actual – Target Leverage)$^{+}$	-0.060**	-4.4			-0.039**	-2.7	-0.061**	-4.5		
Firm size	-0.002*	-2.0	-0.001	-1.6	-0.002	-1.6	-0.002	-1.9	-0.002	-1.8
Profitability	0.083**	7.1	0.081**	6.9	0.081**	7.0	0.086**	7.3	0.083**	7.0
Market-to-book	0.003*	2.0	0.002	1.9	0.003	1.9	0.003*	2.0	0.003	1.9
Stock return	0.003*	2.4	0.004**	2.7	0.003**	2.7	0.003*	2.4	0.003*	2.6
Log-likelihood	-648.1		-637.7		-630.6		-635.8		-639.3	
LR statistic	35.0**		14.1**							
Observations	9,552		9,552		9,552		9,552		9,552	

Table VIII
Robustness: Financing Choice, Dividend, and Acquisition Regressions with Market Leverage

The table presents the robustness of the results presented in Tables V, VI, and VII to the use of market value based measures. In Panel A, we report the results for probit regressions that predict debt vs. equity issuance and equity repurchase vs. debt retirement choices. Panel B presents the results of probit regressions predicting the likelihood of dividend increases, dividend initiations, and dividend decreases versus no action. Panel C presents the results of an OLS regression of funds used for acquisitions. All the models are estimated with sample selection correction using maximum likelihood. Rating deficit, (Target – Actual Rating)$^{+}$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, (Actual – Target Rating)$^{+}$, is (Actual - Target Rating) when positive and zero otherwise. Leverage is market leverage defined as (short-term debt + long-term debt)/(assets – book of equity + market of equity). Leverage deficit, (Target – Actual Leverage)$^{+}$, is (Target – Actual Leverage) when positive and zero otherwise. Leverage surplus, (Actual – Target Leverage)$^{+}$, is (Actual - Target Leverage) when positive and zero otherwise. Firm size is natural log of CPI-adjusted sales. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing the specification pairs modeling each corporate decision. Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

Panel A: Financing choice regressions

	Debt vs. equity issue		Debt vs. equity issue		Equity vs. debt repurchase		Equity vs. debt repurchase	
	(1)		(2)		(3)		(4)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.279**	-4.7			-0.453**	-6.0
(Actual – Target Rating)$^{+}$			0.033	0.3			-0.093	-1.3
(Target – Actual Leverage)$^{+}$	2.285*	2.3	2.120*	2.2	2.600**	4.1	2.583**	3.5
(Actual – Target Leverage)$^{+}$	-2.591**	-3.3	-1.814*	-2.2	-8.019**	-6.4	-6.770**	-5.4
Profitability	3.051**	4.2	2.933**	4.3	3.024**	5.6	3.066**	5.5
Market-to-book	-0.005	-0.1	0.004	0.1	0.551**	13.1	0.534**	12.6
Stock return	-0.313**	-4.2	-0.291**	-4.1	-0.276**	-4.9	-0.235**	-4.4
Log-likelihood	-3,795.3		-3,778.8		-3,853.7		3,821.6	
LR statistic	32.9**				64.1**			
Observations	2,369		2,369		2,346		2,346	

Panel B: Dividend decisions

	Dividend increases				Dividend initiations				Dividend decreases			
	(1)		(2)		(3)		(4)		(5)		(6)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.309**	-8.6			-0.127*	-2.4			0.085*	2.3
(Actual – Target Rating)$^{+}$			0.143*	2.0			0.008	0.2			0.041	0.8
(Target – Actual Leverage)$^{+}$	0.020	0.0	-0.351	-0.6	-0.046	-0.1	-0.147	-0.2	0.577	1.0	0.531	0.9
(Actual – Target Leverage)$^{+}$	-4.397**	-8.3	-3.054**	-5.0	-5.136**	-3.6	-4.790**	-3.5	3.068**	5.4	2.692**	4.3
Firm size	0.109**	4.2	0.122**	4.3	-0.002	0.0	0.001	0.0	0.089*	2.5	0.083*	2.3
Profitability	6.279**	8.9	6.416**	9.3	1.774**	5.8	1.813**	5.9	-0.852	-1.3	-0.757	-1.1
Market-to-book	0.103*	2.1	0.105*	2.1	-0.064	-1.2	-0.063	-1.1	0.290**	4.9	0.286**	4.8
Stock return	0.242**	4.0	0.332**	5.2	-0.002	-0.1	0.013	0.4	0.175	1.3	0.175	1.3
Log-likelihood	-7,570.1		-7,512.6		7,873.6		7,871.0		-5,033.1		-5,029.7	
LR statistic	115.0**				5.1				6.7*			
Observations	5,326		5,326		3,978		3,978		3,277		3,277	

Panel C: Acquisition decisions

	(1)		(2)	
	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$			-0.005**	-5.8
(Actual – Target Rating)$^{+}$			0.003*	2.0
(Target – Actual Leverage)$^{+}$	0.066**	4.0	0.059**	3.6
(Actual – Target Leverage)$^{+}$	-0.069**	-5.3	-0.048**	-3.6
Firm size	0.084**	7.2	0.082**	7.0
Profitability	0.002	1.7	0.002	1.7
Market-to-book	0.001	0.7	0.002	1.3
Stock return	-0.002*	-2.5	-0.002*	-2.1
Log-likelihood	-64.9		-49.1	
LR statistic	31.5**			
Observations	9,465		9,465	

Table IX
Robustness: Sample of Pure Transactions

The table presents the results of probit regressions predicting debt vs. equity issuance and equity repurchase vs. debt retirement choices with sample selection correction using maximum likelihood estimated on a sample of "pure" transactions. Rating deficit, $(\text{Target} - \text{Actual Rating})^+$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, $(\text{Actual} - \text{Target Rating})^+$, is (Actual - Target Rating) when positive and zero otherwise. Leverage is book leverage defined as (short-term debt + long-term debt)/assets. Leverage deficit, $(\text{Target} - \text{Actual Leverage})^+$, is (Target – Actual Leverage) when positive and zero otherwise. Leverage surplus, $(\text{Actual} - \text{Target Leverage})^+$, is (Actual - Target Leverage) when positive and zero otherwise. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing the specification pairs modeling each corporate decision. Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

	Debt vs. equity issue choice				Equity vs. debt repurchase choice			
	(1)		(2)		(3)		(4)	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
$(\text{Target} - \text{Actual Rating})^+$			-0.282**	-3.9			-0.360**	-5.0
$(\text{Actual} - \text{Target Rating})^+$			-0.061	-0.5			-0.080	-0.9
$(\text{Target} - \text{Actual Leverage})^+$	1.660	1.8	1.799	1.9	0.625	0.7	0.760	0.8
$(\text{Actual} - \text{Target Leverage})^+$	-0.567	-0.7	0.315	0.4	-5.654**	-5.9	-4.871**	-5.0
Profitability	2.756**	3.5	2.706**	3.7	2.483**	4.0	2.520**	3.9
Market-to-book	-0.101	-1.7	-0.098	-1.8	0.602**	14.8	0.577**	14.3
Stock return	-0.176*	-2.2	-0.179*	-2.3	-0.068	-1.3	-0.045	-0.8
Log-likelihood	-3,072.4		-3,063.2		-3,155.2		-3,136.4	
LR statistic	18.4**				37.5**			
Observations	1,970		1,970		1,937		1,937	

Table X
Robustness: Controlling for Stale Ratings

The table presents the results for the regressions that predict the financing choices (Table V), the choice of increasing/initiating/decreasing dividends (Table VI), and the acquisition choice (Table VII) with an explicit proxy for the difference between predicted ratings (based on the prediction model that is similar to the ones used by the rating agencies) and the actual ratings. In Panel A, we report the results for probit regressions that predict debt vs. equity issuance and equity repurchase vs. debt retirement choices. Panel B presents the results of probit regressions predicting the likelihood of dividend increases, dividend initiations, and dividend decreases versus no action, as well as the results of an OLS regression of funds used for acquisitions. All the models are estimated with sample selection correction using maximum likelihood. Rating deficit, $(\text{Target} - \text{Actual Rating})^+$, is (Target – Actual Rating) when positive and zero otherwise. Rating surplus, $(\text{Actual} - \text{Target Rating})^+$, is (Actual - Target Rating) when positive and zero otherwise. $(\text{Predicted} - \text{Actual Rating})^+$ takes a positive values when the predicted rating is higher than the actual rating and zero otherwise. $(\text{Actual} - \text{Predicted Rating})^+$ takes a positive values when the actual rating is higher than the predicted rating and zero otherwise. Firm size is natural log of CPI-adjusted sales. Profitability is operating income/assets. Market-to-book is (total assets – book equity + market equity)/total assets. All independent variables are lagged relative to the dependent variables. LR statistics are the likelihood ratio test statistics comparing the specification pairs modeling each corporate decision. Values significantly different from zero at 5% and 1% level are marked * and **, respectively. The reported t-statistics reflect robust standard errors adjusted for heteroskedasticity and clustering by year.

Panel A: Financing decisions

	Debt vs. equity issue		Equity vs. debt repurchase	
	Coef.	z-stat.	Coef.	z-stat.
$(\text{Target} - \text{Actual Rating})^+$	-0.518*	-3.0	-1.903**	-6.7
$(\text{Actual} - \text{Target Rating})^+$	0.543**	3.4	0.922**	4.0
$(\text{Predicted} - \text{Actual Rating})^+$	0.212	1.3	1.456**	4.8
$(\text{Actual} - \text{Predicted Rating})^+$	-0.550**	-3.4	-1.006**	-4.3
Profitability	2.783**	4.3	2.928**	5.4
Market-to-book	0.026	0.6	0.549**	12.1
Stock return	-0.249**	-4.5	-0.108*	-2.1
Log-likelihood	-3,858.3		-3,851.6	
Observations	2,396		2,363	

Panel B: Dividend and acquisition decisions

	Dividend increases vs. no change		Dividend initiations vs. no change		Dividend decreases vs. no change		Acquisitions	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
(Target – Actual Rating)$^{+}$	-0.299**	-3.6	-0.633*	-3.0	0.191*	2.0	-0.006**	-3.5
(Actual – Target Rating)$^{+}$	0.301**	3.1	-0.011	-0.1	-0.096	-0.8	0.004	1.4
(Predicted – Actual Rating)$^{+}$	-0.176	-1.5	0.056	0.3	0.145	1.1	-0.001	-0.3
(Actual – Predicted Rating)$^{+}$	-0.066	-0.7	0.491*	2.6	-0.065	-0.6	0.000	0.1
Firm size	0.120**	4.5	0.008	0.1	0.084*	2.2	-0.001	-1.6
Profitability	6.236**	9.4	1.711**	6.1	-0.645	-1.0	0.081**	6.9
Market-to-book	0.122*	2.5	-0.028	-0.6	0.263**	4.5	0.002	1.9
Stock return	0.388**	6.1	0.049	1.5	0.111	0.9	0.004**	2.7
Log-likelihood	-7,555.0		-8,040.3		-5,054.7		-150.1	
Observations	5,342		4,050		3,285		9,552	