The Determinants and Consequences of Financial Thresholds in Credit Ratings

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Abstract

We introduce new evidence on how financial ratio-based thresholds, an increasingly common feature of credit rating disclosures since the Great Financial Crisis, affect firm behavior and market perceptions. Using a novel dataset extracted from over 20,000 S&P credit reports from 2008 to 2020, we show that these thresholds, now disclosed in 75% of all credit rating reports, are neither mechanical nor symbolic. First, threshold levels reflect both firm fundamentals and credit rating agency (CRA) incentives: they are tighter for riskier firms and looser when CRAs' reputational concerns are lower or conflicts of interest are more salient. Second, thresholds influence real outcomes: firms facing tighter benchmarks cut leverage, preserve equity, and improve performance, especially among speculative-grade issuers. Third, threshold breaches are meaningful signals that predict negative rating actions. These findings demonstrate that ratio-based thresholds, although non-binding, serve as soft constraints and public signals, offering a key mechanism through which CRAs discipline issuers and coordinate expectations in capital markets.
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1. Introduction

In the wake of the 2008 financial crisis, credit rating agencies (CRAs) came under intense scrutiny for their conflicts of interest and failures to detect and disclose risks in a timely manner (e.g., Securities and Exchange Commission 2008; United States House of Representatives, Committee on Oversight and Government Reform 2008, 2011; Partnoy 2017). In response, one subtle but important change in practice has emerged: the disclosure of financial ratio-based thresholds in credit research reports. These thresholds often serve as soft triggers, i.e., non-binding but salient benchmarks that indicate the likelihood of and conditions for future rating actions. Although rarely mentioned prior to the crisis, these thresholds have become an increasingly common feature of rating reports since 2008. Despite their growing prevalence, the criteria used by CRAs to set these thresholds and the implications of the thresholds for the issuing firm and investors are not well studied. This paper provides the first systematic examination of these dynamics.

Financial ratio-based thresholds offer a more granular complement to categorical credit ratings. Unlike a letter grade, which aggregates information across many factors, thresholds tie potential rating outcomes to specific financial metrics, providing a reference point for evaluating issuer performance. Thresholds thus help coordinate the expectations of CRAs, issuers, and investors regarding the likelihood of rating actions. Yet, the mechanisms behind threshold-setting and the responses these thresholds elicit remain unexplored. Thresholds may reflect mechanical criteria, discretionary CRA judgment, or institutional incentives such as reputational concerns and client relationships. For issuers, they may serve as a disciplining mechanism by indicating the financial metrics necessary to maintain a given rating. For investors, they can shape perceptions of credit risk, particularly if they are seen as revealing information beyond what is reflected in

ratings. This paper examines four key questions: (1) How do CRAs determine ratio-based thresholds? (2) Do issuers respond to these thresholds? (3) How do CRAs respond to threshold breaches? and (4) How do investors interpret threshold disclosures?

To systematically answer these questions, we construct a novel dataset of thresholds extracted from over 20,000 credit rating reports issued by Standard & Poor's (S&P) between 2008 and 2020. As part of its rating process, S&P evaluates an issuer's financial risk using two core financial ratios, namely debt-to-EBITDA and funds from operations (FFO) to debt, and several supplementary industry-specific ratios (S&P Corporate Methodology 2013). We focus on the core ratios because they are central to S&P's methodology, applied uniformly across firms, and systematically disclosed, offering the clearest window into the threshold-setting process.[1] Consistent with the broader push for transparency in the rating process following the financial crisis, the share of credit reports including core ratio-based thresholds increased from 9% in 2007 to 70% in 2012 and has continued to trend upward since then (Figure 1).[2]

[Insert Figure 1 about here]

We begin by examining how S&P sets threshold levels across firms. We find that threshold levels vary systematically by both credit rating and industry classification, with each explaining between 10% and 50% of the variation in threshold levels, depending on the ratio. The relative importance of these two dimensions differs across the rating spectrum: for investment-grade firms, industry classification carries more weight, suggesting that S&P places greater emphasis on industry-specific financial norms in tailoring expectations. In contrast, for speculative-grade firms,

[1] Appendix A provides three examples of typical discussions of these two core ratios and thresholds from S&P credit research reports.

[2] Untabulated analyses show that, consistent with the lower importance of supplementary ratios, S&P rarely discloses thresholds based on them in reports: fewer than 7% include such a threshold and no individual supplementary metric appears in more than 4% of the reports.

credit ratings have stronger explanatory power. Adding year fixed effects yields no gains in explanatory power, suggesting that thresholds are not strongly influenced by time trends. The specification with the highest explanatory power includes rating-industry fixed effects and accounts for 67%–69% of the variation. This implies that firm-specific considerations in S&P's threshold-setting process can explain up to one-third of the variation.

To examine firm-specific considerations, we focus on the determinants of threshold tightness, defined as the normalized distance between a firm's threshold and its actual financial ratio. To ensure consistency with S&P's rating framework, we use financial ratios from S&P's financial adjustment matrix, a standardized set of metrics that incorporates the agency's adjustments to reported GAAP figures. We find that S&P assigns tighter thresholds to firms with weaker financial profiles, limited investment opportunities, and greater uncertainty. It also sets tighter thresholds when faced with lower conflicts of interest, less competition, and stronger reputational concerns. These patterns are consistent with S&P's use of tighter thresholds when downside risk is higher and incentives to cater to issuers are less salient. Taken together, the evidence suggests that S&P sets thresholds using a structured baseline tied to rating and industry, layered with discretionary adjustments that reflect firm risk and CRA incentives.

Next, we assess whether firms respond to thresholds by examining the relation between threshold tightness and subsequent changes in financing and operations. We begin by providing evidence of a clear discontinuity in the distribution of firms' realized ratios at the thresholds set by S&P. No such discontinuity exists at pseudo-thresholds based on average values within rating-industry groups, providing preliminary support for the idea that rated firms seek to avoid breaching the thresholds. The regression analyses show a similar pattern: firms facing tighter thresholds subsequently exhibit improvements in the corresponding financial ratios. Additional analyses of

specific responses reveal that these firms tend to reduce their debt issuance, retain more equity capital, and achieve higher sales growth and stronger EBITDA margins when the thresholds are tighter. These improvements are generally more pronounced among speculative-grade firms than investment-grade firms, consistent with a stronger disciplining role of thresholds for riskier firms. These patterns suggest that thresholds operate as constraints and shape firm behavior. Nevertheless, we find that firms with tighter thresholds, although more inclined to take steps to avoid breaches, still face a higher incidence of breaches.

We then examine how S&P responds to breaches of thresholds. Approximately 32% of the breaches are followed by a rating downgrade or downward revision to outlook within the next 12 months, which is significantly higher than the unconditional likelihood of negative rating actions (18%). The likelihood of negative rating actions increases when firms violate both thresholds rather than only one. Near-future breaches, irrespective of current status, are associated with a higher likelihood of negative rating actions, consistent with S&P anticipation. These patterns are consistent with thresholds functioning as soft triggers, informative but non-binding indicators that prompt action when deterioration is material or persistent.

Our final set of tests examines how capital markets interpret threshold tightness. We analyze bond and equity returns around the publication of credit research reports that include newly disclosed thresholds. The results show that both markets react negatively to the disclosure of tighter thresholds, suggesting that investors view them as signals of increased credit risk or reduced financial flexibility. These patterns reinforce the dual role of thresholds as coordination devices and as indicators of CRAs' information set.

We provide the first systematic evidence on how CRAs use ratio-based thresholds to guide rating decisions. Despite extensive research on the impact of credit ratings on market behavior,

there is limited understanding of the specific triggers used by CRAs and their role in credit risk assessment. This gap is especially salient in the context of long-standing debates about rating quality, which intensified following the accounting scandals of the early 2000s and the 2008–2009 financial crisis, where no clear consensus emerged regarding the effectiveness or transparency of the rating process (Alp 2013; Opp, Opp, and Harris 2013; Baghai, Servaes, and Tamayo 2014; deHaan 2017; Bouvard and Levy 2018). We show that thresholds are not applied mechanically; rather, threshold-setting involves significant discretionary judgment, with CRAs layering firm-specific and incentive-based adjustments onto a systematic rating-industry framework. These thresholds function as soft constraints: they influence firm behavior when they are tight, and their breach prompts rating actions.

Our study also shifts the focus of the credit rating literature from headline rating actions to the granular tools that shape these actions. Recent studies show that CRA reports convey incremental information beyond headline ratings, often through qualitative narratives (e.g., Kraft 2015; Agarwal, Chen, and Zhang 2016; Kiesel and Kisgen 2024). We extend this work by analyzing a structured quantitative component of rating reports: ratio-based thresholds as downgrade triggers. These thresholds are directly linked to the rating methodology and provide clear benchmarks that shape both issuer behavior and investor expectations. We show that markets respond to the disclosure of thresholds, consistent with investors treating them as credible and informative. In this way, thresholds shed light on the granular origins of ratings and offer a new lens for understanding how CRAs transmit information to the market.

Finally, we contribute to the literature on external benchmarks and firm behavior. We show that thresholds influence financial and operational policies: firms facing tighter thresholds reduce leverage, improve cash flow, and strengthen operating performance. This extends prior work on

the role of credit ratings in shaping corporate decision-making (e.g., Graham and Harvey 2001; Kisgen 2006, 2009; Hovakimian, Kayhan, and Titman 2009; Tang 2009) by highlighting that firms respond not only to rating changes but also to soft standards embedded in the rating process, such as ratio-based triggers.

While conceptually similar to another external benchmark, namely the financial covenants of bond contracts and private debt contracts (e.g., Dichev and Skinner 2002; Chava and Roberts 2008; Roberts and Sufi 2009; Chava, Kumar, and Warga 2010; Demiroglu and James 2010; De Franco et al. 2020), CRA thresholds differ in important ways. They are non-binding and discretionary rather than contractual and enforceable. Unlike covenants, which are often ad hoc and opaque, CRA thresholds are more standardized and transparent, offering a consistent basis for assessing credit risk across all firms. These features make CRA thresholds well-suited for studying how a standard set of quantitative benchmarks shapes credit assessments in public markets. As such, our findings extend the literature on covenant-based monitoring and offer new insights into the role of non-binding financial constraints in capital markets.

The remainder of this paper is organized as follows. Section 2 provides the institutional background to S&P's use of financial ratios. Section 3 describes the data and presents summary statistics. Sections 4 through 7 contain our main empirical analyses. Section 8 concludes the study.

2. Institutional Background

According to its published methodology, S&P evaluates credit risk using a two-part framework: a qualitative assessment of business risk and a quantitative assessment of financial risk (S&P 2013). Business risk captures exposure to industry cyclicality, competition, and geographic diversification. Financial risk is measured using a standardized set of ratios that anchor a firm's financial risk profile. At the foundation of the financial risk assessment are two financial

ratios, referred to as core ratios by S&P: the debt-to-EBITDA ratio and the FFO-to-debt ratio. These ratios provide a complementary view of a firm's debt servicing capacity; the first ratio measures gross leverage, while the second captures net cash flow coverage after interest and taxes. S&P applies both ratios consistently across all industries and uses them to assign firms to risk categories ranging from "minimal" to "highly leveraged." In practice, the debt-to-EBITDA and FFO-to-debt ratios are the primary financial inputs of the rating process. Supplemental ratios help capture other aspects of financial risk, such as the effects of changes in working capital and capital expenditures. They are used to refine the risk category, but typically do not determine it.

Although the ratios have long been central to the rating process, S&P only began disclosing its thresholds for them more systematically in credit reports after the 2008 financial crisis. Prior to the crisis, such quantitative benchmarks were rarely made public. This shift reflects a combination of regulatory pressure, reputational incentives, and growing demand from investors for greater transparency. In particular, the U.S. Securities and Exchange Commission (2008) and the revised IOSCO Code of Conduct (2008) called for clearer disclosure of rating assumptions and criteria, while institutional investors sought more concrete signals about what might prompt rating changes.

Competitive dynamics reinforced these pressures: several smaller rating agencies entered the market or obtained NRSRO status in the post-crisis period, many emphasizing methodological transparency as a point of differentiation. The major agencies responded. In testimony before Congress, S&P's then-president, Deven Sharma, affirmed the firm's commitment to "*enhancing our ratings process, providing better and more information to investors, and promoting confidence in our ratings*" (U.S. House of Representatives 2008). S&P subsequently revised its criteria, formalized benchmark ratio ranges for each financial risk category, elevated the debt-to-EBITDA and FFO-to-debt ratios to core inputs, and began publishing explicit downgrade thresholds in

rating reports. By the early 2010s, such disclosures had become common.[3] These developments marked a shift toward greater standardization of the credit rating process and created a more structured mechanism for explaining how financial performance maps to rating outcomes.

Ratio-based thresholds resemble financial covenants in private loan agreements in form, but differ significantly in function. Both use quantitative metrics to monitor downside risk and protect creditors, but the enforcement mechanisms and underlying incentives diverge. Covenants are negotiated, transaction-specific, and contractually binding, with immediate consequences for breach, such as renegotiation, tighter control rights, or default (Dichev and Skinner 2002; Chava and Roberts 2008; Roberts and Sufi 2009). In contrast, CRA thresholds are set unilaterally, based on standardized ratio definitions drawn from publicly disclosed methodologies, and non-binding. They serve as probabilistic indicators of credit deterioration, designed primarily for public debt market participants.

These distinctions reflect different institutional roles: private lenders are residual claimants with strong monitoring incentives, while CRAs act as information intermediaries whose credibility hinges on reputation. Prior research highlights that reputational capital and regulatory scrutiny can discipline CRAs, particularly when their performance is observable and subject to investor oversight (e.g., Beaver et al. 2006; Cheng and Neamtiu 2009; Mathis, McAndrews, and Rochet 2009; Bolton, Freixas, and Shapiro 2012). At the same time, CRAs operate under an issuer-paid revenue model, which introduces conflicts of interest, especially in the case of large or recurring issuers (Becker and Milbourn 2011; Jiang, Stanford, and Xie 2012; Efing and Hau 2015). These differences underscore the hybrid nature of CRA thresholds as quantitative tools with disciplining potential but without the enforceability of formal contracts.

[3] Appendix B presents three examples from S&P credit research reports that illustrate how financial ratios and associated downgrade thresholds are typically discussed in practice.

3. Sample Selection and Descriptive Statistics

We construct our sample from U.S. firms rated by S&P between 2008 and 2020. The sample period starts in 2008, when S&P began systematically disclosing ratio-based downgrade thresholds in issuer credit reports. Disclosures of such thresholds were rare prior to this date, appearing in only 9% of the reports in 2007 and in less than 4% during the 2001–2006 period.

Table 1, Panel A, presents our sample selection process. We begin with 4,867 unique U.S. firms from corporate sectors and with non-default credit ratings in the S&P RatingsXpress database, yielding 35,135 firm-year observations. We exclude firms classified by S&P as belonging to non-corporate sectors, such as financial institutions, utilities, and insurance companies, because they use distinct methodologies and industry-specific ratios. We also remove 3,114 firms (20,860 firm-years) without GVKEY or PERMNO, which are required to merge credit ratings with financial data. We further drop 189 firms (1,026 firm-years) for which S&P-adjusted financial ratios are unavailable. These ratios are directly extracted from S&P's financial adjustment matrix, which applies standardized modifications to GAAP figures, such as adjustments for pensions, leases, and off-balance sheet items, to reflect the metrics actually used in credit rating decisions.

[Insert Table 1 about here]

Next, we extract the core ratio thresholds (maximum debt-to-EBITDA and minimum FFO-to-debt) from credit research reports.[4] Specifically, we locate the outlook section of the reports by

[4] S&P issues four types of reports: (1) research updates, which provide an overview and rationale for rating actions taken at the *issuer* level; (2) full analyses, which are typically published once a year and cover an *issuer*'s key strengths and risks, recent credit highlights, as well as outlooks, credit watch, rating downside and upside scenarios, and base-case forecasts. It also includes business description, peer comparison, business and financial risk profiles, and comments on liquidity and covenant analysis. (3) Rating action news, which explains rating actions at the debt *issue* level; and (4) bulletins, which are quick and timely reports commenting on results or addressing a particular development or event that has *no* current impact on the credit rating of an issuer (https://insight.spglobal.com/story/credit-reports-guide/page/1). We extract threshold data from research updates and

searching for the XML node named "outlook" and ask a large language model (LLM; namely Grok-2) to extract the thresholds of the two core ratios that trigger either credit rating downgrades or outlook deteriorations.[5] We focus on downgrade triggers, consistent with S&P's emphasis on downside risk (CFA Institute 2023). For each firm-year, we assign to it the earliest threshold issued after the current year's earnings announcement date but before the following year's earnings announcement date to ensure that S&P has access to the full set of audited financial statements when setting the thresholds. If no threshold is available within this window, we carry forward the most recently disclosed threshold from the previous two years. This approach aligns with S&P's practice of setting downgrade triggers on a 12–24 month horizon, as discussed in its credit reports.[6] Applying this procedure, we retain 10,836 firm-years with thresholds and adjusted financial data. Finally, we remove 899 firm-years missing firm characteristics for the regression analysis. Our final sample covers 1,331 unique firms (9,937 firm-years).

Table 1, Panel B, reports summary statistics for the firm characteristics used in our empirical analyses. All variable definitions are provided in Appendix B. The average credit rating (*Rate*) is 9.978, corresponding to a BB+ rating, with 9.0% of the firm-years rated BBB–, the investment-grade boundary. On average, firms have maintained an S&P credit rating for 17.7 years (*Tenure*), reflecting long-standing analyst coverage. Interest coverage (*IntCov*), calculated as EBITDA over interest expense, averages 10.859, indicating substantial debt servicing capacity. The average profit margin (*PM*) is 20.6%. Firms hold an average of 8.6% of assets in cash (*Cash*)

full analyses as these include explicit forward-looking scenarios. Thresholds are generally not disclosed in rating action news or bulletins, which tend to be brief and event-driven.

[5] We compare the performance of three state-of-the-art LLMs, namely Grok-2, GPT-4o, and DeepSeek-V3, and select Grok-2 based on its superior performance. The detailed evaluation procedure, including prompts and performance metrics, is provided in Online Appendix A.

[6] As a robustness check, we rerun all tests using only firm-years with newly issued thresholds (i.e., excluding any thresholds carried forward from previous years). The results, reported in Online Appendix Table OA1, remain qualitatively unchanged.

and maintain a moderate leverage (*Lev*) of 36.5%. The market-to-book ratio (*MTB*) averages 1.655, consistent with modest growth expectations. Capital investment is nontrivial: three-year cumulative capital expenditures (*CapEx*) account for 17.8% of assets. The average firm size (*Size*), measured as the log of total assets, is 8.541, or approximately USD 5.1 billion in assets. Intangible assets (*Intg*) make up 24.8% of total assets. The firms in our sample are active in bond markets, with an average bond issue over the two years following the rating year (*BondIss*) equal to 6.1% of their assets. Finally, institutional ownership (*Inst*) is high, averaging 77%.

4. Determinants of Ratio-Based Thresholds

Our first objective is to examine how S&P determines ratio-based downgrade thresholds. In principle, thresholds could be applied mechanically, for example fixed by rating level and industry classification. In practice, it is unclear to what extent thresholds are standardized or reflect discretionary judgment. Conceptually, thresholds resemble covenants in private loan agreements: both rely on financial ratios to monitor downside risk. Prior research on loan covenants finds that covenant tightness is shaped by considerations of agency conflicts, risk, and borrower quality. Specifically, studies show that tightness is negatively associated with financial strength and sometimes with investment opportunities, but positively associated with uncertainty (e.g., Boot, Thakor, and Udell 1991; Dichev and Skinner 2002; Nash, Netter, and Poulsen 2003; Demiroglu and James 2010; Denis and Wang 2014; Bradley and Roberts 2015; Demerjian 2017; Prilmeier 2017; Robin, Wu, and Zhang 2017). We expect similar forces to shape threshold-setting in the CRA context: firms with weaker fundamentals or higher uncertainty may face tighter benchmarks. However, CRAs face distinct institutional pressures, including reputational concerns and potential conflicts under an issuer-paid model (Becker and Milbourn 2011; Alp 2013; Baghai, Servaes, and Tamayo 2014), which may also influence how thresholds are applied.

For our analyses, we construct a measure of threshold tightness defined as the distance between the adjusted financial ratio and the corresponding threshold, normalized by firm-level volatility in the ratio.[7] Specifically, for the debt-to-EBITDA ratio, we define tightness as the ratio at the end of year *t* minus the earliest threshold disclosed in year *t*+1, divided by the firm's standard deviation of the ratio from year *t*–4 to year *t*. For the FFO-to-debt ratio, the formula is reversed (i.e., threshold minus ratio) so that higher values indicate a tighter threshold.

Table 2, Panel A, reports the descriptive statistics of adjusted financial ratios, thresholds, and threshold tightness by rating levels. We observe patterns consistent with both economic intuition and S&P's stated methodology. Higher-rated firms exhibit lower debt-to-EBITDA ratios and higher FFO-to-debt ratios, reflecting stronger balance sheets and greater debt servicing capacity. Corresponding thresholds move in the same direction: more creditworthy firms are held to stricter financial standards. More importantly, threshold tightness increases monotonically with credit risk. For debt-to-EBITDA, the mean tightness rises from -2.818 for AAA/AA-rated firms to -0.506 for CCC/CC-rated firms. For FFO-to-debt, tightness increases from -1.415 to -0.058 on the same rating spectrum. These statistics indicate that lower-rated firms receive tighter thresholds, consistent with greater perceived risk and need for oversight.

[Insert Table 2 about here]

Table 2, Panel B, reports the rating and threshold tightness statistics by S&P industry classification. *Water* utilities have the highest average credit ratings (14.7, approximately "A"), while *Media & Entertainment* and *Metals & Mining* have the lowest (8.685 and 8.716, respectively, close to "BB–"). However, these rating patterns do not directly correspond to the tightest or loosest

[7] Normalizing by firm-level volatility allows us to interpret tightness relative to the typical variation in each firm's ratio. As a robustness check, we instead normalize threshold tightness by the threshold level itself. The results remain qualitatively similar and are reported in Online Appendix Table OA2.

thresholds. For example, the *Gas* and *Building Materials* sectors face the tightest thresholds for debt-to-EBITDA and FFO-to-debt, respectively, despite having higher credit ratings than at least seven other industries. In contrast, firms in *Information Technology* and *Media & Entertainment* have the loosest thresholds for the two ratios, even though their average ratings are below the median of all industries. Importantly, threshold usage also varies substantially across industries. Debt-to-EBITDA thresholds are used in all reports in six industries, namely *Building Materials*, *Homebuilding*, *Media & Entertainment*, *Metals & Mining*, *Property & Real Estate*, and *Telecom Services*, and less commonly in *Water* and *Transportation*. FFO-to-debt thresholds are more frequently used in the *Electric*, *Multi*, and *Water* industries. These patterns suggest that S&P calibrates both the selection and tightness of its thresholds based on industry characteristics as well as credit ratings.

We begin by examining whether and to what extent threshold levels are mechanically determined by firm groupings, namely credit rating, industry affiliation, and year. Table 3, Panel A, reports the adjusted R^2 values from OLS regressions of the debt-to-EBITDA and FFO-to-debt thresholds on combinations of these groupings and their interactions. In the full sample, credit rating alone explains nearly half of the variation in debt-to-EBITDA thresholds and 36% for FFO-to-debt thresholds (Columns (1) and (4)). Industry independently explains 13% and 17%, while year fixed effects contribute little to the explanatory power. Including rating-industry fixed effects increases the adjusted R^2 to 67% for debt-to-EBITDA and 69% for FFO-to-debt, suggesting that much of the threshold-setting structure can be attributed to interactions between credit quality and industry affiliation. Further interactions with year fixed effects yield no improvement.

[Insert Table 3 about here]

To explore whether these findings vary by credit quality, we estimate the same regressions separately for investment- and speculative-grade firms. Among investment-grade issuers (Columns (2) and (5)), industry explains substantially more variation than credit rating, 45% vs. 17% for debt-to-EBITDA and 45% vs. 20% for FFO-to-debt. The pattern is reversed among speculative-grade firms (Columns (3) and (6)): rating explains more than industry. The greater reliance on rating-specific variation may reflect greater dispersion in financial structures or a greater emphasis on downside protection for lower-rated firms. We also observe that rating-industry fixed effects explain more variation for investment-grade firms (62% and 68%) than for speculative-grade firms (52% and 40%, Columns (3) and (6)), suggesting that S&P sets thresholds more rigidly for higher-rated firms, anchoring them more closely to industry norms and rating-category benchmarks. Importantly, even after accounting for rating and industry, up to one-third of the variation in thresholds for investment-grade firms and up to 60% for speculative-grade firms remains unexplained. This residual supports the interpretation that threshold-setting involves significant discretion, likely reflecting firm-specific risk factors.

We then investigate what drives the variation in threshold tightness, whether it reflects firm characteristics, CRA incentives, or broader market conditions. In particular, we consider four sets of factors and estimate the following OLS regression model:

$$Tightness_{i,t+1} = \alpha_0 + \alpha_1 Fin.Health_{i,t} + \alpha_2 Inv.Oppts_{i,t} + \alpha_3 Uncertainty_{i,t} + \alpha_4 CRA\ Incentives_{i,t} + Rating - Industry\ FE\ + Year\ FE + \varepsilon_{i,t} \quad (1)$$

First, we measure financial health using interest coverage (*IntCov*), profit margin (*PM*), cash holdings (*Cash*), and leverage (*Lev*), drawing on prior work linking these fundamentals to credit assessments (Blume et al. 1998; Alp 2013; Baghai et al. 2014). Second, we proxy for investment opportunities using the market-to-book ratio (*MTB*), capital expenditures (*CapEx*), and future bond issuance (*BondIss*). The relation between investment opportunities and threshold

tightness is expected to be negative: firms with strong growth prospects are often granted looser thresholds to preserve their financial flexibility and support valuable investments. Still, CRAs may be cautious, and empirical evidence is mixed: public bond covenants tend to be less restrictive for growth firms (Kahan and Yermack 1998; Nash, Netter, and Poulsen 2003), while findings for bank loans are ambiguous (Demiroglu and James 2010; Bradley and Roberts 2015). Third, we measure uncertainty and information asymmetry using firm-level metrics (*RetVol*, *BidAsk*, *EarnVol*, *Intg*, *Tenure*) and broader indicators of industry and market volatility (*Ind_Growth*, *Ind_RetVol*, *VIX*). Research suggests that greater uncertainty and opacity are associated with more restrictive debt contract design (Garleanu and Zwiebel 2009; Bradley and Roberts 2015; Demerjian 2017).

Finally, to capture S&P's incentives to cater to issuers or compete with peer rating agencies, we include two measures: (1) the ratio of the dollar value of new bonds issued by a firm-year to the total value of new bonds rated by S&P in the same industry-year (*MajorClient*), following He, Qian, and Strahan (2012); and (2) the percentage of bonds outstanding in an industry-year rated by Fitch (*FitchShare*), both based on two-digit NAICS codes (Becker and Milbourn 2011; Efing and Hau 2015). To proxy for reputational concerns stemming from the use of ratings in contracts and regulation, we further include (1) firm size (*Size*); (2) institutional ownership (*Inst*); and (3) an indicator for investment-grade/speculative-grade boundary (*BBB-*). We include rating-industry fixed effects to account for unobservable fixed factors specific to these groupings and year fixed effects to account for variations in macroeconomic conditions and other time trends. We winsorize threshold tightness and all continuous explanatory variables at the top and bottom 1% to mitigate the influence of outliers. Standard errors are adjusted for two-way clustering by rating-industry and year in all regressions.

Table 3, Panel B, reports the regression results. The specifications in Columns (1) and (6), which include explanatory variables but exclude fixed effects, explain a meaningful share of the variation in threshold tightness, 23% for debt-to-EBITDA and 16% for FFO-to-debt. Columns (2) and (7) show that adding fixed effects increases the explanatory power to approximately 30% for both ratios. These results show that tightness is negatively associated with better financial health (e.g., higher profit margins and cash holdings, lower leverage), greater investment opportunities (e.g., higher capital expenditures and future bond issuance), and CRA incentives to cater to clients (e.g., more important issuers and higher Fitch market share). Conversely, tightness is positively associated with uncertainty (e.g., wider bid–ask spreads, greater earnings volatility, shorter rating histories) and reputational concerns (e.g., larger firm size). For debt-to-EBITDA, S&P also issues tighter thresholds for firms with lower interest coverage and market-to-book ratios, and when return volatility, intangible intensity, or institutional ownership is higher.

Columns (3) and (8) replace rating-industry fixed effects with firm fixed effects, which substantially increases the explanatory power of the models to around 50%, suggesting that time-invariant firm characteristics, not captured by observed fundamentals, play an important role in how thresholds are set. The remaining columns report the results from separate estimations for investment-grade and speculative-grade firms. Inferences for both subsamples remain broadly consistent with the results for the full sample, although some variables lose statistical significance. Taken together, these findings suggest that variation in threshold tightness reflects a combination of observable and unobservable firm fundamentals, industry/market-level uncertainty, and CRA incentives, consistent with CRAs following a process that balances the need for flexibility with the discipline required for credit assessment in assigning thresholds.

5. Issuer Responses to Ratio-Based Thresholds

Our second objective is to understand whether firms respond to thresholds. If firms view thresholds as constraints, they may take steps to remain compliant, treating them as credible benchmarks that guide financial decisions. In this section, we explore whether firms appear to adjust in response to tighter thresholds, whether such adjustments improve the targeted financial ratios, and the channels through which these responses occur.

We begin by examining the distribution of the difference between firms' adjusted financial ratios and the last thresholds issued before earnings announcements. Figure 2, Panel A, presents a histogram of this difference, where, for ease of interpretation, the signs are adjusted so that negative values consistently indicate threshold breaches. The figure shows that the distribution is bell-shaped and single-peaked, with a notable irregularity at zero for both financial ratios. That is, the frequency of observations with adjusted financial ratios at or slightly above the thresholds (bar 0) is substantially higher than that of observations slightly breaching the thresholds (bar 1). The McCrary density test (McCrary 2008; Cattaneo, Jaansson, and Ma 2018) confirms a discontinuity (robust statistics of 1.64 and 2.64, significant at the 10% and 1% levels for debt-to-EBITDA and FFO-to-debt, respectively).

To assess whether the observed discontinuity is driven by mechanical characteristics of the data rather than firm behavior, we conduct a placebo test using pseudo-thresholds based on average values for each rating-industry pair. As shown in Figure 2, Panel B, the discontinuity disappears, and the McCrary density tests show no statistically significant jump for either financial ratio (robust statistics of 1.00 and 1.43 for debt-to-EBITDA and FFO-to-debt, respectively). This null result supports the interpretation that firms respond specifically to actual thresholds. The two figures provide preliminary evidence that rated firms take steps to avoid breaching thresholds.

[Insert Figure 2 about here]

Next, we examine whether threshold tightness is associated with subsequent changes in firms' corresponding ratios using the following regression:

$$\Delta Ratio_{i,t+1} = \beta_0 + \beta_1 Tightness_{i,t} + \beta_2 Firm\ Characteristics_{i,t} + Rating - Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (2)$$

where the dependent variable, *ΔRatio*, measures the year-over-year change in the adjusted debt-to-EBITDA or FFO-to-debt ratio. The key independent variable is the level of threshold tightness (*Tightness*) in year *t*. If firms respond to threshold tightness, we expect a negative β_1 for debt-to-EBITDA and a positive β_1 for FFO-to-debt. That is, firms facing tighter thresholds are more likely to reduce their debt-to-EBITDA ratio and increase their FFO-to-debt ratio. We control for financial health (*IntCov*, *PM*, *Cash*, *Lev*, *RetEarn*), investment opportunities (*MTB*, *CapEx*, *Tang*), and uncertainty (*EarnVol*, *RetVol*, *Beta*, *Size*), which can impact changes in these ratios. All regressions include rating-industry and year fixed effects.

Table 4, Panel A, reports the results for the full sample and separately for investment- and speculative-grade firms. Across all samples and for both ratios, we find that tightness is negatively associated with future changes in debt-to-EBITDA and positively associated with changes in FFO-to-debt, consistent with firms tightening their capital structure more aggressively, improving their cash flows, or both, when thresholds are more restrictive. The magnitudes are economically meaningful. For example, among speculative-grade firms, a one-unit increase in threshold tightness is associated with a 19% decrease in the debt-to-EBITDA ratio and a 3% increase in the FFO-to-debt ratio in the following year. For the debt-to-EBITDA ratio, these effects are statistically stronger for speculative-grade firms than for investment-grade firms (χ^2 = 53.74, significant at the 1% level), consistent with the notion that lower-rated issuers respond more aggressively to tight thresholds, likely due to their heightened sensitivity to potential rating actions.

[Insert Table 4 about here]

Next, we examine how firms make financing and operating decisions in response to thresholds using the following model:

$$Outcome_{i,t+1} = \delta_0 + \delta_1 Tightness_{i,t} + \delta_2 Firm\ Characteristics_{i,t} + Rating - Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (3)$$

where the outcome variables are (i) *Debt_Issue*, the firm's net debt issuance; (ii) *Equity_Issue*, the firm's net equity issuance; (iii) *SalesGrowth*, the percentage change in revenue; and (iv) *ΔEBITDA*, the change in the EBITDA-to-assets ratio. All specifications include the same set of firm-level controls as in Equation (2).

Table 4, Panel B, reports the results for the two financing activities: net debt and equity issuance. Columns (1)–(6) show that firms facing tighter thresholds issue less net debt. The effect is statistically significant at the 1% level for both ratios and is statistically stronger among speculative-grade firms, consistent with the notion that lower-rated firms are more cautious in their use of debt financing when thresholds are tight, likely due to their higher sensitivity to credit conditions and downgrade risk.

Columns (7)–(9) show that net equity issuance is significantly and positively associated with threshold tightness for debt-to-EBITDA among both investment- and speculative-grade firms, with stronger effects among investment-grade firms. Net equity issuance is also positively associated with threshold tightness for FFO-to-debt, but only among investment-grade firms (Columns (10)–(12)). To disentangle equity issuance from repurchases, we conduct additional analyses using disaggregated outcomes. The results, reported in Online Appendix Table OA3, reveal that changes in net equity issuance are driven by reductions in shareholder payouts, i.e., repurchases and dividends, in investment-grade firms, rather than increases in new equity issuance. This pattern suggests that investment-grade firms respond to tighter thresholds, not by diluting equity but by retaining cash and limiting distributions.

Table 4, Panel C, reports the results when the outcome variables are measures of changes in operating performance (i.e., *SalesGrowth* and *ΔEBITDA*). The results show that firms with tighter thresholds exhibit significantly greater relative improvements in both performance measures over the following year. These effects are again more pronounced among speculative-grade firms, consistent with greater rating pressure or urgency to demonstrate creditworthiness improvements among lower-rated issuers.[8]

Taken together, these findings are consistent with firms responding to thresholds through a combination of capital structure adjustments and operational improvements. This interpretation reinforces the role of thresholds as credible signals of negative rating action risk that guide corporate decision-making.

A natural follow-up to the evidence that firms take actions in response to tight thresholds is whether firms facing tighter thresholds are ultimately more likely to breach them. To test this, we run the following OLS regression[9]:

$$Breach_{i,t+1} = \mu_0 + \mu_1 Tightness_{i,t} + \mu_2 Firm\ Characteristics_{i,t} + Rating - Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (4)$$

where *Breach* equals one if the adjusted debt-to-EBITDA ratio at the end of year *t*+1 exceeds the year *t* threshold or if the FFO-to-debt ratio at the end of year *t*+1 falls below the year *t* threshold, and zero otherwise. The rest of the specification follows Equation (2).

Table 5 presents the results for the full sample and separately for investment- and speculative-grade firms. Across all specifications, we find that threshold tightness is strongly positively associated with the probability of a breach. That is, firms with tighter thresholds are

[8] In Online Appendix Table OA4, we conduct placebo tests using pseudo-threshold tightness based on average values for each rating-industry pair. For ease of comparison, we also tabulate the coefficients from these tests using the actual thresholds in Table 4. We find that although the pseudo-tightness measure is statistically significant, its economic magnitude is much smaller (significant at the 1% level in most cases).

[9] A untabulated robustness analysis shows that using a probit model yields similar inferences.

more likely to violate them. A one-unit increase in tightness in debt-to-EBITDA (FFO-to-debt) is associated with a 3.1% (9.1%) increase in the probability of breaching the thresholds for the full sample. Considering that the unconditional mean of *Breach* is 22.8% (23.8%) for debt-to-EBITDA (FFO-to-debt), these are economically large effects. We do not observe significant differences in the tendency to breach thresholds between investment- and speculative-grade firms, consistent with S&P calibrating thresholds to reflect firms' underlying credit quality. In summary, the evidence presented in Tables 4 and 5 suggests that firms, especially speculative-grade firms, make efforts to reduce their leverage and strengthen their performance when thresholds are tight; however, these responses are insufficient to avoid a breach.

[Insert Table 5 about here]

6. S&P's Responses to Threshold Breaches

Our third objective is to examine how S&P responds to threshold breaches. While breaches are not contractually binding, they may serve as signals of financial deterioration and trigger negative rating actions, imposing significant costs on firms. To examine whether breaches and their severity are associated with S&P's decision to issue a negative rating action, we estimate the following OLS model:

$$Neg\_Action_{i,t+1} = \gamma_0 + \gamma_1 Breach\_Vars_{i,t} + \gamma_2 Firm\ Characteristics_{i,t} + Rating - Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (5)$$

where the dependent variable, *Neg_Action*, equals one if the firm receives a downgrade or negative outlook revision in the next 12 months. The key independent variables (*Breach_Vars*) capture the incidence, severity, and anticipated deterioration of creditworthiness in the near future. *Breach_Either* identifies firm-years in which at least one of the two core thresholds was breached. *Breach_Both* is an indicator of both thresholds being breached in the same year, which points to

deeper credit concerns.[10] *#FutureBreach* is the number of consecutive years in the next three years that a firm breaches the same threshold. This measure is a proxy for S&P's projection of future changes in ratios, assuming that S&P has an accurate assessment of a firm's future financial trajectory.[11]

Table 6, Panel A, reports the summary statistics on threshold breaches and the likelihood of rating outcomes over the next 12 months. As expected, the breach sample exhibits deterioration in debt-to-EBITDA and FFO-to-debt ratios, while the non-breach sample shows improvements in these measures. Moreover, the breach sample has a higher incidence of consecutive breaches over the next three years than the non-breach sample, indicating a persistent deterioration in financial risk after the initial breach. Importantly, negative rating actions are much more frequent among firms that breach thresholds than among those that do not (31.6% vs. 14.9%). Nevertheless, the majority of breaches are not followed by any observable action. These patterns are consistent with the idea that CRAs place a high value on rating stability and are therefore reluctant to take actions until they can ascertain that the deterioration leads to lasting changes in credit quality (e.g., Beaver et al. 2006; Kisgen 2009; Lourie et al. 2024).

[Insert Table 6 about here]

Table 6, Panel B, reports estimates from the model in Equation (5). Columns (1)–(3) show that breach incidence, breach severity, and projected future deterioration in creditworthiness are all positively and statistically significantly associated with the probability of a negative rating action, even after controlling for concurrent changes in the two financial ratios. The magnitudes of the coefficients are economically significant. Firms that breach at least one threshold are 9.3%

[10] In a robustness check, we limit the sample to firm-years with two thresholds. Our inferences remain similar and the results are reported in Online Appendix Table OA5, Panel A.

[11] As a robustness check, we limit the breach sample to firm-years with at least three consecutive years of compliance. Our inferences remain similar and the results are reported in Online Appendix Table OA5, Panel B.

more likely to receive negative actions than those that breach none (Column (1)), while firms that breach both thresholds are 4.9% more likely to receive negative actions than those that breach only one (Column (2)). An increase in the number of consecutive breaches over the next three years raises the likelihood of negative rating actions by 9.1% relative to a single-year breach (Column (3)). Column (4), which combines all breach variables in the same regression, shows broadly consistent results, although the effect of *Breach_both* becomes weaker. Columns (5)–(8) and (9)–(12) present the results for investment- and speculative-grade firms, respectively. In both subsamples, the three breach variables continue to have qualitatively similar effects on the likelihood of negative rating actions.[12]

7. Investor Responses to Threshold Disclosures

We conclude by examining market responses to ratio-based thresholds. Specifically, we assess how investors react to the publication of ratio-based thresholds, i.e., the level of associated tightness. This analysis sheds light on whether market participants treat thresholds as meaningful signals of credit quality. Investor responses may depend on how the thresholds are perceived. On the one hand, tighter thresholds may signal greater CRA-driven discipline, which could be perceived as positive news by investors. On the other hand, tighter thresholds could lead to less financial flexibility and be perceived as CRAs having negative private information about firm prospects.

We analyze the responses of bond and equity markets to the publication of credit reports containing thresholds. Bond markets provide a natural setting given their direct exposure to credit

[12] As an additional analysis, we examine the impact of the magnitude of breaches on negative rating actions, where a higher value indicates a more severe breach. We find that larger breaches are significantly and positively associated with the likelihood of negative rating actions after controlling for *Breach_Either* and changes in financial ratios. The results are reported in Online Appendix Table OA5, Panel C.

risk, while equity markets, being more liquid, offer a timely gauge of investor sentiment. In particular, we estimate the following regression:

$$Ret_{i,t} = \theta_0 + \theta_1 Tightness_{i,t} + \theta_2 \Delta Rate_{i,t} + \theta_3 \Delta Outlook_{i,t} + \theta_4 \Delta Watch_{i,t} + Rating - Industry\ FE + Year\ FE + \varepsilon_{i,t} \quad (7)$$

where *Ret* is either *Bond_Ret* or *Equity_CAR*. We calculate a firm's bond market reaction (*Bond_Ret*) as the value-weighted returns of all of its bonds traded during the one-month period following the publication of an S&P credit report containing threshold information, using the WRDS Bond Returns database. *Equity_CAR* is the cumulative abnormal stock returns over a three-day window centered on the report's publication date. We control for contemporaneous rating actions, including changes in ratings (*ΔRate*), outlook (*ΔOutlook*), and credit watch status (*ΔWatch*).

Table 7 presents the results of the estimation of Equation (7). In general, in both bond and equity markets and for both investment- and speculative-grade firms, threshold tightness is negatively associated with returns around the publication date, after controlling for CRAs' rating actions. That is, investors view tighter thresholds as negative news. One interpretation is that tighter thresholds reflect rating analysts' lack of confidence in the firm's underlying financial health or future performance, possibly informed by private information. Alternatively, the market may view tighter thresholds as providing firms with less financial flexibility, increasing the risk of threshold breaches or triggering rating downgrades under adverse conditions.

[Insert Table 7 about here]

8. Conclusions

This paper leverages a novel dataset of ratio-based thresholds, a now-routine component of rating disclosures, extracted from over 20,000 S&P credit reports issued between 2008 and 2020

to provide the first comprehensive evidence on the role of ratio-based financial thresholds in credit ratings. We document three key findings. First, thresholds are set using a structured framework tied to rating level and industry, but with significant discretion that reflects firm risk, CRA incentives, and broader market conditions. These patterns suggest that S&P uses tighter thresholds when downside risk is high and incentives to cater to issuers are less salient.

Second, thresholds influence real firm behavior: tighter thresholds are associated with improvements in the corresponding ratios, through lower leverage, equity retention, and better operating performance, consistent with their disciplinary role. Third, thresholds serve as credible and informative signals. S&P is more likely to take negative rating actions when firms breach thresholds and investors react negatively to tighter thresholds.

By going beyond headline ratings to examine the quantitative tools embedded in the rating process, this study reveals a key mechanism through which CRAs shape firm behavior and communicate with markets. We contribute to the literature on credit ratings, financial contracts, and market discipline by showing how ratio-based thresholds, which are transparent but non-binding, serve as soft constraints that coordinate expectations and influence corporate decisions. As these thresholds have become increasingly common in rating disclosures over the past decade, a better understanding of their function is essential for evaluating how modern credit ratings work.

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United States House of Representatives, Committee on Oversight and Government Reform. (2011). *Testimony of Deven Sharma, President, Standard & Poor's.*

Appendix A: Examples of Core Ratio-Based Thresholds in S&P Credit Research Reports

Marriott International Inc. (March 29th, 2011)

"The timing and magnitude of inflection points in lodging industry performance have proven to be difficult to forecast with accuracy over several cycles, and we expect that Marriott will incorporate this into its decisions regarding investments and share repurchases in future periods. **The rating could be lowered** in the event Marriott adopts a more aggressive leverage policy, or if Marriott's spending on investments and share repurchases results in a thinning cushion compared to our **3.5x maximum debt to EBITDA and 25% minimum FFO to total debt** thresholds for the 'BBB' rating. Rating upside is unlikely given Marriott's stated leverage policy."

PNM Resources (April 5th, 2013)

"We consider a downgrade unlikely, but we could **lower the rating** if adjusted financial measures materially weaken (with **adjusted FFO to debt of less than 15%, debt to EBITDA of more than 5x**, and debt to capital of more than 60%) or if management fails to execute its regulated strategy while managing regulatory risks. The company's financial performance may deteriorate due to rising debt leverage if it externally finances elevated capital spending primarily with debt. Failure to adequately manage regulatory risks could result in lower ratings before any deterioration in credit measures."

American Tower Corp. (March 13th, 2014)

"A downgrade is not likely in our view but **could occur** if the company were to adopt a more aggressive financial policy, including funding its REIT distributions and stock repurchases on an ongoing basis with additional debt such that **debt to EBITDA were to remain above 6x or higher** or **FFO to debt were to drop to less than 12%** on a permanent basis. A downgrade would also be possible if the company were to engage in debt-funded acquisitions of properties with much less attractive business characteristics than its current assets, such that we reassessed the business risk profile as "strong" from "excellent.""

Appendix B: Variable Definitions

Dependent Variables	
Bond_Ret	Value-weighted return of all bonds traded during one-month period since a firm releases a credit research report containing threshold information. (Source: WRDS Bond Return sourced from TRACE Standard and TRACE Enhanced datasets)
Breach	An indicator variable set to one if a firm at year *t* breaches the threshold set at year *t*-1, and zero otherwise (Source: S&P Adjusted Financial Matrix for adjusted ratios; S&P Credit Research Reports for thresholds).
Debt_Issue	Net amount of debt issued during year *t*+1 (i.e., volume of new debt minus the repayment of outstanding debt), divided by average total assets at the beginning and end of year *t*+1 (Source: Compustat).
Equity_CAR	Cumulative daily market-adjusted return for three trading days [-1,1] around the release of thresholds (Source: CRSP).
Equity_Issue	The net amount of equity issued during year *t*+1 (i.e., the volume of equity issuance minus share repurchases and cash dividend payment), divided by average total assets at the beginning and end of year *t*+1 (Source: Compustat).
Neg_Action	An indicator variable set to one if a firm at year *t* experiences a negative change in outlook or rating downgrade (Source: S&P RatingsXpress).
SalesGrowth	Percentage growth in annual revenues from year *t* to *t*+1 (Source: Compustat).
Tightness	The normalized distance between a firm's financial ratio and its corresponding downward threshold. For debt-to-EBITDA, it is calculated as the adjusted ratio of year *t* minus the threshold at year *t*+1, divided by the five-year standard deviation of the adjusted ratio (from year *t*–4 to *t*). For FFO-to-debt, the formula reverses: the threshold at year *t*+1 minus the adjusted ratio of year *t*, again scaled by the five-year standard deviation. A less negative value indicates tighter thresholds (Source: S&P Adjusted Financial Matrix for adjusted ratios; S&P Credit Research Reports for thresholds).
ΔEBITDA	Change in EBITDA-to-total assets ratio from year *t* to *t*+1 (Source: Compustat).
ΔRatio	Change in adjusted debt-to-EBITDA or FFO-to-debt from year *t* to *t*+1 (Source: S&P Adjusted Financial Matrix).
Independent Variables	
BBB-	An indicator variable that equals to one for firm-years with a BBB- rating and zero otherwise (Source: S&P RatingsXpress).
BidAsk	The average daily bid-ask spread during fiscal year t (Source: CRSP).
MajorClient	The ratio of the dollar value of new bonds rated by S&P for a firm during fiscal year *t* to the total dollar value of all new bonds rated by S&P for the same industry-year (based on 2-digit NAICS) (Source: WRDS Mergent Fixed Income Securities Database).
BondIss	The cumulative amount of bonds issued during fiscal years *t*+1 and *t+2*, divided by total assets at the end of fiscal year *t* (Source: WRDS Mergent Fixed Income Securities Database).

Breach_Both	An indicator variable set to one for firm-year *t* if the firm breaches both debt-to-EBITDA and FFO-to-debt thresholds set in year *t*-1, and zero otherwise (Source: S&P Adjusted Financial Matrix for adjusted ratios; S&P Credit Research Reports for thresholds).
Breach_Either	An indicator variable set to one for firm-year *t* if the firm breaches at least one of the thresholds set for debt-to-EBITDA and FFO-to-debt thresholds in year *t*-1, and zero otherwise (Source: S&P Adjusted Financial Matrix for adjusted ratios; S&P Credit Research Reports for thresholds).
CapEx	Cumulative capital expenditure during fiscal years *t*-2 to *t*, divided by average total assets during that period (Source: Compustat).
Cash	The ratio cash to total assets at the end of fiscal year t (Source: Compustat).
ΔDebt/EBITDA	Change in debt-to-EBITDA from year *t* to *t*+1 (Source: S&P Adjusted Financial Matrix for adjusted ratios).
EarnVol	The standard deviation of profit margin (PM) over the five years ending in fiscal year *t* (Source: Compustat).
ΔFFO/Debt	Change in FFO-to-debt from year *t* to *t*+1 (Source: S&P Adjusted Financial Matrix for adjusted ratios).
FitchShare	The proportion of the dollar value of outstanding bonds rated by Fitch in an industry (based on 2-digit NAICS) during year *t* (Source: WRDS Mergent Fixed Income Securities Database).
#FutureBreach	Number of years that a firm consecutively breaches the threshold of the same financial ratio during year *t*+1 to *t*+3 (Source: S&P Adjusted Financial Matrix for adjusted ratios; S&P Credit Research Reports for thresholds).
Ind_Growth	The cross-sectional standard deviation of annual profit growth in each industry-year (Source: Compustat).
Ind_RetVol	The cross-sectional standard deviation of annual stock returns in each industry-year (Source: CRSP).
Inst	The average of the quarterly percentage of institutional holdings during fiscal year *t* (Source: WRDS LSEG Global Ownership Institutional Holdings (Type 2)).
IntCov	The average value of the ratio of EBITDA to interest expense during fiscal years *t*-2 and *t* (Source: Compustat).
Intg	The ratio of intangible assets to total assets at the end of fiscal year *t* (Source: Compustat).
Lev	The average value of the ratio of the sum of long-term and short-term debt to total assets during fiscal years *t*-2 and *t* (Source: Compustat).
MTB	The ratio of the sum of total liabilities and market value of equity to total assets at the end of fiscal year *t* (Source: Compustat).
PM	The average value of the ratio of EBITDA to revenue during fiscal years *t*-2 and *t* (Source: Compustat).
Rate	A firm's credit rating at the end of fiscal year *t*, ranging from 1(C) to 20 (AAA) (Source: S&P RatingsXpress).

RetEarn	The ratio of retained earnings to total assets at the end of fiscal year *t* (Source: Compustat).
RetVol	The standard deviation of the daily residual returns of fiscal year *t*. Daily residual returns are obtained by regressing daily stock returns on daily value-weighted market index returns (Source: CRSP).
Size	The logarithm of total assets, measured in millions of U.S. dollars, at the end of fiscal year *t* (Source: Compustat).
Tang	The ratio of net property, plant, and equipment to total assets at the end of fiscal year *t* (Source: Compustat).
Tenure	The number of years since the firm first received a credit rating from S&P, as of the end of fiscal year *t* (Source: S&P RatingsXpress).
VIX	The average daily closing value of the CBOE Market Volatility Index during a firm-year (Source: https://www.cboe.com/tradable_products/vix/).
ΔOutlook	An indicator variable with values of negative one, zero, and one, presenting a negative change, no change, and a positive change, in the business outlook, respectively, during one-month period since a firm's thresholds are released (Source: S&P RatingsXpress).
ΔRate	An indicator variable with values of negative one, zero, and one, representing a rating downgrade, no change in the rating, and a rating upgrade, respectively, during one-month period since a firm's financial thresholds are released (Source: S&P RatingsXpress).
ΔWatch	An indicator variable with values of negative one, zero, and one, representing a firm being placed on negative credit watch, no credit watch, and positive credit watch, respectively, during one-month period since a firm's thresholds are released (Source: S&P RatingsXpress).

Figure 1: Time Series Trend in Ratio-Based Thresholds in S&P Rating Reports

This figure presents the percentage of credit research reports that include discussion of thresholds for either debt-to-EBITDA or FFO-to-debt between 2007 and 2020.

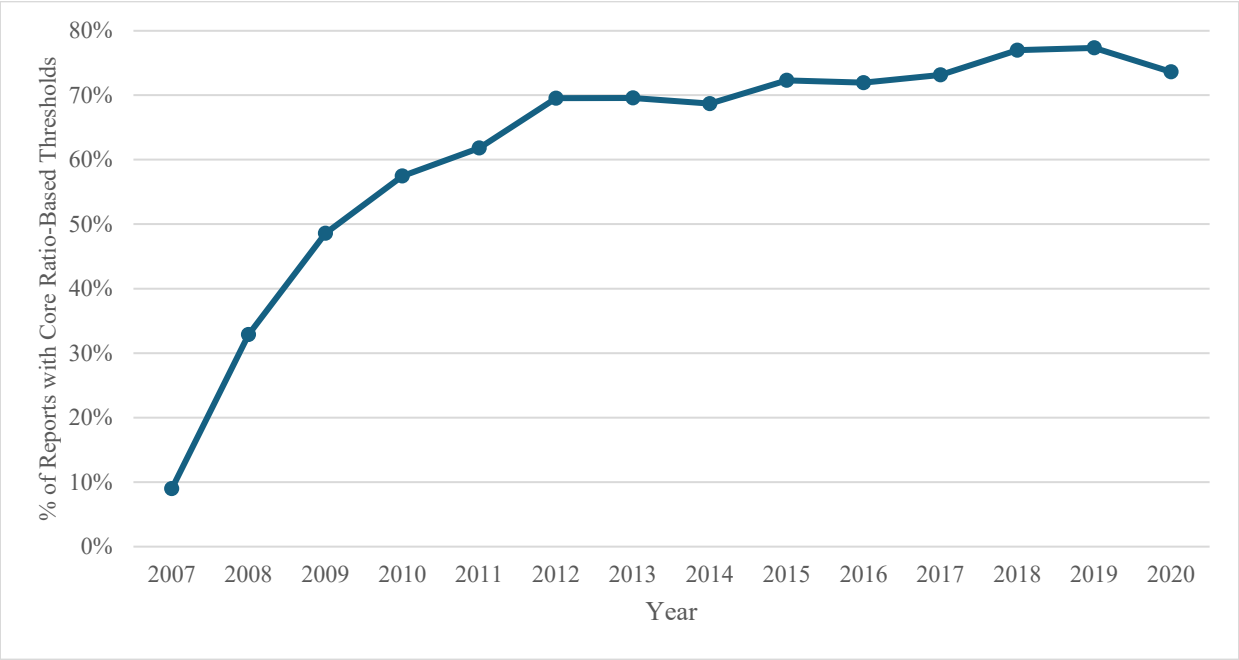
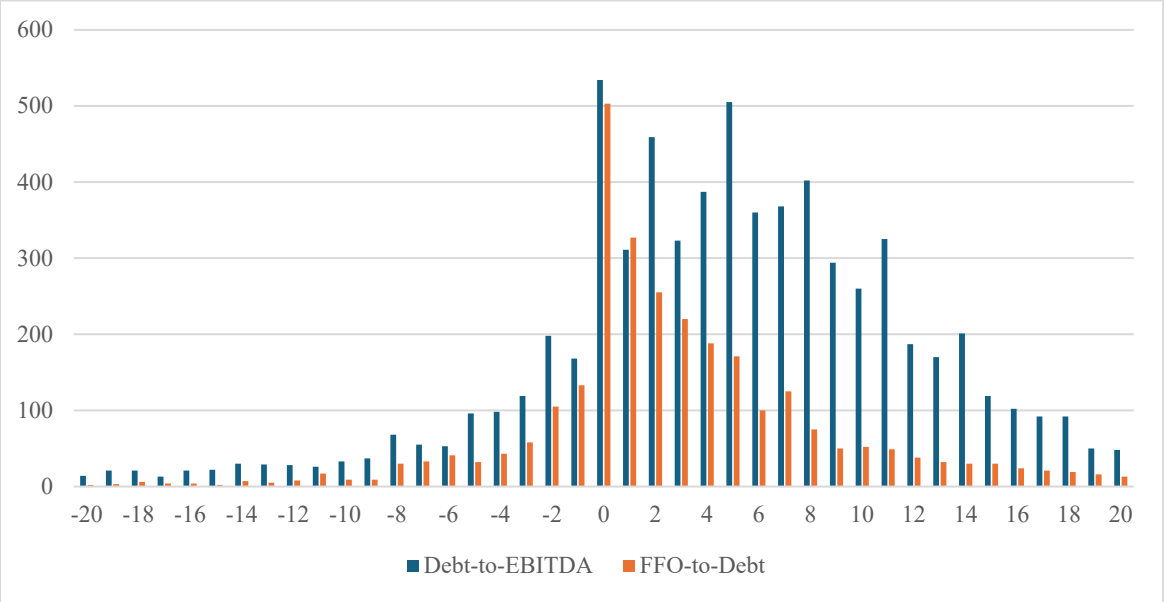


Figure 2: Histogram of Adjusted Financial Ratios Around Actual and Pseudo Thresholds

This figure presents the distribution of deviations between firms' adjusted financial ratios and threshold values. Panel A uses the actual corresponding thresholds. Panel B uses pseudo thresholds, calculated as the average threshold for each rating-industry pair in year *t*, excluding the firm itself. For ease of interpretation, the signs are adjusted so that negative values consistently indicate that the adjusted financial ratio falls short of the threshold (i.e., a breach). The bin width is determined using formula $2(IQR)n^{-1/3}$, where IQR is the interquartile range of the deviation and n is the number of firm-year observations. The vertical axis indicates the number of firm-years within each interval.

Panel A: Histogram of Adjusted Financial Ratios Around Actual Thresholds



Panel B: Histogram of Adjusted Financial Ratios Around Pseudo Thresholds

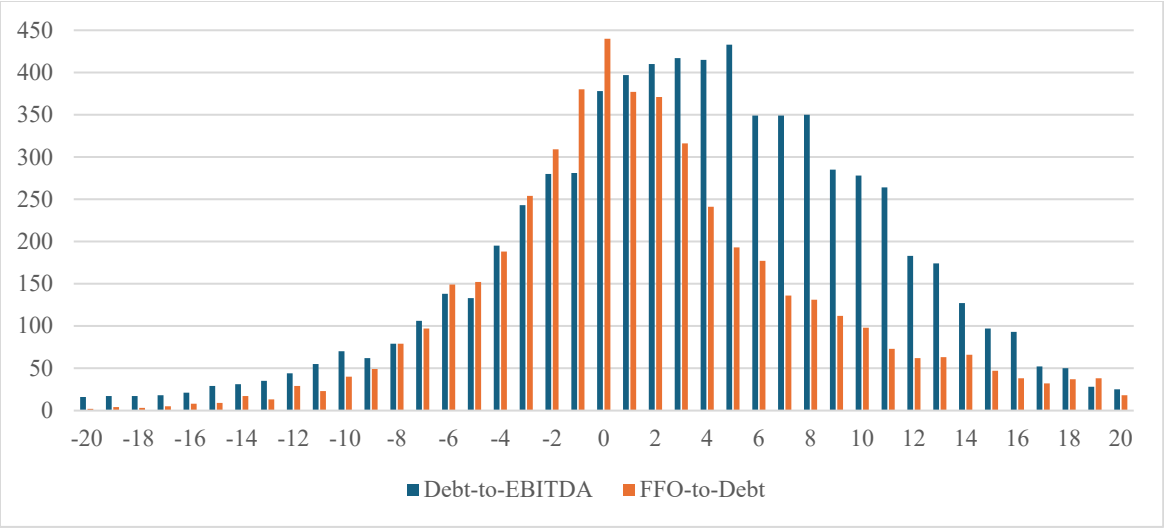


Table 1: Sample Selection and Firm Characteristics

This table presents the sample selection process (Panel A) and summary statistics for firm characteristics (Panel B). Variable definitions are provided in Appendix B. All variables are winsorized at the 1st and 99th percentiles.

Panel A: Sample Selection Process

	# Firms	#Firm-years
U.S. firms with S&P ratings above "D" during 2008 and 2020	4,867	35,135
Less: Missing GVKEY or PERMNO	(3,114)	(20,860)
	1,753	14,275
Less: Missing S&P adjusted debt-to-EBITDA or FFO-to-debt ratios	(189)	(1,026)
	1,564	13,249
Less: Missing thresholds	(124)	(2,413)
	1,440	10,836
Less: Missing control variables	(109)	(899)
Final Sample	**1,331**	**9,937**
Subsamples:		
(1) With a threshold for both debt-to-EBITDA and FFO-to-debt	457	1,905
(2) With a threshold only for debt-to-EBITDA	1,058	6,359
(3) With a threshold only for FFO-to-debt	296	1,673

Panel B: Summary Statistics for Firm Characteristics

	N	Mean	Median	SD	Min	Max
Rate	9,937	9.978	10.000	3.007	1.000	20.000
BBB-	9,937	0.090	0.000	0.286	0.000	1.000
Tenure	9,937	17.700	13.981	15.042	0.000	82.888
IntCov	9,937	10.859	5.417	17.166	0.344	100.000
PM	9,937	0.206	0.177	0.152	-0.308	0.804
Cash	9,937	0.086	0.058	0.089	0.000	0.435
Lev	9,937	0.365	0.342	0.182	0.033	0.975
MTB	9,937	1.655	1.394	0.855	0.708	5.468
CapEx	9,937	0.178	0.118	0.195	0.008	1.197
Size	9,937	8.541	8.409	1.349	5.850	12.178
BondIss	9,937	0.061	0.000	0.130	0.000	0.740
Inst	9,937	0.766	0.852	0.262	0.000	1.050
RetVol	9,937	0.021	0.018	0.012	0.007	0.074
BidAsk	9,937	0.001	0.001	0.002	0.000	0.010
EarnVol	9,937	0.037	0.020	0.048	0.004	0.214
Intg	9,937	0.248	0.196	0.220	0.000	0.818
Ind_Growth	9,937	0.045	0.041	0.025	0.007	0.132
Ind_RetVol	9,937	0.393	0.356	0.164	0.111	0.955
VIX	9,937	19.917	17.012	6.620	11.047	40.472
MajorClient	9,937	0.008	0.000	0.018	0.000	0.077
FitchShare	9,937	0.328	0.313	0.094	0.000	1.000

Table 2: Summary Statistics for Financial Ratios and Thresholds

This table reports summary statistics for key variables used in the analysis. Panel A presents summary statistics for adjusted financial ratios, thresholds, and threshold tightness by rating level. Panel B presents average credit ratings and threshold tightness by S&P industry classification. Variable definitions are provided in Appendix B. All variables are winsorized at the 1st and 99th percentiles.

Panel A: Financial Ratios, Thresholds, and Tightness by Rating Levels

		Ratio			***Threshold***			***Tightness***		
Rating	N	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
					Debt-to-EBITDA					
AAA, AA	138	1.144	1.200	0.769	1.782	1.500	0.334	-2.818	-2.272	2.463
A	720	1.670	1.582	1.202	2.351	2.000	1.201	-2.439	-1.851	2.375
BBB	2,265	2.571	2.400	1.587	3.224	3.000	1.111	-1.858	-1.349	2.181
BB	3,009	3.342	3.100	1.917	4.034	4.000	1.055	-1.423	-0.915	1.941
B	2,034	5.207	4.843	2.744	5.553	5.000	1.410	-0.920	-0.455	1.846
CCC, CC	98	6.793	6.392	4.248	6.765	6.500	2.005	-0.506	-0.060	1.792
Full Sample	**8,264**	**3.448**	**3.000**	**2.388**	**4.034**	**4.000**	**1.604**	**-1.519**	**-0.974**	**2.093**
					FFO-to-Debt					
AAA, AA	51	0.887	0.641	0.663	0.477	0.450	0.127	-1.415	-1.160	1.510
A	663	0.584	0.366	0.740	0.318	0.300	0.145	-1.213	-1.066	1.228
BBB	1,378	0.417	0.286	0.530	0.247	0.230	0.101	-1.196	-1.035	1.282
BB	930	0.329	0.247	0.391	0.195	0.200	0.072	-0.951	-0.735	1.205
B	507	0.211	0.161	0.229	0.133	0.120	0.059	-0.662	-0.358	1.194
CCC, CC	49	0.182	0.097	0.688	0.120	0.120	0.047	-0.058	-0.157	1.004
Full Sample	**3,578**	**0.399**	**0.264**	**0.535**	**0.232**	**0.200**	**0.119**	**-1.047**	**-0.836**	**1.260**

Panel B: Rating and Threshold Tightness by S&P Industry Classification

	Rating			***Tightness***							
				Debt-to-EBITDA				**FFO-to-debt**			
	N	Mean	Median	N	%	Mean	Median	N	%	Mean	Median
Aerospace & Defence	282	10.610	10.000	166	58.9%	-1.363	-0.990	219	77.7%	-0.898	-0.687
Automobiles & Components	270	9.281	9.000	260	96.3%	-1.711	-1.124	88	32.6%	-0.907	-0.783
Building Materials	206	9.398	9.000	206	100.0%	-1.216	-0.749	55	26.7%	-0.386	-0.219
Capital Goods	787	10.320	10.000	606	77.0%	-1.490	-1.080	349	44.3%	-1.288	-1.178
Chemicals	381	10.483	11.000	131	34.4%	-1.133	-0.738	344	90.3%	-0.984	-0.702
Commercial & Professional Services	463	10.205	10.000	409	88.3%	-1.768	-1.134	125	27.0%	-0.820	-0.500
Consumer Products	1,010	10.480	10.500	997	98.7%	-1.446	-1.046	236	23.4%	-0.940	-0.674
Containers & Packaging	100	9.790	10.000	61	61.0%	-1.023	-0.761	65	65.0%	-1.238	-1.168
Electric	337	12.018	12.000	126	37.4%	-0.955	-0.311	326	96.7%	-1.231	-1.058
Energy	1,175	8.786	8.000	892	75.9%	-1.475	-0.893	630	53.6%	-0.852	-0.569
Gas	378	10.336	10.000	276	73.0%	-0.611	-0.309	182	48.1%	-1.231	-1.025
Health Care	708	11.025	11.000	703	99.3%	-1.558	-1.047	80	11.3%	-1.156	-0.826
Homebuilding	113	8.796	9.000	113	100.0%	-1.378	-0.627	-	-	-	-
Hotels & Gaming	292	8.962	9.000	286	97.9%	-1.098	-0.654	76	26.0%	-0.743	-0.637
Information Technology	888	10.033	10.000	884	99.5%	-2.143	-1.489	26	2.9%	-1.155	-0.585
Media & Entertainment	553	8.685	8.000	553	100.0%	-1.279	-0.699	8	1.4%	-1.916	-2.158
Metals & Mining	299	8.716	8.000	299	100.0%	-1.349	-0.745	114	38.1%	-0.742	-0.538
Multi	179	12.849	13.000	50	27.9%	-1.602	-0.499	179	100.0%	-1.222	-1.078
Paper & Forest Products	153	10.046	10.000	145	94.8%	-1.234	-0.955	49	32.0%	-1.205	-1.187
Property & Real Estate	57	10.737	11.000	57	100.0%	-0.768	-0.427	-	-	-	-
Retailing	786	9.826	10.000	780	99.2%	-1.984	-1.371	115	14.6%	-1.432	-1.217
Telecom Services	216	8.741	8.000	216	100.0%	-1.206	-0.990	20	9.3%	-0.922	-0.649
Transportation	238	10.218	10.500	41	17.2%	-1.599	-0.928	226	95.0%	-1.206	-1.049
Water	66	14.682	15.000	7	10.6%	-0.789	-0.601	66	100.0%	-1.251	-1.107

Table 3: Determinants of Ratio-Based Thresholds and the Tightness

This table examines the determinants of S&P's core ratio-based thresholds and the discretionary tightness around them. Panel A reports adjusted R^2 from OLS regressions of threshold levels for debt-to-EBITDA and FFO-to-debt on credit rating, industry, and year fixed effects, as well as their interactions, to assess the explanatory power of observable firm groupings. Panel B presents coefficient estimates from regressions of threshold tightness on firm financial health, investment opportunities, firm- and economy-level uncertainty, and credit rating agency incentives, estimated using the model specified in Equation (1). All regressions in Panel B include rating-industry and year fixed effects, and two-way clustered standard errors by rating-industry and by year. Variable definitions are provided in Appendix B. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Variation in Threshold Levels Explained by Rating, Industry, and Year Effects

Dep. Var. =	***Threshold***					
	Debt-to-EBITDA			**FFO-to-Debt**		
	Full sample (N = 8,264)	Investment Grade (N =3,123)	Speculative Grade (N =5,141)	Full sample (N = 3,578)	Investment Grade (N=2,087)	Speculative Grade (N=1,486)
	(1)	(2)	(3)	(4)	(5)	(6)
Rating	0.497	0.172	0.365	0.357	0.197	0.269
Industry	0.127	0.449	0.104	0.171	0.451	0.057
Year	0.000	0.001	0.001	0.003	0.001	0.008
Rating-Industry	0.669	0.624	0.516	0.693	0.678	0.403
Rating-Industry-Year	0.654	0.574	0.515	0.617	0.608	0.338

Table 3, Continued

Panel B: Determinants of Threshold Tightness

Dep. Var. =	***Tightness***									
	Debt-to-EBITDA					**FFO-to-Debt**				
	Full Sample			Inv. Grade	Spec. Grade	Full Sample			Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I: Financial Health										
IntCov	**-0.015*****	**-0.012*****	**-0.009****	-0.003	**-0.013*****	-0.003	0.000	**-0.006***	0.003	-0.001
	(-6.05)	**(-4.95)**	**(-2.53)**	(-0.79)	**(-4.68)**	(-1.03)	(0.07)	**(-1.97)**	(0.60)	(-0.38)
PM	**-1.174*****	**-1.273*****	**-1.403****	**-2.630*****	**-1.132*****	**-0.994*****	**-1.010*****	**-2.130*****	**-1.971*****	**-0.508****
	(-3.46)	**(-4.44)**	**(-2.74)**	**(-3.89)**	**(-6.08)**	**(-3.57)**	**(-3.17)**	**(-3.84)**	**(-3.21)**	**(-2.36)**
Cash	**-2.675*****	**-1.940*****	**-2.823*****	**-2.466****	**-1.686*****	**-1.506*****	**-1.055***	**-2.336*****	**-1.526***	-0.560
	(-4.23)	**(-3.25)**	**(-3.95)**	**(-2.38)**	**(-3.10)**	**(-3.10)**	**(-1.98)**	**(-4.10)**	**(-2.00)**	(-0.79)
Lev	**2.122*****	**2.055*****	**2.858*****	**4.988*****	**1.483*****	**0.931*****	**0.908****	0.676	**2.209*****	0.334
	(7.14)	**(6.59)**	**(8.88)**	**(7.34)**	**(4.43)**	**(3.28)**	**(2.48)**	(1.38)	**(3.80)**	(0.95)
II: Investment Opportunities										
MTB	**-0.360*****	**-0.259*****	**-0.324*****	**-0.233****	**-0.262*****	-0.061	-0.068	-0.075	-0.076	-0.001
	(-8.75)	**(-4.85)**	**(-4.54)**	**(-2.62)**	**(-3.05)**	(-1.26)	(-1.33)	(-0.96)	(-0.98)	(-0.01)
CapEx	**-1.430*****	**-1.431*****	**-1.081*****	-0.507	**-1.628*****	**-0.729*****	**-0.667*****	-0.093	-0.469	**-0.679*****
	(-6.19)	**(-6.37)**	**(-3.28)**	(-0.82)	**(-6.89)**	**(-6.29)**	**(-5.65)**	(-0.23)	(-1.64)	**(-4.32)**
BondIss	-0.038	**-0.394***	-0.391	**-2.060*****	0.172	**-0.598*****	**-0.765*****	**-0.760****	**-1.581*****	-0.127
	(-0.16)	**(-2.07)**	(-1.17)	**(-4.41)**	(1.09)	**(-3.22)**	**(-3.19)**	**(-2.91)**	**(-4.37)**	(-0.37)
III: Uncertainty										
RetVol	**0.204****	**0.295*****	**0.198****	**0.817*****	**0.230*****	**0.123****	0.085	-0.001	**0.517*****	-0.038
	(2.90)	**(4.79)**	**(2.25)**	**(4.99)**	**(4.05)**	**(2.89)**	(1.27)	(-0.01)	**(4.26)**	(-0.92)
BidAsk	**0.860*****	**0.698****	**0.666*****	**5.012*****	**0.658****	**0.783****	**0.464***	**1.085*****	**1.823*****	**0.599****
	(3.61)	**(2.95)**	**(3.53)**	**(3.24)**	**(2.87)**	**(2.86)**	**(2.01)**	**(3.26)**	**(3.18)**	**(2.63)**
EarnVol	**4.770*****	**4.640*****	**6.008*****	**8.140****	**3.942****	**2.900*****	**2.526****	1.544	**3.338****	**2.635****
	(3.17)	**(3.32)**	**(3.69)**	**(2.44)**	**(2.93)**	**(3.14)**	**(2.24)**	(1.17)	**(2.19)**	**(2.22)**
Intg	**0.391***	**0.763*****	**1.582*****	**1.567*****	**0.515****	0.074	0.276	-0.216	0.345	**0.634****
	(1.86)	**(3.41)**	**(4.12)**	**(3.74)**	**(2.61)**	(0.38)	(1.19)	(-0.33)	(0.94)	**(2.28)**
Tenure	**-0.175*****	**-0.118*****	**-0.514*****	-0.107	**-0.112***	**-0.156*****	**-0.105****	**-0.557*****	-0.050	-0.105

	(-5.03)	**(-3.27)**	**(-4.50)**	(-1.69)	**(-2.16)**	**(-3.58)**	**(-2.35)**	**(-3.66)**	(-1.22)	(-1.43)
Ind_Growth	0.064	0.222	1.582	3.896	-1.057	-0.256	-2.094	-2.187	-3.007	-0.172
	(0.04)	(0.08)	(0.68)	(1.25)	(-0.31)	(-0.18)	(-0.89)	(-0.91)	(-0.78)	(-0.07)
Ind_RetVol	0.176	0.430	**0.537***	0.092	0.602	0.182	0.034	0.337	-0.180	0.364
	(0.76)	(1.62)	**(1.85)**	(0.25)	(1.65)	(0.82)	(0.08)	(1.02)	(-0.33)	(0.82)
VIX	**0.018***	**0.018***	0.013	0.003	0.020	**0.021*****	**0.031*****	**0.034*****	**0.040****	0.006
	(1.84)	**(1.84)**	(0.87)	(0.26)	(1.58)	**(3.58)**	**(4.91)**	**(5.01)**	**(2.98)**	(0.82)
IV: CRA Incentives										
MajorClient	**-0.100*****	**-0.132*****	**-0.083*****	**-0.076*****	**-0.271*****	**-0.093*****	**-0.090*****	**-0.075*****	**-0.055*****	**-0.250*****
	(-5.04)	**(-6.35)**	**(-4.04)**	**(-3.08)**	**(-6.60)**	**(-6.05)**	**(-4.78)**	**(-3.58)**	**(-3.55)**	**(-3.94)**
FitchShare	**-0.038*****	**-0.056*****	**-0.116*****	**-0.079*****	**-0.049*****	**-0.036*****	**-0.055*****	**-0.090*****	**-0.051****	**-0.056*****
	(-3.45)	**(-7.22)**	**(-7.95)**	**(-5.85)**	**(-5.77)**	**(-3.50)**	**(-3.60)**	**(-5.10)**	**(-2.44)**	**(-4.05)**
Size	**0.199*****	**0.301*****	**0.602*****	**0.279****	**0.331*****	**0.170*****	**0.185*****	**0.525*****	**0.147****	**0.278*****
	(5.48)	**(7.47)**	**(5.20)**	**(2.99)**	**(6.65)**	**(4.83)**	**(3.93)**	**(4.65)**	**(2.34)**	**(3.98)**
Inst	**0.447***	**0.597****	**2.199*****	**2.073*****	0.382	0.005	0.025	**2.810*****	0.653	-0.193
	(1.96)	**(2.34)**	**(4.88)**	**(3.33)**	(1.36)	(0.03)	(0.12)	**(4.64)**	(1.56)	(-0.96)
BBB-	0.094		0.092			0.038		-0.064		
	(0.81)		(0.84)			(0.50)		(-0.74)		
Rating-Industry FE	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	No	No	Yes	No	No
Year FE	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
N	8,264	8,264	8,264	3,123	5,141	3,578	3,578	3,578	2,092	1,486
Adj. R^2	0.231	0.302	0.566	0.345	0.260	0.161	0.283	0.492	0.275	0.334

Table 4: Firm Responses to Threshold Tightness

This table examines the relationship between threshold tightness and change in one-year ahead firm outcomes. Panel A reports changes in the underlying financial ratios (debt-to-EBITDA and FFO-to-debt). Panel B presents results for net debt and equity issuance. Panel C examines changes in operating performance, measured by sales growth and changes in EBITDA-to-assets. Variable definitions are provided in Appendix B. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Changes in Financial Ratios

Dep. Var. =	***ΔRatio***					
	Debt-to-EBITDA			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)
Tightness	**-0.189*****	**-0.116*****	**-0.252*****	**0.032*****	**0.029*****	**0.036*****
	(-11.41)	**(-9.36)**	**(-11.82)**	**(9.00)**	**(6.69)**	**(8.87)**
IntCov	-0.003***	-0.003**	-0.002	-0.001*	-0.001	-0.001**
	(-3.06)	(-2.81)	(-1.69)	(-2.16)	(-0.85)	(-2.19)
PM	0.191	-0.114	0.218	-0.073***	-0.140**	-0.023
	(1.13)	(-0.65)	(1.02)	(-3.13)	(-2.66)	(-1.07)
Cash	-0.271	0.123	-0.576**	-0.049	-0.079	-0.035
	(-1.38)	(0.58)	(-2.22)	(-0.78)	(-1.06)	(-0.42)
Lev	-0.200*	0.130	-0.300**	0.019	-0.003	0.035
	(-1.91)	(0.79)	(-2.27)	(1.02)	(-0.09)	(1.54)
MTB	-0.016	-0.030	0.018	0.009	0.014	0.008
	(-0.48)	(-1.14)	(0.37)	(1.19)	(1.71)	(0.64)
CapEx	0.844	2.291***	0.151	-0.197**	-0.456**	-0.115**
	(1.76)	(3.69)	(0.28)	(-2.59)	(-2.57)	(-2.19)
EarnVol	0.049	0.271	0.063	-0.019	-0.041	-0.001
	(0.28)	(1.03)	(0.31)	(-1.53)	(-0.98)	(-0.04)
Tang	-0.129	-0.341*	-0.029	0.065***	0.118**	0.035*
	(-1.16)	(-1.95)	(-0.25)	(3.46)	(2.47)	(1.91)
RetVol	0.035	0.094	0.035	-0.027**	-0.020	-0.028***
	(0.95)	(0.77)	(0.78)	(-2.42)	(-0.86)	(-3.12)
Beta	-0.050	-0.058	-0.047	0.002	0.005	-0.002
	(-1.63)	(-0.90)	(-1.67)	(0.40)	(0.51)	(-0.30)
Size	-0.070***	-0.055**	-0.069***	0.003	0.003	0.006
	(-4.32)	(-2.92)	(-3.41)	(0.70)	(0.61)	(0.90)
RetEarn	-0.044	0.031	-0.062	-0.011	-0.033	0.002
	(-1.06)	(0.52)	(-1.02)	(-0.96)	(-1.66)	(0.11)
χ²(Inv.= Spec.)		**0.136*****			-0.007	
		(53.74)			(1.87)	
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	7,631	2,989	4,642	3,309	1,970	1,339
Adj. R^2	0.183	0.167	0.209	0.212	0.213	0.248

Table 4, Continued

Panel B: Changes in Net Debt and Equity Issuance

Dep. Var. =	***Debt_Issue***						***Equity_Issue***					
	Debt-to-EBITDA			**FFO-to-Debt**			**Debt-to-EBITDA**			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tightness	**-0.007*****	**-0.005*****	**-0.009*****	**-0.007*****	**-0.005*****	**-0.012*****	**0.002*****	**0.002*****	**0.001***	**0.002****	**0.002****	0.002
	(-5.32)	**(-4.68)**	**(-4.66)**	**(-6.11)**	**(-3.96)**	**(-5.10)**	**(3.99)**	**(3.64)**	**(1.83)**	**(2.53)**	**(2.43)**	(1.27)
IntCov	0.000	0.000	0.000	0.000**	-0.000	0.001***	0.000	0.000	0.000	-0.000	-0.000	0.000
	(0.09)	(0.17)	(0.47)	(2.23)	(-0.03)	(4.58)	(1.29)	(0.95)	(1.41)	(-0.77)	(-0.07)	(0.39)
PM	0.022	0.032*	0.015	0.031	0.039***	0.016	-0.010	-0.011	-0.009	-0.002	0.009	-0.016
	(1.50)	(1.97)	(0.74)	(1.63)	(3.35)	(0.63)	(-0.93)	(-0.50)	(-0.76)	(-0.11)	(0.54)	(-1.10)
Cash	-0.061**	-0.035	-0.086***	-0.009	-0.053	0.008	-0.044***	-0.030	-0.057***	-0.024*	-0.011	-0.044***
	(-2.97)	(-1.44)	(-3.63)	(-0.26)	(-1.44)	(0.21)	(-3.91)	(-1.39)	(-4.94)	(-2.11)	(-0.61)	(-3.03)
Lev	-0.072***	-0.029	-0.087***	-0.088***	-0.048*	-0.114***	0.004	0.015	-0.001	0.006	0.044**	-0.017
	(-5.08)	(-1.63)	(-4.87)	(-4.26)	(-1.95)	(-4.18)	(0.56)	(0.89)	(-0.21)	(0.57)	(2.63)	(-1.09)
MTB	0.020***	0.011***	0.030***	0.019***	0.014***	0.023***	-0.010***	-0.016***	-0.004	-0.010**	-0.017***	-0.002
	(5.65)	(3.91)	(4.96)	(5.01)	(3.95)	(4.11)	(-4.84)	(-6.31)	(-0.97)	(-2.57)	(-3.80)	(-0.44)
CapEx	0.208***	0.162**	0.198***	0.182***	0.162***	0.158**	0.069***	0.116	0.050**	0.124***	0.138**	0.115***
	(4.88)	(2.48)	(3.74)	(3.38)	(3.11)	(2.31)	(3.05)	(1.61)	(2.27)	(3.68)	(2.73)	(3.47)
EarnVol	0.012	-0.032	0.013	0.022	-0.017	0.031	0.006	-0.026	0.009	-0.003	0.006	-0.007
	(0.58)	(-1.26)	(0.57)	(1.32)	(-1.06)	(1.41)	(0.78)	(-1.26)	(1.21)	(-0.27)	(0.21)	(-0.60)
Tang	-0.004	-0.009	0.003	-0.007	-0.019	0.010	0.002	0.003	0.004	-0.003	-0.015	0.009
	(-0.47)	(-0.86)	(0.22)	(-0.44)	(-1.32)	(0.48)	(0.36)	(0.22)	(0.54)	(-0.31)	(-1.03)	(0.78)
RetVol	-0.018***	-0.012*	-0.016***	-0.016**	-0.006	-0.019***	-0.001	0.002	0.000	-0.001	0.005	-0.003
	(-8.23)	(-1.78)	(-5.92)	(-2.91)	(-0.86)	(-3.06)	(-0.44)	(0.37)	(0.09)	(-0.23)	(1.27)	(-0.62)
Beta	-0.006**	-0.007**	-0.005*	-0.006*	-0.006	-0.001	-0.001	-0.002	-0.000	0.001	0.000	0.003
	(-2.44)	(-2.90)	(-1.88)	(-2.05)	(-1.61)	(-0.53)	(-0.43)	(-0.58)	(-0.07)	(0.56)	(0.02)	(1.32)
Size	-0.008***	-0.007**	-0.009***	-0.005*	-0.004	-0.010**	-0.002	-0.001	-0.002**	-0.002	-0.003*	-0.002
	(-4.35)	(-2.98)	(-3.84)	(-2.05)	(-1.59)	(-2.60)	(-1.59)	(-0.43)	(-2.57)	(-1.21)	(-2.05)	(-0.69)
RetEarn	-0.002	-0.001	0.001	-0.006	-0.002	-0.007	-0.003	-0.005	0.001	-0.002	-0.013	0.003
	(-0.32)	(-0.17)	(0.17)	(-0.62)	(-0.19)	(-0.50)	(-0.83)	(-0.69)	(0.27)	(-0.39)	(-1.31)	(0.42)
χ^2(Inv.= Spec.)		**0.004****			**0.007****			**0.001****			0.000	
		(4.07)			**(3.80)**			**(4.66)**			(0.08)	
Rating-Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7,631	2,989	4,642	3,309	1,970	1,339	7,631	2,989	4,642	3,309	1,970	1,339
Adj. R^2	0.163	0.150	0.182	0.198	0.137	0.266	0.325	0.404	0.208	0.373	0.439	0.301

Table 4, Continued

Panel C: Changes in Operating Performance

Dep. Var.=	***SalesGrowth***						***ΔEBITDA***					
	Debt-to-EBITDA			**FFO-to-Debt**			**Debt-to-EBITDA**			**FFO-to-Debt**		
	Full Sample (1)	Inv. Grade (2)	Spec. Grade (3)	Full Sample (4)	Inv. Grade (5)	Spec. Grade (6)	Full Sample (7)	Inv. Grade (8)	Spec. Grade (9)	Full Sample (10)	Inv. Grade (11)	Spec. Grade (12)
Tightness	**0.012*****	**0.009*****	**0.015*****	**0.025*****	**0.018*****	**0.034*****	**0.004*****	**0.003*****	**0.005*****	**0.007*****	**0.005*****	**0.010*****
	(4.55)	**(3.79)**	**(3.49)**	**(6.57)**	**(5.04)**	**(5.22)**	**(7.85)**	**(6.15)**	**(7.46)**	**(7.52)**	**(5.17)**	**(7.46)**
IntCov	0.000**	0.000	0.001*	0.000	0.000	0.001	-0.000**	-0.000	-0.000	-0.000**	-0.000	-0.000*
	(2.23)	(0.99)	(1.95)	(0.07)	(0.08)	(0.77)	(-2.47)	(-1.60)	(-1.18)	(-2.45)	(-1.50)	(-1.92)
PM	0.066	0.075	0.067	0.097	0.035	0.124	-0.009	-0.011	-0.009	-0.000	-0.019	0.016
	(1.00)	(0.94)	(0.96)	(1.23)	(0.43)	(1.46)	(-1.30)	(-1.01)	(-1.08)	(-0.00)	(-1.44)	(0.92)
Cash	0.005	0.030	-0.030	0.204**	0.218*	0.151	0.013	0.026	0.005	-0.001	0.019	-0.011
	(0.09)	(0.60)	(-0.42)	(2.18)	(2.11)	(1.13)	(0.91)	(1.73)	(0.31)	(-0.06)	(0.86)	(-0.56)
Lev	-0.105***	-0.088**	-0.111***	-0.194**	-0.019	-0.290***	-0.012***	-0.016*	-0.011**	-0.012	-0.014	-0.010
	(-3.26)	(-2.30)	(-3.10)	(-2.83)	(-0.39)	(-3.69)	(-3.35)	(-1.94)	(-2.45)	(-1.59)	(-1.53)	(-0.79)
MTB	0.035***	0.022***	0.052***	0.048***	0.037***	0.064***	0.000	0.002	-0.001	-0.000	0.003*	-0.002
	(6.06)	(4.45)	(5.19)	(4.49)	(3.06)	(4.08)	(0.22)	(1.24)	(-0.65)	(-0.01)	(1.90)	(-0.57)
CapEx	0.195	-0.421***	0.302*	0.065	-0.492**	0.284	-0.035	-0.124***	-0.013	-0.083**	-0.160***	-0.048
	(1.35)	(-3.61)	(2.08)	(0.32)	(-2.66)	(1.34)	(-1.71)	(-8.32)	(-0.61)	(-2.17)	(-3.11)	(-1.21)
EarnVol	0.111**	-0.006	0.116**	0.158**	0.064	0.177**	0.004	0.014	0.004	0.013	0.003	0.020
	(2.91)	(-0.08)	(3.00)	(2.83)	(0.78)	(3.01)	(0.84)	(0.67)	(0.79)	(1.44)	(0.14)	(1.58)
Tang	-0.032	0.024	-0.038	0.012	0.072	-0.010	0.007	0.015	0.004	0.011	0.023*	0.003
	(-0.91)	(0.65)	(-1.06)	(0.23)	(1.22)	(-0.19)	(1.64)	(1.70)	(0.98)	(1.67)	(1.77)	(0.37)
RetVol	-0.058***	-0.043*	-0.055***	-0.084**	-0.035	-0.087**	-0.003	-0.004*	-0.003	-0.007	-0.006	-0.006
	(-3.95)	(-1.92)	(-3.50)	(-2.65)	(-0.98)	(-2.70)	(-1.59)	(-1.80)	(-1.64)	(-1.60)	(-1.12)	(-1.34)
Beta	-0.002	-0.002	-0.002	-0.018	-0.023*	-0.015	0.000	0.002	-0.000	-0.001	-0.001	-0.003
	(-0.20)	(-0.15)	(-0.28)	(-1.43)	(-1.78)	(-0.98)	(0.12)	(0.73)	(-0.32)	(-0.55)	(-0.23)	(-1.09)
Size	-0.006**	-0.008	-0.007**	-0.008	-0.010*	-0.014	0.003***	0.002**	0.003***	0.002*	0.002	0.003
	(-2.30)	(-1.09)	(-2.64)	(-1.49)	(-1.89)	(-1.41)	(5.24)	(2.77)	(3.55)	(2.15)	(1.74)	(1.47)
RetEarn	0.000	-0.024	0.017	-0.024	-0.064	0.004	-0.001	-0.003	-0.001	-0.003	-0.014**	0.003
	(0.04)	(-1.55)	(1.76)	(-1.16)	(-1.36)	(0.22)	(-0.51)	(-1.22)	(-0.47)	(-0.70)	(-2.30)	(0.51)
χ^2(Inv.= Spec.)		**-0.006***			**-0.016****			**-0.002*****			**-0.005*****	
		(2.59)			**(5.03)**			**(13.05)**			**(7.65)**	
Rating-Ind.FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7,631	2,989	4,642	3,309	1,970	1,339	7,631	2,989	4,642	3,309	1,970	1,339
Adj. R^2	0.219	0.228	0.224	0.333	0.303	0.384	0.163	0.188	0.162	0.233	0.257	0.252

Table 5: Threshold Tightness and the Likelihood of Future Breaches

This table examines the predictive power of threshold tightness on one year ahead threshold breaches. All regressions include rating-industry and year fixed effects. Standard errors are clustered by rating-industry and year. Variable definitions are provided in Appendix B. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep. Var. =	***Breach***					
	Debt-to-EBITDA			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)
Tightness	**0.031***	**0.029***	**0.030***	**0.091***	**0.093***	**0.085***
	(9.79)	**(6.62)**	**(8.01)**	**(17.82)**	**(14.07)**	**(5.96)**
IntCov	0.001**	0.001	0.001**	0.001	-0.001	0.002
	(2.17)	(1.48)	(2.32)	(1.06)	(-0.80)	(1.64)
PM	-0.008	0.040	-0.039	-0.075	0.072	-0.220**
	(-0.15)	(0.42)	(-0.68)	(-0.92)	(0.65)	(-2.39)
Cash	-0.080	-0.011	-0.141	0.195	0.424	0.073
	(-1.34)	(-0.10)	(-1.76)	(1.08)	(1.40)	(0.40)
Lev	0.042	0.297***	-0.029	0.125	0.100	0.173
	(1.00)	(3.68)	(-0.62)	(1.36)	(0.67)	(1.54)
MTB	-0.023*	-0.049***	-0.012	-0.056***	-0.018	-0.101***
	(-1.99)	(-3.73)	(-0.78)	(-3.30)	(-1.09)	(-3.89)
CapEx	0.063	0.589	-0.051	0.248	0.707**	0.249
	(0.32)	(1.26)	(-0.25)	(1.52)	(2.41)	(1.39)
EarnVol	-0.004	0.118**	-0.019	-0.137**	-0.114	-0.162**
	(-0.09)	(2.23)	(-0.39)	(-2.22)	(-0.94)	(-2.51)
Tang	-0.016	-0.140	0.014	-0.181**	-0.231*	-0.191**
	(-0.41)	(-1.64)	(0.33)	(-2.57)	(-1.79)	(-2.25)
RetVol	0.044**	0.046	0.049**	0.165***	0.144**	0.158***
	(2.25)	(1.15)	(2.22)	(5.79)	(2.49)	(4.33)
Beta	-0.003	-0.004	-0.003	-0.027*	0.003	-0.038
	(-0.25)	(-0.15)	(-0.26)	(-1.83)	(0.10)	(-1.72)
Size	-0.002	-0.022	0.007	-0.003	-0.003	-0.002
	(-0.30)	(-1.68)	(0.86)	(-0.20)	(-0.17)	(-0.06)
RetEarn	0.014	0.022	0.005	0.061	0.036	0.064
	(0.91)	(0.90)	(0.23)	(1.57)	(0.64)	(1.38)
χ²(Inv.= Spec.)		-0.001			0.008	
		(0.01)			(0.27)	
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	7,631	2,989	4,642	3,309	1,970	1,339
Adj. R^2	0.148	0.183	0.132	0.233	0.215	0.267

Table 6: S&P Responses to Threshold Breaches

This table reports regression results for how S&P reacts to threshold breaches. Panel A reports descriptive statistics and Panel B reports estimates from the regression analysis of the likelihood of negative ratings actions upon threshold breaches. Variable definitions are provided in Appendix B. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Descriptive Statistics

	Breach Sample		**Non-Breach Sample**		**Difference**	
	Mean	Median	Mean	Median	Mean	Median
	(N=2,132)		(N=8,424)			
Breach_Either	1.000	1.000	0.000	0.000	1.000***	1.000***
Breach_Both	0.151	0.000	0.000	0.000	0.151***	0.000***
#FutureBreach	0.507	0.000	0.137	0.000	0.370***	0.000***
ΔDebt/EBITDA	0.810	0.751	-0.218	-0.100	1.027***	0.851***
ΔFFO/Debt	-0.071	-0.036	0.018	0.014	-0.087***	-0.050***
Neg_Action	0.316	0.000	0.149	0.000	0.167***	0.000***

Panel B: Likelihood of Negative Rating Actions to Threshold Breaches

Dep Var =	***Neg_Action***											
	Full Sample				**Investment Grade**				**Speculative Grade**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Breach_Either	**0.093*****	**0.086*****	**0.066*****	**0.061*****	**0.100*****	**0.089*****	**0.073****	**0.067****	**0.087*****	**0.083*****	**0.062*****	**0.058*****
	(9.32)	**(11.10)**	**(5.84)**	**(5.63)**	**(4.16)**	**(3.89)**	**(2.72)**	**(2.53)**	**(6.20)**	**(7.36)**	**(4.74)**	**(5.13)**
Breach_Both		**0.049***		0.037		**0.062***		0.030		0.037		0.035
		(2.05)		(1.39)		**(1.92)**		(0.69)		(0.88)		(0.81)
#FutureBreach			**0.091*****	**0.091*****			**0.115*****	**0.114*****			**0.076*****	**0.076*****
			(8.35)	**(8.32)**			**(6.10)**	**(6.09)**			**(8.23)**	**(8.27)**
ΔDebt/EBITDA	0.008*	0.008*	0.008*	0.007*	-0.007	-0.008	-0.010	-0.010	0.010**	0.010**	0.010**	0.010*
	(2.05)	(1.97)	(1.91)	(1.86)	(-0.87)	(-0.93)	(-1.22)	(-1.23)	(2.34)	(2.27)	(2.21)	(2.10)
ΔFFO/Debt	-0.098**	-0.098**	-0.095**	-0.094**	-0.099***	-0.098***	-0.097***	-0.097***	-0.139**	-0.139**	-0.134**	-0.134**
	(-3.05)	(-2.86)	(-2.82)	(-2.82)	(-3.78)	(-3.19)	(-3.54)	(-3.51)	(-2.93)	(-2.90)	(-2.75)	(-2.76)
IntCov	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	0.000	0.000	0.000	0.000
	(-0.59)	(-0.63)	(-0.67)	(-0.67)	(-1.60)	(-1.75)	(-1.72)	(-1.71)	(0.53)	(0.58)	(0.57)	(0.57)
PM	-0.028	-0.028	-0.028	-0.028	0.028	0.026	0.020	0.020	-0.055	-0.054	-0.053	-0.052
	(-0.65)	(-0.70)	(-0.61)	(-0.61)	(0.45)	(0.48)	(0.33)	(0.31)	(-0.94)	(-1.01)	(-0.88)	(-0.87)
Cash	0.042	0.043	0.058	0.059	-0.014	-0.014	0.009	0.008	0.073	0.074	0.086	0.087
	(1.05)	(1.12)	(1.47)	(1.48)	(-0.23)	(-0.28)	(0.14)	(0.14)	(1.05)	(1.08)	(1.24)	(1.23)
Lev	0.185***	0.184***	0.168***	0.168***	0.251***	0.250***	0.210**	0.210**	0.175***	0.175***	0.165***	0.165***
	(5.31)	(5.86)	(4.78)	(4.81)	(3.49)	(3.99)	(2.99)	(3.00)	(4.80)	(5.29)	(4.31)	(4.30)
MTB	-0.054***	-0.054***	-0.053***	-0.054***	-0.059***	-0.059***	-0.058***	-0.058***	-0.055***	-0.055***	-0.054***	-0.054***
	(-6.46)	(-6.51)	(-6.64)	(-6.69)	(-6.26)	(-6.37)	(-6.65)	(-6.64)	(-5.12)	(-5.42)	(-5.20)	(-5.24)
CapEx	0.409**	0.413**	0.428**	0.431**	0.621*	0.617*	0.571*	0.569*	0.362*	0.366*	0.393*	0.397*
	(2.20)	(2.44)	(2.40)	(2.41)	(1.98)	(2.03)	(1.88)	(1.87)	(1.88)	(2.10)	(2.10)	(2.11)
EarnVol	-0.019	-0.020	-0.013	-0.013	0.008	0.007	0.008	0.008	-0.037	-0.037	-0.031	-0.031
	(-0.42)	(-0.43)	(-0.28)	(-0.29)	(0.08)	(0.06)	(0.08)	(0.07)	(-0.92)	(-0.97)	(-0.79)	(-0.79)
Tang	-0.071	-0.071	-0.067	-0.067	-0.076	-0.073	-0.045	-0.044	-0.079	-0.079	-0.081	-0.082
	(-1.70)	(-1.72)	(-1.68)	(-1.68)	(-1.22)	(-1.29)	(-0.86)	(-0.84)	(-1.64)	(-1.65)	(-1.69)	(-1.71)
RetVol	0.168***	0.167***	0.166***	0.165***	0.195***	0.195***	0.186***	0.186***	0.162***	0.161***	0.161***	0.161***
	(6.37)	(6.40)	(6.22)	(6.23)	(3.71)	(3.67)	(3.48)	(3.47)	(6.03)	(6.07)	(5.98)	(6.03)
Beta	-0.007	-0.007	-0.007	-0.008	0.001	0.001	0.003	0.003	-0.008	-0.009	-0.010	-0.010
	(-0.64)	(-0.64)	(-0.74)	(-0.76)	(0.03)	(0.03)	(0.13)	(0.13)	(-0.83)	(-0.81)	(-0.98)	(-1.01)
Size	-0.019***	-0.018***	-0.019***	-0.019***	-0.032***	-0.032***	-0.031***	-0.031***	-0.007	-0.007	-0.008	-0.008

	(-3.71)	(-4.35)	(-3.91)	(-3.94)	(-4.19)	(-5.27)	(-4.44)	(-4.45)	(-1.21)	(-1.38)	(-1.30)	(-1.32)
RetEarn	0.026*	0.026**	0.023	0.024	0.074**	0.074***	0.069**	0.070**	-0.001	-0.000	-0.002	-0.002
	(1.99)	(2.19)	(1.71)	(1.74)	(2.98)	(3.05)	(2.84)	(2.83)	(-0.03)	(-0.01)	(-0.09)	(-0.08)
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	10,556	10,556	10,556	10,556	4,591	4,591	4,591	4,591	5,965	5,965	5,965	5,965
Adj. R^2	0.192	0.192	0.210	0.210	0.162	0.163	0.192	0.192	0.211	0.211	0.223	0.223

Table 7: Market Response to Threshold Tightness

This table examines bond and equity market responses to the level of threshold tightness disclosed in credit rating reports, for both debt-to-EBITDA and FFO-to-debt ratios. Standard errors are clustered by rating-industry and year. Variable definitions are provided in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dep Var =	***Bond_Ret***						***Equity_CAR***					
	Debt-to-EBITDA			**FFO-to-Debt**			**Debt-to-EBITDA**			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tightness	**-0.0008*****	**-0.0004***	**-0.0012****	-0.0007	**-0.0012****	0.0010	**-0.0010*****	**-0.0006*****	**-0.0014*****	**-0.0024****	**-0.0015***	**-0.0040***
	(-2.93)	**(-2.12)**	**(-2.34)**	(-1.07)	**(-2.21)**	(0.66)	**(-6.40)**	**(-3.05)**	**(-5.90)**	**(-2.58)**	**(-1.95)**	**(-1.71)**
ΔRate	0.0070***	0.0050***	0.0088***	0.0072***	0.0059***	0.0083***	0.0054***	0.0026	0.0069***	0.0106***	0.0064**	0.0155***
	(5.81)	(3.36)	(4.88)	(4.64)	(3.67)	(2.66)	(4.28)	(1.52)	(4.17)	(3.87)	(2.16)	(3.82)
ΔWatch	0.0183***	0.0170*	0.0204**	0.0461***	0.0234	0.0718***	0.0064	0.0010	0.0075	0.0199	-0.0117***	0.0785***
	(2.68)	(2.01)	(2.08)	(3.32)	(1.30)	(5.46)	(0.48)	(0.54)	(0.46)	(0.65)	(-2.70)	(15.19)
ΔOutlook	0.0045	-0.0007	0.0131	0.0025	0.0010	0.0271***	0.0034***	0.0029*	0.0035**	0.0097***	0.0093***	0.0090**
	(0.66)	(-0.07)	(1.60)	(0.22)	(0.08)	(3.47)	(2.66)	(1.75)	(2.05)	(3.77)	(2.74)	(2.21)
Rating-Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,893	1,978	1,915	1,670	1,165	505	6,394	2,475	3,919	2,372	1,457	915
Adj. R^2	0.174	0.138	0.203	0.244	0.182	0.309	0.053	0.054	0.059	0.112	0.088	0.140

Online Appendix: Additional Analyses and Robustness Tests

Online Appendix A: Procedures for Extracting Thresholds from Credit Research Reports

This appendix details the procedure for extracting the two core ratio thresholds (the maximum debt-to-EBITDA ratio and the minimum FFO-to-debt ratio) from credit research reports. Rating analysts discuss these thresholds in downside scenarios, which describe conditions that would trigger credit rating downgrades or outlook deteriorations, in the reports' outlook sections.

We start with 59,972 S&P credit rating reports issued for 5,496 U.S. firms from 2001 to 2020 in XML format, including full credit reports and research update reports. We locate the outlook section by using a case-insensitive search for an XML node named "outlook" and extracting all non-tabular text within it, resulting in 49,212 reports with outlook discussions. We manually examine 100 of the 10,760 reports for which we cannot find an outlook section and verify that none of them discuss rating outlooks.

We experiment with three state-of-the-art LLMs to extract debt-to-EBITDA and FFO-to-debt thresholds from downside scenario discussions: Grok-2 (version grok-2-1212 with a knowledge cutoff date of July 17, 2024), GPT-4o (version gpt-4o-2024-08-06 with a knowledge cutoff date of October 2023), and DeepSeek-V3 (version released on December 26, 2024, available at https://api-docs.deepseek.com/news/news1226). In an untabulated analysis, we experiment with a keyword-based approach with regular expression patterns to extract downside thresholds and find that its performance is worse than that of the three LLMs.

Specifically, we ask each model to extract thresholds for debt-to-EBITDA and FFO-to-debt ratios that trigger either credit rating downgrades or outlook deteriorations and their associated discussions using the following prompt:

> *You will receive an excerpt from a credit report. Your task is to identify the thresholds for debt/EBITDA and FFO/debt that trigger credit rating downgrades or outlook deterioration. Extract the sentences from the text that reference each threshold. Omit thresholds associated with credit rating upgrades or outlook improvements. Focus solely on thresholds concerning debt/EBITDA/(adjusted) leverage and FFO/debt ratios, disregarding other financial metrics like FOCF/debt, debt/ATE, and EBITDA coverage of interest.*
>
> *Note that outlook deterioration does not mean a negative outlook itself. Shifting from a positive outlook to a negative or stable outlook signifies outlook deterioration. Conversely, transitioning from a negative outlook to a positive or stable outlook indicates outlook improvement.*
>
> *The debt/EBITDA threshold should be a multiple in the format of nx (where n is a number). If it is not a multiple, for example, if it is presented as a percentage, it should not be included. Never convert a percentage into a multiple by replacing the "%" symbol with "x" and then using it as the threshold.*
>
> *The FFO/debt threshold should be a percentage; if it's not, do not include it.*
> *Provide your output in JSON format strictly as follows:*

{"debt/EBITDA": {"threshold": "...", "sentence": "..."},
"FFO/debt": {"threshold": "...", "sentence": "..."}}.
If the thresholds are not specified, enter "N/A" in the JSON response.

Before providing the result, double-check that all extracted thresholds appear in the report text. If any threshold is not explicitly mentioned, remove it and replace it with N/A.

We evaluate the performance of the three LLMs in two steps. In the first step, we compare their performance on a stratified sample of 200 reports, consisting of 10 randomly selected reports each year between 2001 and 2020. Among the possible 400 thresholds (200 reports times two thresholds per report), 66 of them, consisting of 42 debt-to-EBITDA and 24 FFO-to-debt thresholds, are identified by all three models. Additionally, the output of the models for six reports is different, i.e., not all models extract the same threshold from the reports. We read these reports and find that Grok-2, DeepSeek-V3, and GPT-4o fail to identify zero, one, and three thresholds, respectively (type II errors) and incorrectly identify one, two, and one thresholds that are not actual thresholds (type I errors). We further confirm, using a keyword search, that none of the reports in which all LLMs fail to identify any threshold discuss thresholds. Overall, all three LLMs perform well in extracting thresholds, with Grok-2 performing slightly better than GPT-4o and DeepSeek-V3.

In the second step, we use Grok-2 to extract thresholds from a different sample of 200 reports randomly selected from 2001 to 2020 and manually verify its performance in each report. We find that Grok-2 correctly identifies 41 thresholds, fails to identify three actual thresholds, and falsely identifies six thresholds, achieving an overall accuracy rate of 97.75% (391 out of 400).

Table OA1: Results Based on New Thresholds Issued After the Fiscal Year-End

This table presents the robustness check using a sample restricted to firm-years with newly disclosed thresholds issued after the prior fiscal year's earnings announcement. Firm-years where thresholds are carried forward from previous years are excluded. Panel A presents the estimation for the determinants of threshold tightness. Panel B examines rated firms' responses to threshold tightness. Panels C reports S&P's reactions to threshold breaches. Variable definitions are provided in Appendix B of the paper. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Determinants of Threshold Tightness

Dep. Var =	***Tightness***									
	Debt-to-EBITDA					**FFO-to-Debt**				
	Full Sample			Inv. Grade	Spec. Grade	Full Sample			Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I: Financial Health										
IntCov	**-0.015*****	**-0.012*****	**-0.010****	-0.006	**-0.012****	-0.003	0.000	**-0.009***	0.002	-0.000
	(-4.90)	**(-4.01)**	**(-2.38)**	(-1.37)	**(-3.01)**	(-0.87)	(0.07)	**(-1.89)**	(0.41)	(-0.05)
PM	**-1.440*****	**-1.561*****	**-2.161*****	**-2.792*****	**-1.377*****	**-1.029*****	**-1.057*****	**-2.363*****	**-2.261*****	**-0.460***
	(-5.47)	**(-6.61)**	**(-3.16)**	**(-3.63)**	**(-6.01)**	**(-3.61)**	**(-3.35)**	**(-3.68)**	**(-3.18)**	**(-1.92)**
Cash	**-2.437*****	**-1.490***	**-2.139****	-1.858	**-1.252***	**-1.656****	**-1.122**	**-3.163*****	-1.350	-0.793
	(-3.13)	**(-2.05)**	**(-2.32)**	(-1.55)	**(-2.04)**	**(-2.65)**	**(-1.54)**	**(-3.69)**	(-1.21)	(-0.88)
Lev	**2.369*****	**2.497*****	**3.177*****	**4.824*****	**2.028*****	**0.858***	**0.904***	0.677	**2.100*****	0.409
	(9.92)	**(9.42)**	**(6.93)**	**(5.80)**	**(7.66)**	**(2.14)**	**(1.83)**	(1.04)	**(3.09)**	(0.81)
II: Investment Opportunities										
MTB	**-0.386*****	**-0.309*****	**-0.298****	**-0.244****	**-0.363*****	-0.031	-0.021	0.034	-0.045	0.072
	(-8.93)	**(-5.42)**	**(-2.99)**	**(-2.37)**	**(-5.17)**	(-0.60)	(-0.32)	(0.32)	(-0.54)	(0.67)
CapEx	**-1.387*****	**-1.253*****	**-1.021***	-0.209	**-1.531*****	**-0.644*****	**-0.553*****	-0.101	**-0.547***	**-0.387***
	(-5.13)	**(-4.28)**	**(-1.78)**	(-0.29)	**(-5.36)**	**(-5.63)**	**(-3.83)**	(-0.20)	**(-1.86)**	**(-1.99)**
BondIss	-0.238	**-0.368***	-0.449	**-1.920****	0.176	**-0.806*****	**-0.848****	**-1.336*****	**-1.434*****	-0.282
	(-1.12)	**(-1.94)**	(-0.97)	**(-2.98)**	(0.79)	**(-4.43)**	**(-2.84)**	**(-3.19)**	**(-3.81)**	(-0.59)
III: Uncertainty										
RetVol	0.130	**0.311*****	0.075	**0.740*****	**0.237*****	0.105	0.102	-0.073	**0.616*****	-0.094

	(1.50)	**(4.48)**	(0.94)	**(4.67)**	**(3.43)**	(1.31)	(0.80)	(-0.70)	**(3.78)**	(-0.70)
BidAsk	**0.893*****	**0.573*****	**0.813***	**4.498****	**0.480****	**1.032*****	**0.817***	**1.576****	**1.648****	**0.957****
	(3.24)	**(3.04)**	**(2.10)**	**(2.70)**	**(2.59)**	**(3.80)**	**(2.17)**	**(2.38)**	**(2.75)**	**(2.26)**
EarnVol	**4.954****	**4.853****	**7.410*****	6.850	**4.927*****	**2.823*****	**2.389***	0.518	**3.700****	**2.614***
	(2.62)	**(3.00)**	**(5.19)**	(1.69)	**(3.06)**	**(3.15)**	**(2.15)**	(0.41)	**(2.31)**	**(2.08)**
Intg	**0.340**	**0.877*****	**1.643*****	**1.604*****	**0.671****	-0.069	0.244	-0.429	0.116	**0.966*****
	(1.38)	**(3.59)**	**(3.72)**	**(3.20)**	**(2.73)**	(-0.32)	(0.92)	(-0.45)	(0.31)	**(3.18)**
Tenure	**-0.163*****	**-0.106****	**-0.513*****	**-0.116***	**-0.095***	**-0.146*****	**-0.120****	**-0.623****	-0.059	-0.109
	(-4.52)	**(-2.86)**	**(-3.75)**	**(-1.85)**	**(-1.84)**	**(-3.31)**	**(-2.75)**	**(-2.69)**	(-1.21)	(-1.59)
Ind_Growth	-0.097	0.212	2.455	2.268	-0.195	0.481	-2.104	-2.523	1.194	-2.531
	(-0.04)	(0.05)	(0.78)	(0.41)	(-0.04)	(0.35)	(-1.00)	(-0.78)	(0.43)	(-0.78)
Ind_RetVol	0.198	0.599	0.517	**0.723***	0.404	0.158	0.185	0.404	-0.034	0.656
	(1.15)	(1.64)	(1.62)	**(1.81)**	(0.84)	(0.93)	(0.37)	(1.02)	(-0.05)	(1.37)
VIX	0.023*	0.018	0.016	0.006	0.023	**0.020*****	**0.030*****	**0.029****	**0.026****	**0.019****
	(1.86)	(1.60)	(1.10)	(0.34)	(1.57)	**(3.16)**	**(6.21)**	**(2.96)**	**(2.96)**	**(2.83)**
IV: CRA Incentives										
MajorClient	**-0.093*****	**-0.130*****	**-0.086*****	**-0.072****	**-0.261*****	**-0.088*****	**-0.087*****	**-0.055****	**-0.062*****	**-0.206****
	(-3.90)	**(-5.05)**	**(-4.62)**	**(-2.49)**	**(-6.61)**	**(-7.58)**	**(-5.28)**	**(-2.33)**	**(-3.61)**	**(-2.45)**
FitchShare	**-0.037****	**-0.057*****	**-0.107*****	**-0.069*****	**-0.054*****	**-0.033*****	**-0.057*****	**-0.095*****	**-0.048***	**-0.065*****
	(-2.79)	**(-7.37)**	**(-7.71)**	**(-5.30)**	**(-6.10)**	**(-3.10)**	**(-3.18)**	**(-5.23)**	**(-2.16)**	**(-3.74)**
Size	**0.198*****	**0.285*****	**0.700*****	**0.242****	**0.328*****	**0.153*****	**0.181*****	**0.537*****	**0.171****	**0.262*****
	(5.07)	**(6.31)**	**(6.83)**	**(2.88)**	**(5.73)**	**(5.50)**	**(3.89)**	**(3.37)**	**(2.42)**	**(4.96)**
Inst	0.417	**0.573***	**1.873*****	**1.986*****	0.384	-0.091	-0.045	**3.773*****	0.283	-0.130
	(1.59)	**(2.01)**	**(4.06)**	**(3.17)**	(1.18)	(-0.49)	(-0.24)	**(3.40)**	(0.69)	(-0.59)
BBB-	0.146		0.132			0.063		-0.009		
	(1.17)		(0.95)			(0.60)		(-0.07)		
Rating-Industry FE	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	No	No	Yes	No	No
Year FE	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
N	5,380	5,380	5,380	2,088	3,292	2,187	2,187	2,187	1,354	833
Adj. R^2	0.229	0.318	0.592	0.356	0.284	0.138	0.289	0.517	0.294	0.335

Panel B: Firm Responses to Threshold Tightness

	Debt-to-EBITDA			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	***ΔRatio***					
Tightness	**-0.194*****	**-0.117*****	**-0.264*****	**0.035*****	**0.032*****	**0.043*****
	(-11.95)	**(-8.54)**	**(-12.11)**	**(9.40)**	**(5.91)**	**(11.09)**
χ²(Inv.= Spec.)		**-0.147*****			**-0.011***	
		(31.07)			**(2.80)**	
Adj. R^2	0.125	0.179	0.104	0.232	0.219	0.279
Dep. Var. =	***Debt_Issue***					
Tightness	**-0.009*****	**-0.006*****	**-0.011*****	**-0.009*****	**-0.007*****	**-0.016*****
	(-5.74)	**(-5.19)**	**(-4.87)**	**(-6.02)**	**(-4.41)**	**(-4.37)**
χ²(Inv.= Spec.)		**0.005****			**0.009****	
		(4.63)			**(4.13)**	
Adj. R^2	0.204	0.187	0.229	0.252	0.190	0.339
Dep. Var. =	***Equity_Issue***					
Tightness	**0.001*****	**0.002****	**0.001***	**0.002***	**0.002****	0.001
	(3.59)	**(2.42)**	**(2.00)**	**(2.08)**	**(2.42)**	(0.70)
χ²(Inv.= Spec.)		0.001			0.001	
		(0.67)			(0.11)	
Adj. R^2	0.324	0.393	0.209	0.409	0.469	0.344
Dep. Var. =	***SalesGrowth***					
Tightness	**0.015*****	**0.009*****	**0.020*****	**0.030*****	**0.021*****	**0.043*****
	(5.29)	**(3.21)**	**(4.12)**	**(6.57)**	**(4.30)**	**(5.79)**
χ²(Inv.= Spec.)		**-0.011*****			**-0.022*****	
		(6.50)			**(6.88)**	
Adj. R^2	0.222	0.233	0.227	0.384	0.355	0.425
Dep. Var. =	***ΔEBITDA***					
Tightness	**0.005*****	**0.004*****	**0.007*****	**0.008*****	**0.007*****	**0.012*****
	(10.98)	**(6.96)**	**(10.70)**	**(7.65)**	**(5.46)**	**(6.18)**
χ²(Inv.= Spec.)		**-0.003*****			**-0.005****	
		(20.05)			**(5.84)**	
Adj. R^2	0.174	0.197	0.181	0.258	0.291	0.276
Dep. Var. =	***Breach***					
Tightness	**0.023*****	**0.022*****	**0.020*****	**0.068*****	**0.070*****	**0.060*****
	(6.04)	**(4.42)**	**(4.49)**	**(10.64)**	**(7.02)**	**(5.64)**
χ²(Inv.= Spec.)		0.002			0.010	
		(0.07)			(0.34)	
Adj. R^2	0.125	0.179	0.104	0.232	0.219	0.279
N	5,090	2,016	3,074	2,075	1,297	778
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: S&P Responses to Threshold Breaches – Negative Rating Actions

Dep Var =	***Neg_Action***											
	Full Sample				**Investment Grade**				**Speculative Grade**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Breach_Either	**0.097*****	**0.091*****	**0.072*****	**0.069*****	**0.112*****	**0.104*****	**0.086*****	**0.083****	**0.086*****	**0.082*****	**0.063*****	**0.060****
	(10.46)	**(9.95)**	**(8.44)**	**(6.49)**	**(4.48)**	**(4.85)**	**(3.23)**	**(3.00)**	**(4.13)**	**(3.68)**	**(3.28)**	**(2.81)**
Breach_Both		0.037		0.024		0.044		0.018		0.029		0.025
		(1.28)		(0.68)		(1.51)		(0.36)		(0.55)		(0.44)
#FutureBreach			**0.082*****	**0.081*****			**0.091*****	**0.091*****			**0.077*****	**0.077*****
			(7.15)	**(7.06)**			**(5.37)**	**(5.26)**			**(6.14)**	**(6.13)**
ΔDebt/EBITDA	0.008	0.008	0.007	0.006	-0.013	-0.014	-0.014	-0.015	0.012*	0.012*	0.011*	0.010
	(1.40)	(1.24)	(1.21)	(1.18)	(-1.51)	(-1.77)	(-1.59)	(-1.60)	(2.06)	(1.78)	(1.79)	(1.77)
ΔFFO/Debt	-0.072**	-0.072*	-0.068**	-0.068**	-0.078**	-0.079**	-0.076**	-0.076**	-0.116*	-0.117*	-0.112*	-0.112*
	(-2.18)	(-2.00)	(-2.27)	(-2.26)	(-2.38)	(-2.21)	(-2.37)	(-2.28)	(-1.95)	(-1.93)	(-1.89)	(-1.89)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6,056	6,056	6,056	6,056	2,636	2,636	2,636	2,636	3,420	3,420	3,420	3,420
Adj. R^2	0.226	0.227	0.242	0.242	0.205	0.205	0.224	0.224	0.246	0.246	0.260	0.260

Table OA2: The Alternative Measure of Threshold Tightness

This table presents the robustness tests in which threshold tightness is normalized by the threshold itself (*Tightness_Alt)*, instead of the standard deviation of the ratio. Panel A presents the estimation for the determinants of threshold tightness. Panel B examines rated firms' responses to threshold tightness. Panels C presents market reactions to threshold tightness. Other variable definitions are provided in Appendix B of the paper. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Determinants of Threshold Tightness

Dep. Var =	***Tightness_Alt***									
	Debt-to-EBITDA					**FFO-to-Debt**				
	Full Sample			Inv. Grade	Spec. Grade	Full Sample			Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I: Financial Health										
IntCov	**-0.001*****	**-0.001*****	-0.000	0.001	**-0.001*****	**-0.006****	**-0.005***	**-0.008*****	**-0.007***	-0.003
	(-4.09)	**(-3.52)**	(-0.20)	(1.55)	**(-3.95)**	**(-2.42)**	**(-2.16)**	**(-3.49)**	**(-1.81)**	(-1.46)
PM	**-0.170*****	**-0.165*****	**-0.282****	**-0.281****	**-0.145*****	**-0.569*****	**-0.600*****	**-0.859*****	**-0.906****	**-0.446*****
	(-3.74)	**(-4.20)**	**(-2.53)**	**(-2.95)**	**(-4.87)**	**(-4.65)**	**(-3.94)**	**(-3.24)**	**(-2.97)**	**(-3.84)**
Cash	**-0.745*****	**-0.581*****	**-0.593*****	**-0.803*****	**-0.426*****	**-2.319*****	**-1.575*****	**-2.130*****	**-2.459*****	-0.630
	(-6.63)	**(-5.68)**	**(-4.89)**	**(-5.16)**	**(-4.82)**	**(-6.35)**	**(-3.97)**	**(-5.01)**	**(-3.95)**	(-1.24)
Lev	**0.468*****	**0.433*****	**0.576*****	**0.880*****	**0.343*****	**1.175*****	**1.202*****	**1.090****	**1.406*****	**1.162*****
	(10.92)	**(10.98)**	**(10.18)**	**(11.14)**	**(9.02)**	**(6.87)**	**(5.80)**	**(2.76)**	**(3.41)**	**(5.90)**
II: Investment Opportunities										
MTB	**-0.047*****	**-0.040*****	**-0.055*****	**-0.045*****	**-0.042*****	-0.054	**-0.099****	**-0.148****	-0.031	**-0.144****
	(-7.49)	**(-5.51)**	**(-8.89)**	**(-4.24)**	**(-4.20)**	(-1.66)	**(-2.72)**	**(-2.50)**	(-0.57)	**(-2.70)**
CapEx	**-0.124*****	**-0.148*****	-0.075	0.035	**-0.191*****	**-0.360****	**-0.363****	-0.043	**-0.431****	**-0.328****
	(-3.28)	**(-4.20)**	(-1.08)	(0.41)	**(-6.15)**	**(-2.96)**	**(-2.97)**	(-0.22)	**(-2.52)**	**(-2.50)**
BondIss	-0.009	-0.027	0.013	**-0.185*****	0.033	**-0.547*****	**-0.587*****	**-0.477****	**-0.954*****	-0.310
	(-0.25)	(-0.77)	(0.30)	**(-3.18)**	(0.89)	**(-3.32)**	**(-3.19)**	**(-2.97)**	**(-3.02)**	(-1.71)
III: Uncertainty										
RetVol	**0.037*****	**0.040*****	**0.050*****	**0.067****	**0.042*****	-0.043	0.025	-0.035	0.082	0.017
	(3.71)	**(3.71)**	**(4.35)**	**(2.61)**	**(3.93)**	(-0.95)	(0.59)	(-0.92)	(0.94)	(0.43)

BidAsk	**0.132****	**0.095***	**0.146****	**0.626*****	**0.102***	**0.433****	0.285	**0.520****	**0.842****	**0.379***
	(2.98)	**(1.81)**	**(2.77)**	**(3.36)**	**(1.94)**	**(2.32)**	(1.54)	**(2.54)**	**(2.46)**	**(1.98)**
EarnVol	0.140	0.113	-0.167	-0.006	0.155	0.117	0.245	0.395	-0.212	0.585
	(0.76)	(0.68)	(-0.47)	(-0.02)	(0.83)	(0.20)	(0.43)	(0.59)	(-0.26)	(0.91)
Intg	0.032	**0.082****	0.114	**0.170*****	0.052	-0.051	0.377	-0.345	0.451	**0.415***
	(1.11)	**(2.66)**	(1.46)	**(3.17)**	(1.61)	(-0.42)	(1.74)	(-1.10)	(1.44)	**(2.04)**
Tenure	**-0.017*****	**-0.011****	**-0.083*****	0.002	**-0.018****	**-0.036***	-0.010	**-0.224*****	0.035	-0.033
	(-3.33)	**(-2.22)**	**(-4.02)**	(0.26)	**(-2.20)**	**(-1.83)**	(-0.49)	**(-3.07)**	(1.49)	(-1.22)
Ind_Growth	-0.383	0.523	0.585	**1.081***	0.334	**-2.321****	-1.454	-1.358	-0.361	-2.034
	(-1.15)	(1.29)	(1.35)	**(2.01)**	(0.82)	**(-2.69)**	(-1.26)	(-1.09)	(-0.25)	(-1.25)
Ind_RetVol	**0.079****	**0.092****	**0.111****	0.080	**0.091***	**0.331****	**0.410****	**0.554*****	0.335	**0.548****
	(2.46)	**(2.66)**	**(2.32)**	(1.04)	**(1.91)**	**(2.68)**	**(2.36)**	**(3.56)**	(1.49)	**(2.45)**
VIX	0.002	**0.003***	0.003	0.001	0.003	**0.006****	**0.015****	**0.014****	0.013	0.013
	(1.51)	**(1.95)**	(1.24)	(0.61)	(1.46)	**(2.45)**	**(2.57)**	**(2.61)**	(1.51)	(1.24)
IV: CRA Incentives										
MajorClient	**-0.010*****	**-0.015*****	**-0.011*****	-0.005	**-0.037*****	**-0.029*****	**-0.037*****	**-0.026****	-0.011	**-0.146*****
	(-3.30)	**(-4.66)**	**(-3.54)**	(-1.53)	**(-5.66)**	**(-3.22)**	**(-3.50)**	**(-2.65)**	(-1.13)	**(-3.78)**
FitchShare	**-0.004*****	**-0.007*****	**-0.014*****	**-0.008*****	**-0.007*****	**-0.010****	**-0.026*****	**-0.040*****	**-0.018****	**-0.034*****
	(-3.72)	**(-6.32)**	**(-7.19)**	**(-5.15)**	**(-5.85)**	**(-2.39)**	**(-4.42)**	**(-3.92)**	**(-2.50)**	**(-4.08)**
Size	**0.039*****	**0.048*****	**0.124*****	**0.030****	**0.060*****	**0.110*****	**0.069****	**0.250*****	0.024	**0.154*****
	(6.82)	**(7.69)**	**(5.55)**	**(2.50)**	**(7.52)**	**(4.87)**	**(2.76)**	**(4.86)**	(0.83)	**(3.82)**
Inst	**0.092****	**0.109****	**0.372*****	**0.271*****	**0.095****	0.074	0.143	**0.927*****	**0.400***	0.095
	(2.77)	**(2.62)**	**(3.32)**	**(4.09)**	**(2.18)**	(0.69)	(1.07)	**(3.10)**	**(1.96)**	(0.58)
BBB-	0.013		-0.006			-0.035		-0.045		
	(0.66)		(-0.38)			(-0.89)		(-1.04)		
Rating-Industry FE	No	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes
Firm FE	No	No	Yes	No	No	No	No	Yes	No	No
Year FE	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
N	8,264	8,264	8,264	3,123	5,141	3,578	3,578	3,578	2,092	1,486
Adj. R^2	0.291	0.367	0.571	0.480	0.315	0.246	0.375	0.583	0.416	0.401

Panel B: Firm Responses to Threshold Tightness

	Debt-to-EBITDA			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	***ΔRatio***					
Tightness_Alt	**-1.923*****	**-1.406*****	**-2.264*****	**0.086*****	**0.082*****	**0.090*****
	(-16.90)	**(-13.16)**	**(-17.01)**	**(10.97)**	**(6.79)**	**(9.84)**
χ²(Inv.= Spec.)		**0.858*****			-0.008	
		(47.40)			(0.39)	
Adj. R^2	0.261	0.247	0.282	0.269	0.245	0.351
Dep. Var. =	***Debt_Issue***					
Tightness_Alt	**-0.053*****	**-0.048*****	**-0.058*****	**-0.019*****	**-0.015*****	**-0.022*****
	(-5.07)	**(-6.86)**	**(-4.03)**	**(-5.72)**	**(-6.53)**	**(-3.69)**
χ²(Inv.= Spec.)		**0.010****			**0.007***	
		(4.64)			**(3.06)**	
Adj. R^2	0.163	0.153	0.180	0.207	0.145	0.272
Dep. Var. =	***Equity_Issue***					
Tightness_Alt	**0.020*****	**0.026*****	**0.017*****	0.002	0.003	0.001
	(7.27)	**(5.09)**	**(4.73)**	(0.82)	(1.13)	(0.31)
χ²(Inv.= Spec.)		**0.009****			0.002	
		(4.32)			(0.53)	
Adj. R^2	0.331	0.407	0.214	0.369	0.436	0.299
Dep. Var. =	***Salesgrowth***					
Tightness_Alt	**0.145*****	**0.137*****	**0.155*****	**0.050*****	**0.033*****	**0.068*****
	(7.63)	**(7.21)**	**(5.92)**	**(5.95)**	**(4.11)**	**(6.91)**
χ²(Inv.= Spec.)		-0.018			**-0.035****	
		(0.54)			**(6.29)**	
Adj. R^2	0.235	0.250	0.238	0.333	0.299	0.389
Dep. Var. =	***ΔEBITDA***					
Tightness_Alt	**0.046*****	**0.039*****	**0.051*****	**0.019*****	**0.014*****	**0.023*****
	(8.74)	**(8.21)**	**(7.89)**	**(8.59)**	**(6.94)**	**(7.61)**
χ²(Inv.= Spec.)		**-0.012*****			**-0.009****	
		(8.27)			**(6.97)**	
Adj. R^2	0.197	0.219	0.199	0.265	0.273	0.290
Dep. Var. =	***Breach***					
Tightness_Alt	**0.374*****	**0.392*****	**0.355*****	**0.159*****	**0.193*****	**0.126*****
	(11.17)	**(12.69)**	**(8.17)**	**(10.55)**	**(11.49)**	**(4.59)**
χ²(Inv.= Spec.)		0.037			**0.067****	
		(0.70)			**(5.43)**	
Adj. R^2	0.162	0.198	0.142	0.219	0.203	0.258
N	7,631	2,989	4,642	3,309	1,970	1,339
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Market Reaction to Threshold Tightness

Dep Var	***Bond_Ret***						***Equity_CAR***					
	Debt-to-EBITDA			**FFO-to-Debt**			**Debt-to-EBITDA**			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tightness_Alt	**-0.005*****	**-0.003****	**-0.008****	-0.001	-0.002	0.000	**-0.007*****	**-0.006****	**-0.007*****	**-0.003****	-0.002	-0.004
	(-3.00)	**(-2.52)**	**(-2.35)**	(-0.75)	(-0.95)	(0.09)	**(-3.67)**	**(-2.45)**	**(-2.81)**	**(-2.52)**	(-1.17)	(-1.16)
ΔRate	0.007***	0.005***	0.008***	0.007***	0.006***	0.009***	0.005***	0.002	0.006***	0.010***	0.006**	0.015***
	(5.44)	(3.27)	(4.48)	(4.64)	(3.66)	(2.79)	(3.83)	(1.25)	(3.68)	(3.74)	(2.11)	(3.59)
ΔWatch	0.018***	0.017*	0.020**	0.046***	0.024	0.072***	0.006	0.000	0.007	0.020	-0.012**	0.076***
	(2.67)	(2.02)	(2.07)	(3.30)	(1.31)	(5.33)	(0.46)	(0.09)	(0.41)	(0.66)	(-2.45)	(16.96)
ΔOutlook	0.004	-0.001	0.013	0.003	0.001	0.028***	0.003***	0.003*	0.003**	0.010***	0.009***	0.009**
	(0.64)	(-0.07)	(1.54)	(0.23)	(0.09)	(3.68)	(2.62)	(1.72)	(1.99)	(3.74)	(2.76)	(2.13)
Rating-Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,893	1,978	1,915	1,669	1,165	504	6,394	2,475	3,919	2,371	1,457	914
Adj. R^2	0.173	0.137	0.201	0.236	0.180	0.297	0.049	0.054	0.053	0.110	0.087	0.137

Table OA3: Firm Responses to Threshold Tightness - Equity Issuances versus Repurchases

This table reports regression results for how threshold tightness in year *t* relates to equity issuances versus equity repurchases and dividend distributions in year *t*+1. Variable definitions are provided in Appendix B of the paper. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep. Var. =	***Equity_Issue***						***Equity_Repurchase***					
	Debt-to-EBITDA			**FFO-to-Debt**			**Debt-to-EBITDA**			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tightness	0.000	0.000	0.000	0.001	0.000	0.001	0.001	**0.002****	-0.000	0.001	**0.002****	-0.001*
	(0.62)	(0.20)	(0.95)	(0.71)	(0.16)	(0.39)	(1.75)	**(2.97)**	(-1.51)	(1.07)	**(2.67)**	(-1.89)
χ²(Inv.= Spec.)		0.000			-0.001			**0.002*****			**0.003*****	
		(0.00)			(0.02)			**(18.17)**			**(14.96)**	
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7,631	2,989	4,642	3,309	1,970	1,339	7,631	2,989	4,642	3,309	1,970	1,339
Adj. R^2	0.450	0.409	0.150	0.472	0.486	0.241	0.354	0.411	0.254	0.442	0.506	0.312

Table OA4: Firm Responses to Pseudo Threshold Tightness

This table examines the relationship between pseudo threshold tightness and change in one-year ahead firm outcomes and compare the results with those based on actual firm-specific thresholds (Table 4 of the paper). Pseudo threshold tightness is the normalized difference between focal firm's actual financial ratio at year *t* and pseudo threshold at year *t*-1, which is based on a rating-industry-year's average threshold of all rated firms (excluding the focal firm under consideration). Other variable definitions are provided in Appendix B of the paper. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Debt-to-EBITDA			**FFO-to-Debt**		
	Full Sample	Inv. Grade	Spec. Grade	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =			***ΔRatio***			
Tightness	-0.189***	-0.116***	-0.252***	0.032***	0.029***	0.036***
Pseudo_Tightness	-0.051***	-0.027***	-0.078***	0.010***	0.009**	0.013***
Difference	**-0.138*****	**-0.089*****	**-0.174*****	**0.022*****	**0.020*****	**0.023*****
(χ^2)	**(125.98)**	**(99.93)**	**(61.26)**	**(90.49)**	**(39.06)**	**(60.75)**
Dep. Var. =			***Debt_Issue***			
Tightness	-0.007***	-0.005***	-0.009***	-0.007***	-0.005***	-0.012***
Pseudo_Tightness	-0.002***	-0.001*	-0.003***	-0.001	-0.001	-0.002
Difference	**-0.005*****	**-0.004*****	**-0.006*****	**-0.006*****	**-0.004*****	**-0.010*****
(χ^2)	**(55.51)**	**(37.08)**	**(26.48)**	**(30.80)**	**(16.79)**	**(17.32)**
Dep. Var. =			***Equity_Issue***			
Tightness	0.002***	0.002***	0.001*	0.002**	0.002**	0.002
Pseudo_Tightness	0.001***	0.001***	0.001*	0.001**	0.001	0.002*
Difference	**0.001****	**0.001*****	0.000	**0.001****	**0.001****	0.000
(χ^2)	**(5.12)**	**(7.88)**	(0.44)	**(3.91)**	**(5.22)**	(0.03)
Dep. Var. =			***Salesgrowth***			
Tightness	0.012***	0.009***	0.015***	0.025***	0.018***	0.034***
Pseudo_Tightness	0.005***	0.004***	0.006***	0.010***	0.006***	0.014*
Difference	**0.007*****	**0.005*****	**0.009*****	**0.015*****	**0.012****	**0.020*****
(χ^2)	**(25.02)**	**(12.15)**	**(17.07)**	**(27.37)**	**(11.70)**	**(16.13)**
Dep. Var. =			***ΔEBITDA***			
Tightness	0.004***	0.003***	0.005***	0.007***	0.005***	0.010***
Pseudo_Tightness	0.001***	0.001***	0.002**	0.003***	0.002***	0.004***
Difference	**0.003*****	**0.002*****	**0.003*****	**0.004*****	**0.003*****	**0.006*****
(χ^2)	**(150.39)**	**(82.83)**	**(74.58)**	**(65.91)**	**(31.20)**	**(46.04)**

Table OA5: S&P's Responses to Threshold Breaches – Alternative Samples and Measure

This table reports S&P responses to threshold breaches in alternative samples and responses to threshold deviations. Panel A presents S&P responses to threshold breaches in a sample where a firm-year has thresholds for both financial ratios. Panel B presents S&P responses to threshold breaches in a sample where a firm-year has complied with both thresholds in the past three years. Panel C reports the results for S&P responses to threshold deviations (*Threshold_Dev*), i.e., the distance of the actual ratio from the threshold, where more positive values indicate more severe breach and more negative values indicate greater distances from breach. Other variable definitions are provided in Appendix B of the paper. All regressions include rating-industry and year fixed effects, and standard errors are clustered by rating-industry and year. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: S&P Reponses to Threshold Breaches When a Firm-year Has Both Financial Thresholds

Dep Var =	***Neg_Action***											
	Full Sample				**Investment Grade**				**Speculative Grade**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Breach_Either	**0.073***	0.036	0.050	0.015	**0.086***	0.051	0.064	0.035	0.052	0.005	0.032	-0.015
	(2.17)	(1.06)	(1.53)	(0.48)	**(1.83)**	(0.89)	(1.27)	(0.65)	(1.18)	(0.13)	(0.74)	(-0.34)
Breach_Both		**0.083****		**0.076****		0.080		0.066		**0.099***		**0.100***
		(3.05)		**(2.86)**		(1.41)		(1.03)		**(1.76)**		**(2.01)**
#FutureBreach			**0.101*****	**0.100*****			**0.093*****	**0.091*****			**0.105*****	**0.105*****
			(6.20)	**(6.27)**			**(3.18)**	**(3.19)**			**(4.74)**	**(4.88)**
ΔDebt/EBITDA	0.014	0.007	0.012	0.006	0.020	0.014	0.017	0.012	0.007	-0.002	0.004	-0.005
	(1.32)	(0.66)	(1.28)	(0.60)	(1.07)	(0.75)	(0.90)	(0.69)	(0.67)	(-0.25)	(0.51)	(-0.52)
ΔFFO/Debt	-0.105*	-0.118**	-0.093*	-0.105**	0.044	0.043	0.053	0.052	-0.287***	-0.322***	-0.288***	-0.323***
	(-2.04)	(-2.82)	(-2.03)	(-2.25)	(0.98)	(1.12)	(1.30)	(1.39)	(-3.11)	(-5.89)	(-3.11)	(-3.54)
Firm Char.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,753	1,753	1,753	1,753	895	895	895	895	858	858	858	858
Adj. R^2	0.351	0.353	0.373	0.376	0.346	0.349	0.370	0.372	0.370	0.374	0.390	0.394

Panel B: S&P Reponses to Threshold Breaches When a Firm-year Has Complied with Both Thresholds in the Past Three Years

Dep Var =	***Neg_Action***											
	Full Sample				**Investment Grade**				**Speculative Grade**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Breach_Either	**0.074*****	**0.073*****	**0.045****	**0.047****	**0.092****	**0.085****	**0.064***	**0.063***	**0.067****	**0.069*****	**0.043***	**0.045***
	(4.71)	**(4.42)**	**(2.76)**	**(2.55)**	**(2.63)**	**(2.35)**	**(1.83)**	**(1.82)**	**(2.96)**	**(3.21)**	**(1.98)**	**(1.86)**
Breach_Both		0.003		-0.012		0.045		0.002		-0.019		-0.021
		(0.07)		(-0.28)		(0.75)		(0.03)		(-0.24)		(-0.29)
#FutureBreach			**0.098*****	**0.098*****			**0.128*****	**0.128*****			**0.073*****	**0.073*****
			(8.71)	**(8.73)**			**(8.95)**	**(8.73)**			**(5.77)**	**(5.80)**
ΔDebt/EBITDA	0.013**	0.013**	0.012*	0.012*	-0.020**	-0.021**	-0.023**	-0.023**	0.019**	0.019**	0.018**	0.018**
	(2.32)	(2.38)	(2.03)	(2.10)	(-2.37)	(-2.22)	(-2.51)	(-2.49)	(2.70)	(2.75)	(2.56)	(2.59)
ΔFFO/Debt	-0.077**	-0.077**	-0.072**	-0.072**	-0.118***	-0.119***	-0.113***	-0.113***	-0.090*	-0.090*	-0.085*	-0.085*
	(-3.01)	(-2.98)	(-2.64)	(-2.60)	(-4.33)	(-4.04)	(-4.44)	(-4.53)	(-2.15)	(-2.15)	(-1.91)	(-1.88)
Firm Char.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6,724	6,724	6,724	6,724	3,063	3,063	3,063	3,063	3,661	3,661	3,661	3,661
Adj. R^2	0.186	0.186	0.206	0.206	0.151	0.152	0.187	0.187	0.216	0.216	0.226	0.226

Panel C: S&P Responses to Threshold Deviations

Dep Var =	***Neg_Action***		
	Full Sample	Inv. Grade	Spec. Grade
	(1)	(2)	(3)
Threshold_Dev	**0.006****	**0.010****	0.002
	(2.48)	**(2.20)**	(0.86)
Breach_Either	**0.080*****	**0.071****	**0.081*****
	(5.35)	**(2.44)**	**(3.86)**
Threshold_Dev×Breach_Either	0.004	0.010	0.006
	(0.21)	(0.46)	(0.27)
ΔDebt/EBITDA	0.005	-0.008	0.007
	(1.33)	(-0.85)	(1.47)
ΔFFO/Debt	-0.109**	-0.080*	-0.175**
	(-2.62)	(-2.16)	(-2.82)
Firm Characteristics	Yes	Yes	Yes
Rating-Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	8,801	3,876	4,925
Adj. R^2	0.208	0.172	0.234