Credit Rating Agency and Equity Analysts' Adjustments to GAAP Earnings

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Abstract

Moody's analysts and sell-side equity analysts adjust GAAP earnings as part of their research. We show that adjusted earnings definitions of Moody's analysts are significantly lower than those of equity analysts when companies exhibit higher downside risk, as measured by volatility in idiosyncratic stock returns, volatility in negative market returns, poor earnings, and loss status. Relative to adjusted earnings definitions of equity analysts, adjusted earnings definitions of Moody's analysts better predict future bankruptcies, yet they fare significantly worse in predicting future earnings and operating cash flows. These findings persist after controlling for optimism incentives of analysts, reporting incentives of companies, credit rating levels, and industry and year effects. Our findings suggest that credit rating agencies cater to their clients' need for a more conservative interpretation of company-reported performance than what is offered by equity analysts.

Keywords: Credit rating agencies, analysts, street earnings, conservatism.

JEL classification: G24.

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1. Introduction

Credit rating agency analysts and sell-side equity analysts adjust GAAP earnings as part of their research. Both groups of analysts do so in order to better compare realized performance across different companies and to capture the part of realized performance more likely to recur in the future. Investors react to the earnings adjustments of credit rating agency analysts (De Franco et al. 2011, Kraft 2014, Batta et al. 2014) and equity analysts (Bhattacharya et al. 2003, Gu and Chen 2004), indicating each groups of analysts' ability to capture recurring company performance.

Notwithstanding their congruent objectives and ability to adjust GAAP earnings, each group of analysts serves clients with different information needs. Credit rating agency analysts (hereafter "rating analysts") cater to bond investors and regulators, who are more interested in company downside risk (i.e., possibility of default related to poor performance) than company upside potential. In contrast, equity analysts cater to stock investors, who are not asymmetrically interested in company downside risk. Consequently, rating analysts should have stronger client-based incentives to identify and communicate company downside risk on a more timely basis than company upside potential. We call such research conservative—parallel to the concept of conditional conservatism in financial accounting (Basu 1997, Beaver and Ryan 2005).

In this paper, we make two hypotheses about how the stronger conservatism incentives of rating analysts will shape their adjusted earnings definitions. First, we hypothesize that rating analysts' earnings definitions should be lower than those of equity analysts, when companies exhibit higher downside risk.[1] Second, rating analysts' earnings definitions should predict bankruptcies more accurately than those of equity analysts. Relative to a comparison between the distributional properties of credit ratings of rating analysts and stock recommendations of equity analysts, a comparison between the earnings definitions of the two groups of analysts should more clearly test analysts' different conservatism incentives. This is because the earnings definitions measure *realized* company performance and can be readily benchmarked against one another as well as GAAP earnings for the same company and year. In contrast, credit ratings and stock recommendations are predictions of *future* company performance; and they represent fundamentally different forms of assessment geared toward different users.

[1] Equity analysts' adjusted earnings are known as "pro forma" or "street" earnings. We choose the more general term "adjusted earnings" to label the definitions of both credit rating agency and equity analysts.

We test our hypotheses by comparing three definitions of realized performance for the same company and year: company-reported GAAP earnings, earnings definitions of Moody's analysts, and earnings definitions of equity analysts. The sample consists of all 1,256 industrial companies that were analyzed by both Moody's analysts and equity analysts between years 2002 and 2011. Regarding the first hypothesis, we find that earnings definitions of Moody's analysts are lower than those of equity analysts when companies exhibit higher downside risk, as measured by volatility in negative idiosyncratic stock returns, volatility in negative market returns, poor earnings, and loss status. We make several efforts toward enhancing the reliability of our findings. First, our findings are robust to different proxies for company downside risk and controls for optimism incentives of analysts, reporting incentives of companies, rating levels, and year and industry fixed effects. Second, our findings are not caused by Moody's research affecting measurement of company downside risk or by the way I/B/E/S compiles earnings definitions of equity analysts. Third, our findings are not sensitive to timing advantages of Moody's analysts, who adjust GAAP earnings about one month after equity analysts. Finally, the association between downside risk and earnings definitions holds across adjustments to different components of GAAP earnings.

Regarding the second hypothesis, we find that earnings definitions of Moody's analysts predict bankruptcies better than earnings definitions of equity analysts do. As hypothesized, the efficiency in bankruptcy prediction can result from Moody's analysts' conservatism incentives to identify and communicate company downside risk on a timely basis. Alternatively, the efficiency in bankruptcy prediction can result from Moody's analysts' potentially superior ability and information advantages over equity analysts. In our final set of tests, we attempt to distinguish between these alternative interpretations by examining which earnings definition better predicts recurring company performance, i.e., future company earnings and operating cash flows. If the conservatism (superior ability and information advantages) interpretation holds, we would not expect (expect) that earnings definitions of Moody's analysts predict future earnings and operating cash flows better than those of equity analysts. Our tests show that earnings definitions of Moody's analysts predict future earnings and operating cash flows significantly worse than earnings definitions of equity analysts. We conclude that Moody's analysts are more efficient in predicting bankruptcies largely because of their stronger conservatism incentives and not because of their potentially superior ability and information advantages.

We are the first, to our knowledge, to directly compare conservatism incentives of rating analysts and equity analysts by using a research output common to both groups of analysts (i.e., ex post definitions of realized company performance). We show that Moody's analysts' earnings definitions are conditionally more conservative and more efficient in predicting bankruptcies—yet less efficient in predicting future earnings and operating cash flows. This finding holds after controlling for rating levels, suggesting that rating analysts communicate their conservative research not only through ratings but also through their (lesser-known) adjustments to GAAP earnings.

Our study also extends the literature on debt contracting. Positive accounting theory predicts that accounting conservatism enhances efficiency in debt contracts (Watts and Zimmerman 1986, Watts 2003, Nikolaev 2010). Borrowers and lenders use conservative accounting information in private debt contracts (Asquith et al. 2005, Ball et al. 2008); adjust accounting information in order to facilitate private debt contracts (Li 2010); and adjust accounting information conservatively when agency costs of debt are higher (Beatty et al. 2008). Our findings suggest that conservative adjustments to accounting information extend beyond those made by borrowers and lenders in private contracts to those made by rating analysts in public bond markets.

Finally, our study contributes to the literature on bond analysts, who are alternative information providers to rating analysts. Bond analysts provide more research for distressed borrowers (Johnston et al. 2009); and investment recommendations of bond analysts are less optimistically distributed than stock recommendations of equity analysts (De Franco et al. 2009). Similar to our study, these findings suggest that bond investors' demand conservative company information. However, we note important differences between our study and this literature. First, we explore adjusted earnings definitions, which serve as a more directly comparable (and richer) research output than credit ratings and stock recommendations. Second, our findings suggest that ratings agencies' stronger conservatism may arise from non-investment uses such as portfolio governance and regulatory oversight, contrasting with bond analysts' conservatism for the exclusive use of bond investors. Lastly, our study uses a superior sample not only in sample size but also in the cross-sectional variation in key variables, given that rating agencies cover virtually all bond issues, whereas bond analysts cover a small percentage of bond issues.

2. Hypothesis development

2.1. Conservatism incentives of rating analysts

Credit rating agencies and their analysts have incentives to issue high credit ratings in order to curry favour with borrowers, especially under lax regulations and weak competition from other agencies (Kraft 2014, Jiang et al. 2012). At the same time, rating agencies and their analysts have incentives to emphasize company downside risk due to their investment advisory and certification roles. In their investment advisory role, rating agencies facilitate comparisons of investment value among borrowers (Hand et al. 1992, Dichev and Piotroski 2001, Hull et al. 2004), and risk losing credibility when highly-rated borrowers default (De Franco et al. 2009). In their certification role, rating agencies facilitate debt contracts as well as regulatory monitoring of financial institutions, and risk losing credibility and regulatory privileges when highly-rated borrowers default.[2] The incentives of rating agencies and their analysts to emphasize company downside risk are similar to those of regulators and auditors, who are held responsible for consequences of aggressive company reporting (Watts 2003).

We call analyst research that emphasizes company downside risk conservative—parallel to the concept of conditional conservatism in financial accounting, which is defined as asymmetric timeliness in recognizing losses than gains (Basu 1997, Beaver and Ryan 2005, Khan and Watts 2009). Rating analysts have net incentives to err on the side of conservatism. For instance, Moody's internally assesses its research quality by *infrequency of default* for companies rated investment grade, and less so by *frequency of default* for companies rated speculative grade (Moody's 2007).

2.2. Conservatism incentives of equity analysts

Brokerage houses and their analysts have incentives to produce optimistic research in order to curry favour with company management and to generate investment banking and trading commissions (Lin and McNichols 1998, Irvine 2004). At the same time, equity analysts have incentives to produce conservative research when they advise institutional investors (Del Guercio 1996, Gompers and Metrick 2001, Hugon and Muslu 2010). A tightened regulatory

[2] Rating agencies were criticized for missing accounting failures in early 2000's and defaults on structured finance products in 2008. In the aftermath of the financial crisis of 2008, the Dodd-Frank Act of 2010 mandated stronger conflicts of interest and governance controls and enhanced transparency to improve the quality of credit ratings and increase credit rating agency accountability. In August 2014, the SEC adopted the new requirements in accordance with the Dodd-Frank Act.

regime since early 2000's bolstered equity analyst incentives to produce conservative research (Kadan et al. 2009, Barniv et al. 2009).

On balance, rating analysts should have stronger net conservatism incentives than equity analysts for the following reasons. First, regulators evaluate rating agencies—but not brokerage houses—on their ability to research company downside risk. In fact, equity analysts may have even stronger optimistic bias for companies with uncertain earnings (Das et al. 1998, Ackert and Athanassakos 2003, Lim 2001). Second, brokerage houses have incentives to promote stocks and generate trading commissions from retail investors, whereas rating agencies cater to institutional investors, who make more prudent investments than retail investors (De Franco et al. 2009). Third, brokerage houses can avoid coverage of unfavourable stocks (McNichols and O'Brien 1997), whereas major rating agencies such as Moody's and S&P rate all bond issues. Therefore, rating agencies typically have lower quid pro quo incentives to produce optimistic research in exchange of coverage fees (Bongaerts et al. 2012, Covitz and Harrison 2003).[3]

Our expectation of stronger conservatism incentives of rating analysts is consistent with the findings of prior literature in different settings. Beaver et al. (2006) find that Nationally Recognized Statistical Rating Organization (NRSRO)'s issue more conservative ratings than the other rating agencies because of stronger demand for NRSRO-based research from regulators and institutional investors. De Franco et al. (2009) find that bond analysts issue less optimistic recommendations than equity analysts as a result of bond investors' asymmetric demand for negative information.

2.3. Earnings adjustments as part of conservative research

Moody's analysts base their ratings partially on components of their adjusted earnings such as sales, EBITDA, and interest expense (Moody's 2007).[4] While Moody's analysts make these adjustments to improve comparability across companies and to reflect underlying economics of company performance, they may also reflect their conservatism incentives in their

[3] Quid pro quo incentives may still exist. For instance, Jiang et al. (2012) show that S&P assigned higher ratings after switching from "investor pays" to "issuer pays" model. Cornaggia and Cornaggia (2013) show that "issuer pays" ratings are slower to identify default risk than "investor pays" ratings. However, rating agencies' universal coverage of borrowers should diminish such incentives. For instance, Cornaggia et al. (2014) find that ratings on structured finance products such as insurance and mortgage-backed securities are higher than corporate debt ratings. Rating shopping still happens, but more so in markets for structured finance products (Neumann 2013).

[4] Apart from the earnings-related determinants, Moody's analysts determine credit ratings using other financial information (such as geographical and segment diversity in sales and costs, and strength of cash flows) and "soft information" (such as macroeconomic and industry trends or management credibility).

adjusted earnings. For instance, Moody's cites as one primary reason for earnings adjustments "to reflect estimates and assumptions that we believe are more prudent" (Moody's 2007) and "to reflect estimates or assumptions that we believe are more appropriate, for analytical purposes for credit analysis, in the company's particular circumstances" (Moody's 2010).[5] In contrast, equity analysts may not make as prudent earnings adjustments, if they have weaker conservatism incentives. Thomson Reuters (2009), which tracks equity analysts' research through the I/B/E/S database, does not invoke conservatism and states that GAAP earnings are adjusted "to reflect the basis that the majority of contributors use to value the stock." This discussion serves as the basis for our first hypothesis.

Hypothesis 1: The gap between the adjusted earnings definitions of rating analysts and equity analysts is larger under conditions of higher downside risk.

Hypothesis 1 suggests that earnings definitions of rating analysts exclude more (fewer) positive (negative) components of GAAP earnings, and add more (fewer) losses (gains) that are not included in GAAP, when companies exhibit higher downside risk. Alternatively, rating analysts and equity analysts may adjust GAAP earnings similarly for several reasons. First, contrary to our expectation, rating analysts may not have significantly stronger conservatism incentives over equity analysts. Second, rating analysts may choose to act upon their conservatism incentives by merely shading ratings downwards, rather than adjusting inputs into ratings. Third, bond investors with short investment horizons may be more interested in profiting from short-term trades than long-term returns of capital, and hence demand more information about recurring earnings than conservatively-adjusted earnings. These cases individually or collectively may result in earnings definitions of rating analysts and equity analysts correlating similarly with company downside risk.

2.4. Earnings adjustments and bankruptcy prediction

We next examine whether Moody's analysts' emphasis on negative earnings components improves efficiency in bankruptcy prediction for companies with higher downside risk. Moody's analysts should improve bankruptcy prediction for companies with higher downside risk,

[5] Moody's also cites the following reasons to adjust company-reported financials: "To apply accounting principles that we believe more faithfully capture underlying economics," "to identify and segregate effects of unusual or non-recurring items," and "to improve comparability by aligning accounting principles" (Moody's 2007, 2010).

because their earnings definitions include more negative components that are predictive of financial distress. This prediction is consistent with prior literature, which shows that financial ratios adjusted by Moody's analysts explain variation in bond credit spreads better than ratios based on GAAP financials (Batta et al. 2014, Kraft 2014). In contrast, equity analysts' forecast optimism (Easterwood and Nutt 1999, Hong and Kubik 2003) is likely to spill over to their earnings definitions and will not bring any incremental advantage in predicting bankruptcies. Moreover, Moody's analysts' earnings definitions will better reflect the volatility of the firm's recurring earnings—especially those that relate to downside risk—than equity analysts' smoother earnings definitions (Titman and Trueman 1988). Any enhancements to the measurement of volatility should improve bankruptcy prediction, given the importance of volatility in debt pricing (Merton 1974) and default risk (Vassalou and Xing 2004). This discussion serves as the basis for our second hypothesis.

Hypothesis 2: The adjusted earnings definitions of rating analysts predict bankruptcies better than adjusted earnings definitions of equity analysts.

Hypothesis 2 may not hold if rating analysts and equity analysts similarly adjust GAAP earnings in response to company downside risk (that is, if Hypothesis 1 may not hold). Furthermore, rating analysts may indeed focus on downside risk, but their earnings definitions may have lower quality than those of equity analysts because of excessive demand for negative information from rating agency clients. Given their asymmetric loss functions, rating agency clients may demand *unconditionally* conservative earnings definitions, even if these definitions are not efficient in bankruptcy prediction.

2.5. Earnings adjustments and prediction of recurring company performance

Hypothesis 2 suggests that Moody's analysts' conservatism incentives will improve their bankruptcy prediction. Alternatively, Moody's analysts' potentially superior ability and information advantages over equity analysts may improve their bankruptcy prediction. For instance, Regulation FD, which was enacted in 2000, banned managers from releasing private information to equity analysts but carved out an exemption for rating analysts.[6] Furthermore, Moody's analysts have timing advantages, because they typically issue earnings definitions after

[6] This exemption remained in force through the majority of our sample period until the Securities and Exchange Commission removed it in October 2010.

the 10-K filings, whereas I/B/E/S determines equity analysts' definitions soon after the company earnings announcements.[7]

In order to distinguish between the two interpretations for Hypothesis 2, we examine which set of analysts' earnings definitions better predicts recurring company performance, i.e., one- and two-year-ahead company earnings and operating cash flows. On the one hand, rating analysts' asymmetric focus on downside risk has the potential to poorly reflect recurring company performance, because negative earnings components typically reverse faster than positive earnings components. Under this explanation, we do not expect earnings definitions of Moody's analysts to predict future earnings and cash flows better than those of equity analysts. On the other hand, Moody's analysts' potentially superior ability and information advantages may lead them to better predict both bankruptcies and recurring company performance. Under this explanation, we expect earnings definitions of Moody's analysts to predict future earnings and cash flows better than those of equity analysts.

3. Sample

We obtained Moody's analysts' adjustments to GAAP earnings from *Moody's Financial Metrics* (hereafter MFM). MFM is a data and analytics platform that provides Moody's analysts' detailed worksheets of company financial statements and ratings calculations for a moving window of past five years.[8] We obtained data from MFM in May 2008 and November 2012, allowing us to compile a continuous set of Moody's analysts' adjustments between fiscal years 2002 and 2011.[9] In order to enable comparability with equity analysts' earnings adjustments, we consider only the following set of Moody's analysts' adjustments that affect net income available to common shareholders: Reversing special (unusual and non-recurring) items; expensing

[7] Companies provide richer information in 10-K filings than in earnings announcements. In 10-K filings, companies may also update information that was released in earnings announcements (Hollie et al. 2005).

[8] MFM has 4,100 subscriber institutions and 235,000 users as of 2012, suggesting that Moody's analysts' adjustments to GAAP earnings are widely followed.

[9] We use the 2012 data pull when the two data pulls overlap (for the fiscal year of 2007). The two data pulls occasionally produced different GAAP earnings or adjustments for the same firm-year, because Moody's analysts may change their data retrospectively to account for company restatements, changes in their earnings adjustment methodology, or any adjustment errors. We investigate whether these changes alter our findings. First, we identify potential restatement firm-years by comparing GAAP earnings in the Compustat Fundamentals Annual and the Compustat Unrestated databases. The results are robust to excluding these observations. The mean (median) *IBES-Moody's* for 6,566 non-restating firm-years equals 0.98% (0.40%), which is not materially different from the sample mean (median) of 0.92% (0.37%). Second, we verify with Moody's that their earnings adjustment methodology was not changed materially between 2008 and 2012. Third, we do not observe any statements about corrections to adjustments in the MFM database.

capitalized interest; non-standard or "ad hoc" adjustments; pension-related adjustments; and expensing stock-based pay prior to SFAS 123R.[10] Because Moody's analysts do not align adjusted earnings with adjusted balance sheets, their earnings adjustments are not mechanical outcomes of their balance sheet adjustments.

Moody's analysts adjust GAAP earnings using Moody's industry-specific "ratings methodologies" and "global standard adjustments" guidelines (Moody's 2006, 2010). These guidelines are updated regularly and applied consistently across all firms. While Moody's analysts simply follow the guidelines in some adjustments, they have significant case-specific discretion for many types of adjustments, such as reversing special items, non-standard or "ad-hoc" adjustments, and pension-related adjustments.[11] Appendix 1 presents our assessment on the degree of analyst discretion in each adjustment category based on Moody's guidelines and our communications with Moody's analysts.

We do not test to distinguish between Moody's analysts' discretionary and non-discretionary adjustments, both because MFM does not officially make this distinction, and because in many cases it is not feasible to make this distinction. More importantly, Moody's as an institution and its analysts have client-based incentives that are strongly aligned through the analysts' employment. Similarly, given the strongly-aligned incentives of brokerage houses and equity analysts, the literature on sell-side equity analysts does not distinguish between equity analysts' discretionary and non-discretionary analyses; to a large extent, this literature uses brokerage and equity analyst incentives interchangeably.

3.1. Three definitions of realized earnings

We use GAAP earnings as the benchmark for the analysts' earnings definitions. MFM reports "Reported net profit after-tax before unusual items," which is identical to "Earnings before extraordinary items and discontinued operations" in the Compustat North America Fundamentals Annual database. To compute GAAP earnings available to common shareholders,

[10] Moody's analysts' other adjustments include dividing hybrid securities into debt and equity, capitalizing operating leases, and reversing the effects of securitizations. These adjustments do not change adjusted income available to common shareholders, but only shift amounts within the income statement.

[11] Moody's (2010) states "In addition to the Standard Adjustments, Moody's analysts may also make non-standard adjustments to financial statements for other matters to better reflect underlying economics and improve comparability with peer companies. For example, we may adjust financial statements to reflect estimates or assumptions that we believe are more suitable for credit analysis. …These adjustments typically relate to highly judgmental areas such as asset valuation allowances, impairment of assets, and contingent liabilities. No standard adjustment falls in this category as the calculations are too company-specific. Instead, we adjust financials in this area based on individual facts and circumstances."

we subtract MFM's "Preferred dividends declared" from this figure and label the result as *GAAP*.

MFM reports an earnings definition that incorporates the cumulative after-tax effect of Moody's analysts' adjustments. To compute a definition of earnings available to common shareholders, we subtract MFM's "Preferred dividends declared" from this figure and label the result as *Moody's*.

The I/B/E/S Unadjusted Summary database reports a per-share earnings definition "Actuals," which incorporates the cumulative after-tax effects of adjustments by the majority of equity analysts. To convert per-share figures to total earnings, we multiply "Actuals" by the number of shares outstanding and label the result as *IBES*.[12] We only obtain I/B/E/S observations matched to the MFM observations by company and fiscal year; the combined dataset comprises about 15% of the I/B/E/S universe.

We deflate *GAAP*, *Moody's*, and *IBES* by total assets of the prior fiscal year.[13] We obtain stock returns and financials from CRSP and Compustat; and credit ratings from MFM, Moody's Default and Recovery Database (DRD), and Mergent Fixed Income Securities Database (FISD).[14]

3.2. Descriptive statistics

The final sample consists of 8,743 annual observations from 1,256 industrial firms that have non-missing *GAAP*, *Moody's*, and *IBES* earnings definitions. The sample has average total assets of $8.8 billion, equity market capitalization of $8.8 billion, liability-to-assets of 68%, and equity analyst following of 13.8. Overall, the sample firms are larger in assets, debt, and equity analyst coverage than the Compustat universe.

[12] We understand from our conversations with I/B/E/S staff that I/B/E/S Actuals are converted to per-share amounts based on weighted common (diluted) shares outstanding for companies with negative (positive) earnings. We follow this practice. Any errors due to conversion of per-share numbers to total levels are likely to be infrequent and unrelated to company downside risk. In two separate sensitivity analyses, we multiplied I/B/E/S "Actuals" by either common or diluted shares outstanding for the whole sample. The untabulated results are very similar to those reported.

[13] We do not deflate by equity market capitalization, because doing so would systematically result in small deflator problems for high downside risk firms and generate bias.

[14] 51.8% of the ratings in the sample (all after 2007) come from MFM, which provides information on issuer-level long-term ratings. 46.7% of the ratings (all before 2007) come from DRD, which provides issuer-level senior unsecured debt ratings based either on the senior unsecured debt or a proprietary Moody's algorithm that estimates pro forma senior unsecured debt from the firm's outstanding secured or junior debt. DRD states that "in most cases, this [estimation] yields an assessment of credit risk that is relatively unaffected by collateral or position in the capital structure." The remaining 1.5% of the ratings comes from FISD, which provides issue-level, rather than issuer-level, ratings. We use FISD ratings of senior unsecured debt absent any special features such as putability, floating rates, sinking funds, and convertibility.

Table 1, Panel A presents descriptive statistics for the earnings definitions and differences among the earnings definitions for the same firm-year. All earnings definitions and differences are winsorized at the 1% level to mitigate the effect of outliers. The average *IBES*, *Moody's*, and *GAAP* are 5.66%, 4.73%, 4.31% of last year's total assets. The median ordering is slightly different, with *IBES* at 5.02%, *GAAP* at 4.40%, and *Moody's* at 4.30%. *GAAP* has the largest standard deviation; *IBES* and *Moody's* are smoother largely because they exclude many *GAAP* special items. The average (median) *Moody's–GAAP* is 0.34% (-0.02%), suggesting that Moody's analysts exclude some negative components of GAAP earnings. The average (median) *IBES–GAAP* is 1.32% (0.18%), suggesting that equity analysts exclude more of the negative components of GAAP earnings (Bradshaw and Sloan 2002). Our key variable of interest, *IBES–Moody's*, has an average (median) of 0.92% (0.37%), suggesting that Moody's analysts, on average, produce lower earnings definitions than equity analysts. All earnings definitions and their differences are significantly different from zero.

Table 1, Panel B presents a breakdown of earnings definitions and earnings differences by Moody's credit rating levels. We group Aaa, Aa, and A ratings as high (13% of the sample); Baa as medium (24% of the sample); Ba and B as low (41% of the sample); and Caa, Ca, C as very low (3% of the sample). The remaining 19% of the sample lacks Moody's ratings.[15] Unsurprisingly, mean and median levels of all earnings definitions decrease monotonically going from high to very low ratings. Moreover, *Moody's–GAAP* and *IBES–GAAP* increase almost monotonically going from high to very low ratings. The trends are statistically significant, suggesting that *GAAP* is even lower than *Moody's* and *IBES* when companies have lower ratings. Our key variable of interest, *IBES–Moody's*, does not exhibit a discernible pattern across ratings.

Table 1, Panel C presents a breakdown of earnings definitions and their differences by fiscal year. Unsurprisingly, mean and median levels of all earnings definitions appear to rise and fall with the state of the economy. For instance, earnings definitions are the lowest in the recession years 2002, 2008, and 2009. Differences in earnings definitions also appear to take extreme values in the recession years. The annual variation in earnings differences across credit rating levels and fiscal years suggests the need to control for credit rating levels and fiscal years in cross-sectional regressions.

[15] This is because Moody's analysts may adjust financials of unrated firms with which to compare rated firms; they may retain adjusted financials of firms whose ratings are withdrawn; or they may adjust financials of subsidiary firms whose parent companies are rated.

3.3. Adjustments to components of GAAP earnings and GAAP special items

We next analyze how Moody's analysts and equity analysts differ in adjusting different components of GAAP earnings. Column 1 in Appendix 2, Panel A presents average level of Moody's analysts' non-zero adjustments to different components of GAAP earnings. Moody's analysts' adjustments to special items are the largest, increasing their earnings definitions, on average, by 1.27% of last period's total assets. In comparison, Moody's analysts' adjustments to capitalized interest decrease their earnings definitions, on average, by 0.21%; non-standard adjustments do not change the level of their earnings definitions; adjustments to pension accounting decrease their earnings definitions by 0.11%; and expensing stock-based pay before the adoption of SFAS 123R decreases their earnings definitions by 0.80%.

Since equity analysts' adjustments to different components of GAAP earnings are not available, our comparison of the two groups of analysts' specific adjustments will be indirect and will focus on differences in their earnings definitions. Both groups of analysts can adjust components of GAAP earnings when they have the "option to adjust" components of GAAP earnings, i.e., when conditions that give rise to adjustments are present. For example, both groups of analysts have the option to adjust special items only when companies report special items (4,429 out of 5,142 firm-years that have data on earnings breakdowns, as reported in Columns 2 and 3 of Panel A). Similarly, both groups of analysts have the option to adjust the relevant items only when companies report capitalized interest payments (1,138 firm-years); pension charges (3,329 firm-years); and implied stock-based pay prior to SFAS 123R (871 firm-years). For non-standard adjustments, we assume that both groups of analysts have the option to adjust when Moody's analysts actually make the non-standard adjustments (286 firm-years).

Average level of *Moody's–GAAP* is larger when analysts *have* the option to adjust GAAP special items and when analysts *lack* the option to adjust pension charges or stock-based pay (Columns 4 to 6). These differences suggest that Moody's analysts reverse GAAP special items, which are on average negative due to accounting conservatism; include pension-related non-GAAP expenses; and include stock-pay related non-GAAP expenses in their earnings definitions. Similarly, average level of *IBES–GAAP* is significantly larger when analysts *have* the option to adjust GAAP special items and when analysts *lack* the option to adjust pension charges (Columns 7 to 9). These differences suggest that equity analysts reverse negative GAAP special items; and include pension-related non-GAAP expenses in their earnings definitions.

More importantly, there are significant differences in how Moody's analysts and equity analysts adjust different components of GAAP earnings (Columns 10 to 12). First, average level of *IBES–Moody's* is 0.66% (0.15%) when analysts have (lack) the option to adjust GAAP special items. This difference suggests that Moody's analysts reverse less of negative GAAP special items. Second, average level of *IBES–Moody's* is 0.75% (0.55%) when analysts have (lack) the option to adjust capitalized interest. This difference suggests that Moody's analysts expense capitalized interest more extensively than equity analysts. Third, average level of *IBES–Moody's* is 1.03% (0.52%) when analysts have (lack) the option to expense stock-based pay before the adoption of SFAS 123R. This difference suggests that Moody's analysts expense stock-based pay more extensively than equity analysts. We do not find statistically significant differences in the average level of *IBES–Moody's* when analysts have versus when they lack the option to make non-standard or pension adjustments. In sum, Moody's analysts' earnings definitions are lower because of their incrementally negative adjustments for special items, capitalized interest, and stock-based pay.

The adjustments to special items are the single largest category that drives the above findings. Using the same methodology in Panel A, we break down adjustments to special items into its components. Panel B presents which adjustments to components of GAAP special items are likely to produce differences in the earnings definitions of the two groups of analysts. The average level of *IBES–Moody's* is larger when analysts have the option to adjust in-process R&D expensing, reversals of restructuring and M&A expenses, and recording restructuring costs and M&A expenses. These items are mostly income-reducing, suggesting that differences in earnings definitions of the two groups of analysts are driven by Moody's analysts' retaining these items, and equity analysts excluding them, in their earnings definitions.

4. Earnings definitions and downside risk

4.1. A summary measure for company downside risk

We define company downside risk as the possibility of default related to poor performance, and measure it using four proxies. First, *Neg. Idiosyncratic Volatility* relates to company-specific downside risk. To calculate, we regress daily stock returns net of the one-month T-bill rate on value-weighted market returns net of the one-month T-bill rate, for each company and year that ends three months after fiscal year-end. We define *Neg. Idiosyncratic*

Volatility as the standard deviation of negative return residuals for the firm-year where positive return residuals are set to zero. Second, *Neg. Market Volatility* relates to market-wide downside risk, and is defined as the standard deviation of negative value-weighted market returns for the year where positive market returns are set to zero. Both measures are motivated by prior studies suggesting that unconditional volatility is a symmetric measure that does not fully capture how users judge risk (Slovic 1987, Koonce et al. 2005). The volatility in negative company-specific and market returns should reflect the possibility of default related to poor performance more efficiently than the volatility in overall returns. Third, *(-1)*GAAP* is defined as the negative of *GAAP*. Company downside risk should decrease with performance, since contemporaneous earnings should indicate recurring earnings power of a firm's assets and reduced risk of default. Fourth, *Loss* is defined as an indicator variable equal to one if *GAAP* is negative. *Loss* captures any incremental downside risk over GAAP earnings.

Table 2, Panel A presents descriptive statistics for the downside risk proxies. The average *Neg. Idiosyncratic Volatility* is 1.3%, which is higher than average *Neg. Market Volatility*, 0.8%. The average *(-1)*GAAP* and *Loss* are -4.3% and 19%, respectively. Table 2 Panel B shows that downside risk proxies positively correlate with each other. The highest correlations are between *(-1)*GAAP* and *Loss* (0.68) and *Neg. Idiosyncratic Volatility* and *Loss* (0.43).

For easier interpretation of our tests, we define a summary measure *Downside Risk* as the first principal component of the four proxies after they are standardized to have unit variance. *Downside Risk* ranges between -2.71 and 6.47. It has a mean (median) of 0.00 (-0.50) and a standard deviation of 1.49. Table 2, Panel B shows that *Downside Risk* correlates significantly with the individual proxies; the Spearman correlation coefficients of *Downside Risk* with *Neg. Idiosyncratic Volatility*, *Neg. Market Volatility*, *(-1)*GAAP*, and *Loss* are 0.74, 0.53, 0.76, and 0.67, respectively. Untabulated tests show that *Downside Risk* also strongly correlates with credit ratings. The average *Downside Risk* for firm-years with high ratings (Aaa, Aa, and A) is -1.02; medium ratings (Baa) is -0.56; low ratings (Ba and B) is 0.47; and very low ratings (Caa, Ca, and C) is 2.37. The monotonic relation between *Downside Risk* and credit ratings is consistent with *Downside Risk* measuring possibility of default.

4.2. Correlations between Downside Risk and differences in earnings definitions

Table 2, Panel B shows that Spearman correlation coefficients of *Downside Risk* with *Moody's–GAAP* and *IBES–GAAP* are 0.14 and 0.29, respectively. When companies experience

higher downside risk, they record more negative charges such as asset write-downs and restructuring expenses, as mandated by GAAP. The correlation coefficients show that both Moody's analysts and equity analysts reverse some of these charges, likely because of their assessment that these charges are transitory. In other words, both groups of analysts are conditionally less conservative than GAAP. More importantly, *Downside Risk* correlates significantly and positively with *IBES–Moody's* with a Spearman correlation coefficient of 0.18. When companies experience higher downside risk, Moody's analysts reverse more of the negative GAAP charges than equity analysts do. In other words, Moody's analysts are conditionally more conservative than equity analysts. This correlation supports Hypothesis 1.

4.3. Controlling for analyst optimism incentives and corporate reporting incentives

We test Hypothesis 1 in a multivariate setting. Prior literature suggests that equity analysts' optimism incentives shape their research (Bradshaw 2011, Lin and McNichols 1998), and companies' reporting incentives shape GAAP earnings (Dechow et al. 2013). Both types of incentives can confound the predicted associations between company downside risk and earnings definitions, because equity analysts and companies can attempt to garner high valuations by reporting higher earnings (Bradshaw and Sloan 2002). We control for proxies for analyst optimism incentives and corporate reporting incentives using the model below:

$$\begin{aligned} \textit{Differences in Earnings Definitions}_t = {} & \alpha\ \textit{Downside Risk}_t + B\ \textit{Equity Analyst Optimism Proxies}_t \\ & + \Theta\ \textit{Reporting Incentive Proxies}_t + \textit{Ratings fixed effects}_t + \textit{Industry fixed effects} \\ & + \textit{Year fixed effects}_t + \varepsilon_t \end{aligned} \quad (1)$$

Eq. (1) uses two proxies for equity analysts' optimism incentives. *Buy Recommendations* is the percentage of strong buy and buy recommendations issued by all equity analysts for the firm-year.[16, 17] *Share Turnover* is the number of shares traded annually divided by the number of shares outstanding, and measures analysts' trading-fee based optimism incentives (Irvine 2004).

Eq. (1) uses several proxies for corporate reporting incentives. *Log(Market Cap)* is the logarithm of the firm's market capitalization and proxies for size-related conservative reporting incentives (Watts and Zimmerman 1990), or—in contrast—improved earnings quality due to

[16] We only use recommendations issued by equity analysts whose earnings definitions are included in *IBES*. For this purpose, we exclude analysts whose estimates are in the I/B/E/S Detail Unadjusted Stopped Estimates or Excluded Estimates files.

[17] Results are robust to using the percentage of only strong buy recommendations.

adequate internal control procedures (Ball and Foster 1982). *Book Leverage* is the ratio of total liabilities to total assets. *Debt Issuance* is the ratio of long-term debt issuance during the year to total assets. Both proxies measure conservative reporting incentives associated with debt contracts (Ahmed et al. 2002, Lawrence et al. 2013), or—in contrast—managers' earnings management incentives to avoid violating a covenant (Dechow et al. 2010).[18] *Institutional Investor* is the percentage of institutional investors, and proxies for lower earnings management incentives due to institutional investors (Roychowdhury 2006). *Top Performer (Bottom Performer)* is an indicator variable that is one if the company is in the top (bottom) 5% of its GICS industry return-on-assets distribution in the fiscal year, and proxies for extreme performers' incentives to manage earnings or record large accruals (Kothari et al. 2005, Butler et al. 2004). *Dividend Payer* is an indicator variable that is one if the firm has paid cash dividends during the fiscal year, and proxies for incentives associated with managers' signaling incentives of current and future performance (Subramanyam 1996) or reduced earnings quality (Daley and Vigeland 1983). *Met Forecasts* is an indicator variable that is one if the firm met at least nine out of twelve quarterly forecasts during the last three years, and proxies for reporting incentives associated with meeting analysts' forecasts (Degeorge et al. 1999, Bartov et al. 2002). *Restated* is an indicator variable that is one if the firm has restated its past earnings during the fiscal year, and proxies for aggressive reporting that has unraveled ex post. *Managerial Guidance* is an indicator variable that is one if the firm issued an earnings forecast, and proxies for managers' incentives to guide analysts not only for performance expectations but also for adjusted earnings definitions (Christensen et al. 2011). *Market Cap/Assets* is the equity market capitalization deflated by book value of total assets, and proxies for market-motivated reporting incentives (Jensen 2005).[19] *Log(Audit Fee)* is the logarithm of annual audit fees. *Big 4 Auditor* is an indicator variable that is one if the firm is audited by a Big 4 auditor. The audit-related proxies measure accounting quality, firm complexity, and the associated level of effort expended by auditors (Hay et al. 2006, Hribar et al. 2014).

Eq. (1) also includes ratings fixed effects to control for "soft" inputs into the Moody's ratings process; two-digit GICS industry fixed effects to control for differences in adjustment

[18] *Log(Market Cap)*, *Book Leverage*, and *Debt Issuance* also potentially control for Moody's analysts' fee-based optimism incentives.

[19] *Log(Market Cap)* and *Market Cap/Assets* also potentially control for equity analysts' optimism incentives due to size and predicted growth (Bonini et al. 2010).

methodologies across industries; and year fixed effects to control for macroeconomic shocks to earnings definitions. Since errors may be correlated across firms and time, standard errors are clustered at both the firm and fiscal year level.

Table 3, Panel A reports descriptive statistics for the equity analyst optimism proxies and corporate reporting incentive proxies. The sample size reduces from 8,743 to 8,119 firm-year observations due to data requirements. The percentage of strong buy or buy recommendations stands at 46%. Average annual share turnover is 26 times average shares outstanding. Average book leverage is 63%; annual bond issuance is 5% of total assets. Institutional investors comprise 61% of the investors. 57% of sample companies pay dividends; 51% have consistently met analyst forecasts; 7% restated prior years' earnings; 46% provide managerial guidance; and 69% are audited by a Big 4 auditor. Average equity market capitalization is similar in levels to total assets. These statistics are in line with those of Compustat companies at large.

Table 3, Panel B reports results of estimating Eq. (1). When the dependent variable is *Moody's–GAAP* (Column 1), the coefficient for *Downside Risk* is positive, at 1.63, and significant. When companies experience higher downside risk, *Moody's* is relatively higher than *GAAP*, suggesting that Moody's analysts reverse some of negative GAAP charges or make more positive non-GAAP adjustments. A one standard deviation increase in *Downside Risk* (1.49) increases *Moody's–GAAP* by 2.43 (=1.63*1.49) or 70% (=2.43/3.45) of its standard deviation. When the dependent variable is *IBES–GAAP* (Column 2), the coefficient for *Downside Risk* is positive, at 2.53, and significant. When companies experience higher downside risk, *IBES* is relatively higher than *GAAP*, suggesting that equity analysts reverse negative GAAP charges or make more positive non-GAAP adjustments. A one standard deviation increase in *Downside Risk* (1.49) increases *IBES–GAAP* by 3.77 (=2.53*1.49) or 87% (=3.77/4.31) of its standard deviation.

We are particularly interested in how Moody's analysts and equity analysts differentially respond to company downside risk. When the dependent variable is *IBES–Moody's* (Column 3), the coefficient for *Downside Risk* is positive, at 0.83, and significant. When companies experience higher downside risk, *IBES* is relatively higher than *Moody's*, suggesting that Moody's analysts reverse fewer negative GAAP charges or make more positive non-GAAP adjustments than equity analysts. A one standard deviation increase in *Downside Risk* increases *IBES–Moody's* by 1.24 (=0.83*1.49) or 36% (=1.24/3.44) of its standard deviation. Overall, after

controlling for analyst optimism and corporate reporting incentives, all the coefficient estimates for *Downside Risk* are consistent with the correlation coefficients in Table 2, Panel B. When we exclude analyst optimism and corporate reporting incentives (Column 4), the full sample size of 8,743 observations is restored and the coefficient for *Downside Risk* remains positive, at 0.61, and significant.

In addition, the coefficient estimates for many control variables are significant, and consistent with our expectations. When *IBES–Moody's* is the dependent variable (Column 3), the coefficients for *Buy Recommendations* and *Share Turnover* are positive and significant, suggesting that optimism incentives of equity analysts are associated with equity analysts' higher earnings definitions relative to those of Moody's analysts. Similarly, the coefficients for *Met Forecasts*, *Managerial Guidance*, and *MarketCap/Assets* are positive and significant, suggesting that companies' equity-market-motivated reporting incentives are associated with equity analysts' higher earnings definitions. In contrast, the coefficient for *Top Performer* is negative, suggesting that equity analysts make incrementally conservative adjustments to GAAP earnings that are reported by top extreme performers.

4.4. Adjustments to particular components of GAAP earnings

In order to test whether a specific adjustment drives the positive association between *Downside Risk* and *IBES–Moody's*, we re-perform Eq. (1) using subsamples where both groups of analysts have the option to adjust particular components of GAAP earnings. Given that inclusion of analyst optimism and corporate reporting incentive proxies reduces the sample size, we use two variations of Eq. (1). The "short model" includes only *Downside Risk* and ratings, industry, and year fixed effects to explain *IBES–Moody's*. The "long model" is the full version of Eq. (1).

Table 4, Panel A (Panel B) reports the results of the short (long) model. In both panels, we find that the coefficient estimates for *Downside Risk* remain positive and significant for almost all subsamples where both groups of analysts have the option to adjust a particular component of GAAP earnings. More importantly, this result holds when analysts have the option to adjust special items, non-standard adjustments (marginally), and pensions, all of which require a high degree of Moody's analyst discretion. The result also holds when analysts have the option to adjust capitalized interest and stock-based pay, both of which require a low degree of Moody's analyst discretion. Under conditions of higher downside risk, Moody's analysts appear to modify

their materiality thresholds even for low discretion items, similar to (i) financial auditors who change firm-specific materiality thresholds based on the level of income or total assets; and (ii) company managers who write down assets when the fair values drop below book values (Lawrence et al. 2013). Overall, we conclude that the positive correlation between *Downside Risk* and *IBES–Moody's* is not driven by adjustments to a particular component of GAAP earnings or Moody's analysts' non-discretionary adjustments.

4.5. Alternative Explanations

We perform several analyses to ensure that our findings are robust to alternative explanations discussed below.

Empirical choices drive the findings

The statistical and economic significance of the coefficient estimate for *Downside Risk* is not changed with the following (untabulated) modifications: Replacing *Downside Risk* with the individual proxies or the sum of the individual proxies; adding total stock return volatility or positive stock return volatility in Eq. (1); excluding companies that make the two most-likely non-discretionary adjustments (i.e., reversing capitalized interest and expensing stock-based pay); excluding rating fixed effects or all the fixed effects; testing Eq. (1) in different rating groups separately; and truncating outliers or using median regressions.

Rating analysts and equity analysts have different information sets

As discussed in Section 2.5, Moody's analysts' superior information may drive empirical findings. We address this explanation using two tests. First, we use only special item adjustments of Moody's analysts. Because earnings announcements typically discuss special items, the two groups of analysts should have similar information about special items while adjusting *GAAP*. We redefine *Moody's* as *GAAP* net of MFM's "Unusual & Nonrecurring Items–Adjusted After-tax Inc/(Dec)." When we re-perform Eq. (1) with *IBES–Moody's* as the dependent variable (untabulated), the coefficient for *Downside Risk* remains positive and significant. Second, we control for any updated information between earnings announcements and subsequent 10-K filings. We re-perform Eq. (1) after including differences between preliminary earnings (pretax income, net income, and operating income figures from the Compustat Preliminary History file) and reported earnings (corresponding figures from the Compustat Fundamental Annual file). The coefficient for *Downside Risk* remains positive and significant. We conclude that empirical findings are not driven by differences in the analysts' information sets.

Causality runs from earnings definitions to downside risk

We address the possibility that GAAP earnings influence market-related independent variables of Eq. (1) including *Downside Risk*. In untabulated tests, we lag independent variables by one year and re-perform Eq. (1). The effect of *Downside Risk* on *IBES–Moody's* remains economically and statistically significant. In addition, the results are robust to including lagged *IBES–Moody's* in Eq. (1). We conclude that reverse causality from *IBES–Moody's* to *Downside Risk* does not drive our findings.

I/B/E/S adjusted earnings definitions do not reflect the views of all analysts

The I/B/E/S Actual figure does not necessarily reflect the views of some individual analysts, given that I/B/E/S bases its earnings definition on the majority of equity analysts following the firm. Brown and Larocque (2013) propose a method for measuring earnings definition of an individual analyst for the first fiscal quarter by subtracting the analyst's annual earnings forecast from the sum of the analyst's forecasts for the second, third, and fourth quarters, soon after first quarter earnings are released. If the analyst makes adjustments on the same basis as I/B/E/S, the analyst's earnings definition for the first quarter should equal the I/B/E/S Actual figure.

In untabulated tests, we follow this methodology. The sample size drops to 3,796 company-quarters because of data requirements. We find that the first-quarter average or median inferred earnings are nearly identical to I/B/E/S Actuals. When we re-perform Eq. (1) using average or median of inferred earnings net of *Moody's* as the dependent variable, the coefficient for *Downside Risk* remains positive and significant. We conclude that the findings are not driven by the methodology I/B/E/S employs to compile equity analysts' earnings definitions.

5. Earnings definitions and bankruptcy prediction

We use two contemporary bankruptcy prediction models to test Hypothesis 2.

5.1. Shumway's (2001) model

Shumway's (2001) discrete-time hazard model is a multiperiod logit specification:

$$\textit{Probability}\,[\textit{Bankruptcy}_{t+1}] = (1+\exp(-\alpha_0 - \alpha_1\,\textit{Earnings Definitions}_t - \alpha_2\,\textit{Book Leverage}_t - \alpha_3\,\textit{Compounded Excess Returns}_t - \alpha_4\,\textit{Idiosyncratic Volatility}_t - \alpha_5\,\textit{Relative Size}_t - \varepsilon_t))^{-1} \quad (2)$$

Eq. (2) replaces return on assets in Shumway (2001) with *Earnings Definitions*, i.e., *GAAP*, *Moody's*, and *IBES*. *Book Leverage* is the ratio of total liabilities to total assets. *Compounded Excess Returns* is the firm's annual stock returns less the value-weighted market returns for the year ending three months after the fiscal year-end. *Idiosyncratic Volatility* is the standard deviation of the residual returns from regressing the stock's monthly return on value-weighted market returns. *Relative Size* is the logarithm of the firm's market capitalization relative to total capitalization of NYSE, NASDAQ, and AMEX firms. Shumway's (2001) model is one of the most frequently used bankruptcy prediction models, appearing in recent publications such as Lee (2012), Greenwood and Hanson (2013), and Li (2013). Shumway (2001) finds that his model outperforms accounting-based models such as Altman (1968) and Zmijewski (1984). Documented evidence also suggests that Shumway's (2001) model performs at least as well as the less parsimonious models of Beaver et al. (2005) and Beaver et al. (2012).

We obtain bankruptcy events (i.e., Chapter 11 and Chapter 7 filings with federal bankruptcy courts) from four sources: Moody's Default Risk Services, UCLA-Lopucki bankruptcy research database, Audit Analytics bankruptcy database, and Securities Data Corporation corporate restructuring database. The final sample has 71 bankruptcies between January 2003 and September 2014.[20] To assess differences in bankruptcy prediction between the earnings definitions, we include *Moody's*, *IBES*, and *GAAP* both separately and simultaneously in different versions of Eq. (2). Table 5, Panel A reports descriptive statistics for the independent variables. Firms are fairly indebted, with average ratio of liabilities to book value of assets of 0.64 and average ratio of liabilities to market value of total assets of 0.17. Annual stock returns in excess of market returns average 9%; average cash balance is 2% of total assets; and average share price is $13.3.

Panel B reports results of estimating Eq. (2), where standard errors are clustered at the firm level. Column 1 shows that *GAAP* is negative and only marginally associated with the probability of one-year-ahead bankruptcy. Columns 2 and 3 show that *Moody's* and *IBES* are negative and significantly associated the probability of one-year-ahead bankruptcy. The coefficient estimates for the other independent variables are significant, and in line with

[20] The sample size drops to 7,930 because of data requirements. Following Shumway (2001), we carry-forward data for years in which it is missing. In many cases, either accounting or market data are missing for firms that ultimately go bankrupt, in several years prior to bankruptcy. While Shumway does not limit the number of years in which he carries data forward after data becomes missing, we limit it to two years. This forward-filling procedure increases sample size to 8,750 for the Shumway model and 8,748 for the Campbell et al. model.

Shumway (2001). When we include three earnings definitions simultaneously (Column 4), the coefficient for *GAAP* becomes positive and significant; the coefficient for *Moody's* remains negative and significant; and the coefficient for *IBES* loses significance. These findings are consistent with Hypothesis 2.

To evaluate economic significance of the findings in Column 4, we calculate the percentage of actual bankruptcies in the top two sample deciles ranked on the predicted probability of bankruptcy. 80.3% of actual bankrupt firms are in the top two deciles. The percentage is identical when *IBES* is excluded from the regression; and drops to 78.9% when *Moody's* is excluded from the regression. The difference in percentages (1.4%) suggests the predictive superiority of *Moody's* over *IBES*. The difference appears modest, yet is economically significant given the average recovery rate of 51% on defaulted bonds in U.S. markets (Acharya et al. 2007).[21]

When the sample is divided into high and low *Downside Risk* groups, the predictive superiority of *Moody's* survives in both groups, and it is pronounced for the low *Downside Risk* group. When we divide companies into rating groups, we find that the predictive superiority of *Moody's* survives in groups with very low ratings, low ratings, and high rankings. We conclude that earnings definitions of Moody's analysts predict one-year-ahead bankruptcies incremental to the effect of other variables that are known to predict bankruptcies, whereas earnings definitions of equity analysts do not possess any incremental predictive ability.

5.2. Campbell et al.'s (2008) model

Campbell et al. (2008) claim modest improvements over Shumway's model by retaining Shumway's econometric model and some predictor variables while adding new variables:

$$\begin{aligned} Probability\,[Bankruptcy_{t+1}] = (1+exp\,(&-\alpha_0 - \alpha_1\, Earnings\ Definitions_t + \alpha_2\, Market\ Leverage_t \\ &- \alpha_3\, Average\ Excess\ Returns_t - \alpha_4\, Idiosyncratic\ Volatility_t - \alpha_5\, Relative\ Size_t - \alpha_6\, Cash_t \\ &- \alpha_7\, M/B_t - \alpha_8\, Share\ Price_t - \varepsilon_t))^{-1} \end{aligned} \quad (3)$$

[21] The predictive superiority of *Moody's* over *IBES* remains if we use the top decile; top three deciles; and top five deciles of the predicted probability of bankruptcy.

As in Eq. (2), *Earnings Definitions* are *GAAP*, *Moody's*, and *IBES*, which use book value of total assets as deflators.[22] *Market Leverage* is the ratio of total liabilities to the market value of total assets, defined as the sum of book value of total liabilities and market value of equity. *Average Excess Returns* are weighted average of monthly stock returns net of market returns, with geometrically greater weights in the recent months of the year.[23] *Idiosyncratic Volatility* and *Relative Size* are defined the same way as in Eq. (2). Additional predictors in the Campbell et al. (2008) model include the ratio of cash and short-term investments to the market value of total assets (*Cash*); the ratio of market value of equity to book value of equity (*M/B*); and price per share, with values capped at $15 (*Share Price*).[24]

Panel C reports results of estimating Eq. (3). Column 1 shows that *GAAP* is not significantly associated with the probability of one-year-ahead bankruptcy. Columns 2 and 3 show that *Moody's* and *IBES* are negatively and significantly associated with the probability of one-year-ahead bankruptcy. The coefficient estimates for the other independent variables are significant (except for *M/B*) and consistent with Campbell et al. (2008). When three earnings definitions are included simultaneously in Eq. (3), the coefficient for *GAAP* becomes positive and significant; the coefficient for *Moody's* remains negative and significant; and the coefficient for *IBES* loses significance (Column 4).

To evaluate economic significance of the findings in Column 4, we calculate that 83.1% of actual bankrupt firms are in the top two deciles of the predicted probability of bankruptcy, showing an improvement over the Shumway's model. In contrast to the results for Eq. (2), the percentages are identical when *Moody's* is excluded from the regression. However, the percentage actually increases to 84.5% when *IBES* is excluded, revealing a worse prediction when *IBES* is included in the model. Overall, the results of Campbell et al. model are also consistent with Hypothesis 2.

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[22] These definitions depart from Campbell et al. (2008), which use market value of total assets as deflators. We do this in order to retain consistency with the earnings definitions in our prior tests as well as the original Shumway model. We also depart from Campbell et al. by directly using yearly earnings definitions (due to data limitations), whereas Campbell et al. compute weighted average of quarterly earnings for the year.

[23] Average Excess Returns is computed as $\frac{1-\theta}{1-\theta^{12}}$ ($EXRET_{\text{m}}$ + $\theta EXRET_{\text{m-1}}$ + … + $\theta^{11} EXRET_{\text{m-11}}$), where $EXRET_{\text{m}}$ is the difference between company stock returns less market returns during month m. Θ is $2^{-\frac{1}{3}}$ (Campbell et al. 2008).

[24] To compute book value of equity, Campbell et al. (2008) add 10% of the difference between market and book value of equity to the book value of equity. This increases book values that are negative or extremely small. Any firm-years that have a negative book value of equity after this adjustment are replaced with a value of one dollar.

Finally, following Campbell et al., we vary bankruptcy horizon across six-month periods spanning 30 months after the fiscal year of earnings definitions. We do this to observe whether the predictive superiority of Moody's analysts over equity analysts and GAAP persists into longer horizons. Panel D reports results of estimating the modified version of Eq. (3); for brevity, we do not report coefficient estimates for control variables. At the prediction horizon of [1, 6] months where month 0 is three months after the fiscal year-end, none of the earnings definitions is significant on a two-sided testing basis, though *Moody's* is negative and significant on a one-sided basis. At the prediction horizons of [7, 12] and [13, 18] months, the coefficient for *Moody's* is negative and significant, whereas the coefficient for *IBES* is not significant. At longer prediction horizons, the models lose power, and none of the earnings definitions remains significant at conventional levels, except for a negative and significant *IBES* coefficient at [19, 24] months. We conclude that *Moody's* is more useful in predicting bankruptcies during the first 18 months after the fiscal year-end.[25]

6. Earnings definitions and prediction of recurring performance

In order to distinguish whether the above bankruptcy findings result from Moody's analysts' conservatism incentives or their potentially superior ability and information advantages, we perform one- and two-year-ahead performance prediction tests below:

$$GAAP_{t+k} \text{ or } OCF_{t+k} = \alpha_0 + \alpha_1 GAAP_t + \alpha_2 Moody's_t + \alpha_3 IBES_t + \varepsilon_t \qquad (4)$$

where OCF is operating cash flows deflated by prior year total assets, and k is 1 or 2. Panel A reports results of estimating Eq. (4) when the dependent variable is $GAAP_{t+1}$ (Columns 1 to 4) and $GAAP_{t+2}$ (Columns 5 to 8). The coefficient estimates for independent variables are positive and significant across all columns, suggesting that all three earnings definitions predict future GAAP earnings. More importantly, Column 4 shows that the coefficient estimate for *IBES* (0.48) is larger than the coefficient estimate for *Moody's* (0.13). Similarly, Column 8 shows that the coefficient estimate for *IBES* (0.55) is larger than the coefficient estimate for *Moody's* (0.15). The differences are statistically and economically significant.

[25] We find qualitatively similar results to those reported when we use Ohlson (1980) and Zmijevski (1984) bankruptcy prediction models.

Panel B reports results of estimating Eq. (4) when the dependent variable is OCF_{t+1} (Columns 1 to 4) and OCF_{t+2} (Columns 5 to 8). Operating cash flows measure company performance that is relatively free of companies' accrual choices, arguably providing clearer tests for recurring performance. The coefficient estimates for the independent variables are positive and significant across all columns, suggesting that all three earnings definitions predict future operating cash flows. At the same time, Column 4 shows that the coefficient estimate for *IBES* (0.50) is larger than the coefficient estimate for *Moody's* (0.20); Column 8 shows that the coefficient estimate for *IBES* (0.81) is larger than the coefficient estimate for *Moody's* (0.18). The differences are statistically and economically significant.

The findings in both panels suggest that earnings definitions of equity analysts predict recurring performance significantly better than earnings definitions of rating analysts. These findings contrast with the findings that earnings definitions of rating analysts better predict future bankruptcies. Overall, both set of findings collectively suggest that rating analysts' conservatism incentives—rather than their superior ability and information advantages—shape their earnings definitions.

7. Conclusion

We compare adjusted earnings definitions of Moody's analysts and equity analysts by using a comprehensive sample of firms analyzed by both group of analysts between years 2002 and 2011. This setting provides us with a unique opportunity to observe differences in which the two groups of analysts serve information needs of their clients, their congruent incentives to reflect underlying economics of company performance notwithstanding. The adjusted earnings definitions are arguably not the most visible research output of the analysts (versus credit ratings, stock recommendations, and earnings forecasts). However, they are the only readily comparable research output between the two groups of analysts. A comparison of the two groups of analysts' earnings definitions for the realized performance of the same company and year renders our tests relatively clear of the effects of firm- and year-specific omitted variables that correlate both with the adjustments and the analysts' forecasting abilities.

The earnings definitions of both groups of analysts are higher than GAAP earnings, suggesting that both groups of analysts reverse many negative components of GAAP earnings in order to better reflect recurring company performance. Yet, earnings definitions of Moody's

analysts are lower than those of equity analysts. The difference arises from Moody's analysts' retaining more of GAAP special items such as R&D expenses, M&A costs, and restructuring costs, as well as their expensing of capitalized interest and stock-based pay. More importantly, the difference between the earnings definitions of Moody's analysts and equity analysts is larger under conditions of higher company downside risk, as measured by volatility in negative firm-specific and market returns, poor accounting performance, and loss status. The difference between the earnings definitions is robust to controlling for optimism incentives of analysts, reporting incentives of companies, credit rating levels, and industry and year fixed effects. We also show that earnings definitions of Moody's analysts predict future bankruptcies more accurately than earnings definitions of equity analysts and GAAP earnings, whereas they fare significantly worse in predicting future earnings and operating cash flows. These seemingly conflicting findings suggest that Moody's analysts' client-based conservatism incentives—and not their superior ability or information advantages—shape their earnings definitions.

Prior studies find that earnings adjustments of rating analysts explain rating levels, bond credit spreads, and stock prices (Kraft 2014, Batta et al. 2014, De Franco et al. 2011). Our paper extends this literature by showing that earnings adjustments of rating analysts reflect their higher conservatism incentives relative to equity analysts. We argue that these incentives arise from the information needs of Moody's clients (i.e., regulators, institutional investors, and lenders contracting with companies), who demand a more prudent perspective on company downside risk than that provided by equity analysts. Moody's analysts appear to address their clients' information needs regarding company downside risk and help clients predict default—albeit exhibiting a poor performance in predicting future earnings and operating cash flows. The conservative outlook of Moody's analysts are incremental to their ratings, which are determined not only by their adjustments to GAAP earnings but also by other financial information, such as geographical and segment diversity in sales and costs, and strength of cash flows, as well as their qualitative assessments such as macroeconomic and industry trends or management credibility. In other words, rating analysts appear to articulate their conservative research to their clients clearly and in greater detail by making conservative adjustments to different components of GAAP earnings as opposed to simply slanting ratings downward.

The evidence of rating analysts' conservative adjustments to GAAP earnings also extends the literature on the role of accounting conservatism in debt contracting. Borrowers and lenders

use accounting information in private loan contracts (Asquith et al. 2005, Ball et al. 2008); and adjust accounting information in a manner consistent with both efficient contracting (Li 2010) and conservative expectations of lenders when agency costs of debt are higher (Beatty et al. 2008). We contribute by showing that conservative modifications to accounting information extend beyond those made by borrowers and lenders in private contracts to those made by credit rating agencies in corporate bond markets.

We note an important caveat. Given data constraints, we only use earnings adjustments of Moody's analysts and make suggestions about the credit rating industry. The three largest rating agencies, Moody's, S&P, and Fitch, issue highly correlated ratings (Bongaerts et al. 2012), suggesting that these agencies are likely to make similar adjustments to GAAP statements. At the same time, smaller ratings agencies may have different incentives given that they selectively cover bond issues. Consequently, our findings may not generalize to the credit rating industry as a whole.

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Appendix 1 Moody's analysts' adjustments to GAAP earnings

Categories	Areas of Moody's analysts' discretion	Degree of discretion
1) Special (unusual and non-recurring) items: Under GAAP, companies report various unusual and non-recurring items. Moody's analysts reverse many of these items, net of their tax effect.	Whether to make an adjustment and by how much. Moody's does not have a defined list of special items to be adjusted and states that analysts "identify unusual and non-recurring transactions and events from public disclosures, including management's discussion and analysis of operations;" and analysts "may also discuss those types of transactions with management to help ensure that we have considered major items and accurately quantified their effects" (Moody's 2010).	High
2) Capitalized interest: Under GAAP, companies capitalize financing costs of self-constructed assets. Moody's analysts expense interest capitalized during the period.	Degree of materiality of capitalized interest	Low
3) Non-standard adjustments: Moody's analysts make non-standard adjustments if they believe that GAAP definitions and assumptions do not reflect economic reality. These adjustments are mostly related to asset valuation allowances, asset impairments, and contingent liabilities.	Fully discretionary adjustments	High
4) Pensions: Under GAAP, defined benefit pension expenses are determined by smoothing the recognition of actuarial gains and losses on pension assets, liabilities, and service cost. Moody's analysts recognize as debt the underfunded pension amount, i.e., the projected benefit obligation (PBO) net of fair value of pension assets. Moody's analysts define as pension expense the service cost plus the imputed interest on the PBO net of the actual earnings on pension assets. Both pension debt and expenses cannot be negative. Moody's analysts reverse GAAP pension costs.	(i) For unfunded plans: Target pension plan debt-to-equity ratio. Helps determine the plan's unfunded status, which is related to adjusted interest expense (ii) For unfunded plans: Excess cash related to unfunded pensions (iii) Borrowing rate used for pension obligations	High Low High
5) Stock-based pay: GAAP did not require expensing fair value of employee stock options prior to SFAS 123R. Moody's analysts expensed fair value of employee stock options prior to SFAS 123R. Moody's analysts do not adjust related GAAP expenses post SFAS 123R.	Degree of materiality in stock-based pay	Low

Appendix 1 continued

Apart from the above adjustments that change net income available to common shareholders, Moody's analysts also make the following adjustments that shift items within the income statement without affecting net income available to common shareholders:

Categories	Areas of Moody's analysts' discretion	Degree of discretion
6) Hybrid securities: Hybrid securities such as preferred stock exhibit attributes of both debt and equity. Moody's analysts divide the value of hybrid securities into debt and equity. This adjustment shifts amounts between interest expense and preferred dividends.	Degree to which hybrid security is divided into debt versus equity	High
7) Operating leases: GAAP does not recognize assets and liabilities related to operating leases. Moody's analysts treat all operating leases as capital leases. This adjustment reduces operating expenses (i.e., rent) and increases interest and depreciation expense.	Incremental borrowing rate	Low
8) Securitizations: Under GAAP, companies may record the transfer of assets to securitization trusts as sales. Moody's analysts reclassify securitizations as collateralized borrowings.	Estimated borrowing rate implicit in the securitization arrangement	Low
Moody's analysts impute interest expense on deemed financing from securitizing assets, but they offset this expense with a reduction in operating expenses.	Estimated amount of uncollected/ unrealized sponsor assets in the securitization arrangement	High

Moody's analysts also make the following adjustment that does not affect any item in the income statement:

9) Inventory method: The LIFO method, which is allowed under GAAP, understates the value of inventory. Moody's analysts adjust the value of inventory by adding firms' LIFO reserve to the reported LIFO inventory.	No discretion	None

Appendix 2 Adjustments to different components of GAAP earnings and different components of GAAP special items

Panel A, Column 1 reports average level of non-zero adjustments by Moody's analysts to different components of GAAP earnings. Column 2 (3) reports the number of observations in which both groups of analysts have (lack) the option to adjust different components of GAAP earnings. Analysts' option to adjust special items, capitalized interest, non-standard adjustments, pensions, and stock-based pay are defined respectively as the presence of special items in GAAP earnings; presence of capitalized interest in GAAP earnings; presence of non-standard adjustments by Moody's analysts; presence of pension-related expense in GAAP earnings; and presence of implied compensation expense in company disclosures prior to SFAS 123R. Subsequent columns of Panel A report average level of differences between the three earnings definitions (i.e., Moody's, IBES, and GAAP) when both groups of analysts have (lack) the option to adjust different components of GAAP earnings. Panel B, Column 1 (2) reports the number of observations in which both groups of analysts have (lack) the option to adjust different components of GAAP special items. Analysts' option to adjust different components of GAAP special items is defined as the presence of the following components in GAAP earnings: In-process research and development expensing (Compustat variable name *rdipa*); reversal of restructuring and acquisition charges (*rra*); restructuring costs (*rca*); write-downs (*wda*); goodwill impairment (*gdwlia*); M&A expenses (*aqa*); other special items (*spioa*); litigation and insurance settlements (*seta*); nonrecurring income taxes (*nrtxt*); gain or loss on ineffective hedges (*hedgegl*); and debt extinguishment (*dtea*). Subsequent columns of Panel B report average level of differences between the three earnings definitions; when both groups of analysts have (lack) the option to adjust different components of GAAP special items. All adjustments and earnings definitions are scaled by prior period assets. In Column 1 of Panel A, *** denotes significance from zero at 1%. In other columns, ***, **, and * denote significance levels (at 1%, 5%, and 10%, respectively) on the difference in the earnings definitions between subsamples where analysts have and lack the option to adjust different components of GAAP earnings or GAAP special items. The sample for this Appendix is 5,142 firm-year observations, which have information regarding adjustments to particular earnings components and downside risk.

Panel A: Adjustments to different components of GAAP earnings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Number of observations in which both groups of analysts		Average Moody's–GAAP when both groups of analysts			Average IBES–GAAP when both groups of analysts			Average IBES–Moody's when both groups of analysts		
Components of GAAP earnings	Average level of non-zero adjustments by Moody's analysts	have the option to adjust	lack the option to adjust	have the option to adjust	lack the option to adjust		have the option to adjust	lack the option to adjust		have the option to adjust	lack the option to adjust	
Special items	1.27***	4,429	713	0.60	-0.06	***	1.31	0.17	***	0.66	0.15	***
Capitalized interest	-0.21***	1,138	4,004	0.37	0.54		1.14	1.15		0.75	0.55	**
Non-standard adjust.	-0.01	286	4,856	0.44	0.51		1.12	1.15		0.67	0.59	
Pensions	-0.11***	3,329	1,813	0.33	0.83	**	0.93	1.55	***	0.58	0.61	
Stock-based pay (pre SFAS 123R)	-0.80***	871	132	-0.10	0.16	**	0.99	0.93		1.03	0.52	***

Appendix 2 continued

Panel B: Adjustments to different components of GAAP special items

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Number of observations in which both groups of analysts		Average Moody's–GAAP when both groups of analysts			Average IBES–GAAP when both groups of analysts			Average IBES–Moody's when both groups of analysts		
Components of GAAP special items	have	lack	have	lack		have	lack		have	lack	
	the option to adjust		the option to adjust			the option to adjust			the option to adjust		
In-process R&D expensing	181	4,961	1.81	0.46	***	4.00	1.05	***	2.19	0.53	***
Reversal of restructuring/M&A	581	4,561	0.51	0.50		1.90	1.05	***	1.31	0.50	***
Restructuring costs	2,145	2,997	0.70	0.36	**	1.77	0.71	***	1.01	0.29	***
M&A	947	4,195	0.90	0.42	*	1.89	0.98	***	0.95	0.51	***
Goodwill impairment	570	4,572	2.96	0.20	***	3.86	0.81	***	0.78	0.57	
Write-downs	1,028	4,114	1.20	0.33	***	1.99	0.94	***	0.76	0.55	
Other special items	1,291	3,851	0.63	0.46		1.34	1.09	*	0.67	0.56	
Litigation/insurance settlement	1,314	3,828	0.49	0.51		1.19	1.14		0.66	0.57	
Nonrecurring income taxes	1,397	3,745	0.43	0.53		1.05	1.19		0.54	0.61	
Gain/loss on ineffective hedges	1,025	4,117	0.34	0.55	***	0.93	1.20	**	0.54	0.61	
Debt extinguishment	1,570	3,572	0.75	0.40	***	1.34	1.07	**	0.53	0.62	

Appendix 3 Variable definitions

Unless otherwise stated, all variables are measured at the same fiscal year of earnings definitions, and continuous variables are winsorized at 1%. Unless otherwise stated, data sources are CRSP and Compustat databases.

Average Excess Returns:	Weighted average of monthly stock returns less market returns over the past twelve months, where weights geometrically decline with monthly lags: $\frac{1-\theta}{1-\theta^{12}}$ ($EXRET_{t}$ + $\theta EXRET_{t-1}$ + … + $\theta^{11} EXRET_{t-11}$) with $\theta=2^{-\frac{1}{3}}$ (*Source*: CRSP, Campbell et al. 2008).
Big 4 Auditor:	Indicator variable that is one if the firm is audited by a Big 4 auditor (*Source*: Audit Analytics).
Book Leverage:	Total liabilities divided by total assets (*Source*: Moody's Financial Metrics, Compustat).
Bottom Performer:	Indicator variable that is one if the firm is in the bottom 5% of its GICS industry return-on-assets distribution in the fiscal year.
Buy Recommendations:	Percentage of strong buy and buy recommendations during the twelve months ending three months after the fiscal year-end (*Source*: I/B/E/S).
Cash:	Cash and short-term investments divided by the sum of total liabilities as of the fiscal year-end and market value of equity as of three months after the fiscal year-end.
Compounded Excess Returns:	Twelve-month compounded stock returns less twelve-month compounded market (NYSE, NASDAQ, and AMEX) returns for the year ending three months after the fiscal year-end.
Debt Issuance:	Long-term debt issuance for the year divided by total assets. Missing values are reported as zero.
Dividend Payer:	Indicator variable that is one if the firm has paid cash dividends to common shareholders.
Downside Risk:	The first principal component of Negative Idiosyncratic Volatility, Negative Market Volatility, (-1)*GAAP, and Loss, computed after the individual proxies are standardized to have unit variance.
GAAP:	Company-reported "Earnings before extraordinary items and discontinued operations (ib)" (*Source*: Compustat) less company-reported "Preferred Dividends Declared" scaled by total assets as of the beginning of the fiscal year (*Source*: MFM, Compustat).
(-1)*GAAP:	GAAP multiplied by (-1).
IBES:	*Actual* earnings definitions (*Source*: I/B/E/S Unadjusted Summary file) multiplied by number of shares outstanding and scaled total assets as of the beginning of the fiscal year. The number of shares outstanding is defined as the number of diluted shares used to calculate EPS (*cshfd*) when income (*epspi*) is positive and the number of basic shares (*cshpri*) when income is negative. This definition mimics the I/B/E/S methodology.
Idiosyncratic Volatility:	Standard deviation of market-model residuals, which is obtained from a regression of monthly stock returns on the value-weighted market returns for the year ending three months after the fiscal year-end.
Institutional Investor:	Percentage of institutional investors at the fiscal year-end (*Source*: Thompson Reuters).

Appendix 3 continued

Log (Audit Fee):	Natural logarithm of annual audit fees (*Source*: Audit Analytics).
Log (Market Cap):	Natural logarithm of equity market capitalization, computed as the number of common shares outstanding multiplied by share price as of three months after the fiscal year-end.
Loss:	Indicator variable that is one if GAAP is negative (*Source*: Moody's Financial Metrics, Compustat).
Market Cap/Assets:	Equity market capitalization deflated by book value of total assets.
Market Leverage:	Total liabilities divided by the sum of book value of total liabilities as of the fiscal year-end and market value of equity as of three months after the fiscal year-end.
M/B:	Market value of equity as of three months after the fiscal year-end divided by book value of equity as of the fiscal year-end.
Managerial Guidance:	Indicator variable that is one if the firm issued an earnings forecast (*Source*: First Call)
Met Forecasts:	Indicator variable that is one if the firm met at least nine out of twelve forecasts during the last three fiscal years (*Source*: Audit Analytics and Compustat).
Moody's:	As Adjusted "Reported net profit after-tax before unusual items" less As Adjusted "Preferred Dividends Declared", scaled by total assets as of the beginning of the fiscal year (*Source*: Moody's Financial Metrics).
Neg. Idiosyncratic Volatility:	Standard deviation of market-model residuals, which is obtained from a regression of daily stock returns less one-month T-bill rate on the value-weighted market returns less one-month T-bill rate for the year ending three months after the fiscal year-end. For the calculation of standard deviation, positive residuals set to zero (*Source*: CRSP, T-bill rates are from Professor French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french).
Neg. Market Volatility:	Standard deviation of daily returns of value-weighted market portfolio for the year ending three months after the fiscal year-end, with positive returns set to zero.
Restated:	Indicator variable that is one if the firm has restated its past earnings during the fiscal year. Restatements made based on technical grounds are excluded (*Source*: Non-reliance Restatements database of Audit Analytics).
Relative Size:	The logarithm of the ratio of equity market capitalization to the total market capitalization of NYSE, AMEX, and NASDAQ firms, as of three months after the fiscal year-end.
Share Turnover:	Annual trading volume divided by weighted average of shares outstanding during the fiscal year. (*Source*: Mergent Fixed Income Securities Database).
Share Price:	Price per share, with prices above $15 truncated at $15.
Top Performer:	Indicator variable that is one if the firm is in the top 5% of its GICS industry return-on-assets distribution in a fiscal year.

Table 1 Sample

The sample consists of 8,743 annual observations from 1,256 industrial firms that were covered by both Moody's analysts and equity analysts between years 2002 and 2011. Panel A presents descriptive statistics for the three definitions of realized company earnings and differences among these definitions. Means and medians are tested for difference from zero. Tests of means use standard errors clustered at the firm and fiscal year level. *** and ** denote significance at 1% and 5%, respectively. Panel B presents earnings definitions and earnings differences by rating category. Panel C presents earnings definitions and earnings differences by fiscal year. Mean (median) values in Panels B and C are presented in the first (second) row. All earnings definitions and earnings differences are winsorized at 1%. See Appendix 3 for variable definitions.

Panel A: Earnings definitions

	Mean	Q1	Q2	Q3	Std dev
GAAP	4.31***	1.24	4.40***	8.41	8.41
Moody's	4.73***	1.36	4.30***	8.19	7.19
IBES	5.66***	2.29	5.02***	8.89	6.49
Moody's–GAAP	0.34**	-0.48	-0.02***	0.30	3.45
IBES–GAAP	1.32***	-0.01	0.18***	1.40	4.31
IBES–Moody's	0.92***	-0.05	0.37***	1.53	3.44

Panel B: Earnings definitions by Moody's rating levels

Mean (Median)	N	GAAP	Moody's	IBES	Moody's–GAAP	IBES–GAAP	IBES–Moody's
High Ratings [Aaa, Aa, A]	1,137	8.85	8.50	9.68	-0.34	0.82	1.18
		(8.50)	(7.99)	(8.96)	(-0.13)	(0.16)	(0.53)
Medium Ratings [Baa]	2,066	5.85	5.72	6.49	-0.11	0.71	0.80
		(4.98)	(4.83)	(5.41)	(-0.09)	(0.11)	(0.34)
Low Ratings [Ba and B]	3,616	2.42	3.20	4.09	0.66	1.63	0.88
		(2.92)	(3.14)	(3.82)	(0.00)	(0.28)	(0.34)
Very Low Ratings [Caa, Ca, C]	287	-6.65	-4.70	-3.42	1.45	2.63	1.06
		(-4.29)	(-3.48)	(-2.35)	(0.00)	(0.08)	(0.26)
Missing ratings	1,637	5.31	5.90	6.87	0.49	1.54	0.96
		(5.29)	(5.28)	(5.84)	(0.00)	(0.07)	(0.35)

Panel C: Earnings definitions by fiscal year

Mean (Median)	N	GAAP	Moody's	IBES	Moody's– GAAP	IBES– GAAP	IBES– Moody's
2002	704	3.16	2.33	4.42	-0.92	1.24	2.10
		(3.44)	(2.35)	(3.93)	(-0.88)	(0.24)	(1.50)
2003	811	4.07	3.99	4.96	-0.14	0.91	1.02
		(3.93)	(3.81)	(4.38)	(-0.22)	(0.16)	(0.57)
2004	843	5.10	5.09	6.04	-0.06	0.92	0.93
		(4.83)	(4.70)	(5.25)	(-0.17)	(0.15)	(0.41)
2005	851	5.21	5.31	6.09	0.01	0.85	0.75
		(5.10)	(5.01)	(5.63)	(-0.10)	(0.18)	(0.42)
2006	969	5.73	6.10	6.61	0.37	0.82	0.45
		(5.38)	(5.49)	(5.86)	(0.00)	(0.04)	(0.13)
2007	965	5.19	5.69	6.26	0.41	1.05	0.59
		(5.14)	(5.19)	(5.73)	(0.00)	(0.05)	(0.20)
2008	977	1.67	3.12	5.23	1.09	3.29	2.08
		(3.63)	(3.27)	(5.22)	(-0.09)	(0.45)	(1.30)
2009	960	2.97	4.03	4.58	1.03	1.66	0.56
		(2.97)	(3.39)	(3.90)	(0.08)	(0.25)	(0.16)
2010	910	5.02	5.58	6.04	0.57	1.09	0.46
		(4.56)	(4.69)	(5.21)	(0.05)	(0.24)	(0.13)
2011	753	5.07	5.65	6.13	0.63	1.15	0.47
		(4.48)	(4.78)	(5.30)	(0.00)	(0.20)	(0.24)

Table 2 Downside risk

Panel A provides descriptive statistics for individual downside risk proxies and their summary measure *Downside Risk*. Numbers above (below) the diagonal in Panel B present Spearman (Pearson) correlation coefficients among individual downside risk proxies, *Downside Risk*, and differences in earnings definitions. All continuous variables are winsorized at 1%. See Appendix 3 for variable definitions.

Panel A: Downside risk proxies

	Mean	Q1	Q2	Q3	Std dev
Neg. Idiosync. Volatility (%)	1.29	0.77	1.09	1.54	0.79
Neg. Market Volatility (%)	0.75	0.42	0.69	0.98	0.36
(-1)*GAAP (%)	-4.34	-8.41	-4.40	-1.24	10.61
Loss	0.19	0.00	0.00	0.00	0.39
Downside Risk	0.00	-0.97	-0.50	0.49	1.49

Panel B: Correlations among downside risk proxies and earnings definitions

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(A): Neg. Idiosync. Volatility	1.00	0.38	0.35	0.43	0.74	0.04	0.15	0.12
(B): Neg. Market Volatility	0.45	1.00	0.12	0.13	0.53	0.03	0.10	0.10
(C): (-1)*GAAP	0.37	0.12	1.00	0.68	0.76	0.23	0.32	0.11
(D): Loss	0.48	0.14	0.57	1.00	0.67	0.25	0.31	0.11
(E): Downside Risk	0.80	0.49	0.70	0.83	1.00	0.14	0.29	0.18
(F): Moody's–GAAP	0.21	0.08	0.43	0.37	0.40	1.00	0.32	-0.38
(G): IBES–GAAP	0.27	0.16	0.53	0.45	0.51	0.61	1.00	0.61
(H): IBES–Moody's	0.11	0.12	0.26	0.17	0.22	-0.24	0.58	1.00

Table 3 Downside risk and earnings definitions

Panel A provides descriptive statistics for equity analyst optimism and corporate reporting incentive proxies. Panel B presents results of regressing differences in earnings definitions on *Downside Risk*, analyst optimism and corporate reporting incentive proxies, and fixed effects of Moody's rating levels, industry, and year. *High Ratings* denotes Aaa, Aa, and A ratings. *Medium Ratings* denotes Baa ratings. *Low Ratings* denotes Ba and B ratings. *Very Low Ratings* denotes Caa, Ca, and C ratings. Industry fixed effects are based on two-digit GICS codes. Standard errors are clustered at both the firm and fiscal year level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. All continuous variables are winsorized at 1%. See Appendix 3 for variable definitions.

Panel A: Equity analyst optimism and financial reporting incentives

	Mean	Q1	Q2	Q3	Std dev
Equity analyst optimism proxies					
Buy Recommendations	0.46	0.29	0.46	0.62	0.25
Share Turnover	26.18	13.24	20.93	32.82	19.42
Corporate reporting incentive proxies					
Log(Market Cap)	7.91	6.86	7.85	8.95	1.56
Book Leverage	0.63	0.51	0.62	0.74	0.20
Debt Issuance	0.05	0	0	0.04	0.11
Institutional Investor	0.61	0.40	0.74	0.89	0.35
Top Performer	0.03	0	0	0	0.18
Bottom Performer	0.01	0	0	0	0.08
Dividend Payer	0.57	0	1	1	0.50
Met Forecasts	0.51	0	1	1	0.50
Restated	0.07	0	0	0	0.26
Managerial Guidance	0.46	0	0	1	0.50
Market Cap/Assets	1.00	0.46	0.77	1.29	0.82
Log(Audit Fee)	14.68	14.00	14.62	15.34	1.02
Big 4 Auditor	0.69	0	1	1	0.46

Panel B: Regressions of differences in earnings definitions on downside risk proxies

	Moody's–GAAP	IBES–GAAP	IBES–Moody's	IBES–Moody's
Downside Risk	1.63	2.53	0.83	0.61
	(5.17)***	(11.30)***	(5.16)***	(5.65)***
Buy Recommendations	-0.17	0.14	0.34	
	(1.86)*	(0.78)	(2.10)**	
Share Turnover	-0.02	-0.01	0.01	
	(3.15)***	(2.88)**	(1.91)*	
Log(Market Cap)	0.26	0.37	0.10	
	(2.66)***	(3.55)***	(1.63)	
Book Leverage	-1.08	-1.04	0.10	
	(1.61)	(2.93)***	(0.15)	
Debt Issuance	0.70	0.37	-0.31	
	(1.89)*	(1.18)	(0.76)	
Institutional Investor	0.45	0.34	-0.09	
	(2.90)***	(1.74)*	(0.71)	
Top Performer	0.55	-0.73	-1.72	
	(2.34)**	(2.25)**	(4.01)***	
Bottom Performer	2.54	2.00	-0.89	
	(4.50)***	(1.65)*	(0.79)	
Dividend Payer	0.28	0.34	0.04	
	(2.44)**	(2.99)***	(0.36)	
Met Forecasts	0.38	0.66	0.25	
	(3.35)***	(4.63)***	(2.55)**	
Restated	0.13	0.00	-0.17	
	(0.79)	(0.03)	(1.37)	
Managerial Guidance	0.08	0.37	0.35	
	(0.65)	(3.01)***	(2.51)**	
Market Cap/Assets	0.21	0.84	0.68	
	(1.30)	(6.16)***	(5.78)***	
Log(Audit Fee)	-0.27	-0.18	0.15	
	(1.97)**	(1.88)*	(1.45)	
Big 4 Auditor	0.02	-0.01	-0.03	
	(0.41)	(0.07)	(0.29)	
High Ratings	-1.44	-2.14	-0.67	-0.77
	(4.67)***	(4.96)***	(1.45)	(1.82)*
Medium Ratings	0.01	0.09	0.09	-0.03
	(0.06)	(0.66)	(0.91)	(0.26)
Low Ratings	-0.03	0.21	0.25	0.45
	(0.24)	(1.28)	(1.49)	(2.26)**
Very Low Ratings	-0.09	0.21	0.29	0.93
	(0.42)	(0.91)	(1.38)	(3.66)***
Industry and year F.E.	Yes	Yes	Yes	Yes
N	8,119	8,119	8,119	8,743
Adjusted R^2	26.7%	40.9%	15.6%	11.0%

Table 4 Downside risk and earnings definitions when analysts have the option to adjust different components of GAAP earnings

The table presents abbreviated regression results of *IBES–Moody's* on *Downside Risk* and other regressors of Equation (1) for subsamples where both groups of analysts have the option to adjust different components of GAAP earnings. Appendix 1 provides five adjustment categories for different components of GAAP earnings. The short model in Panel A uses *Downside Risk*, ratings, industry, and year fixed effects. The long model in Panel B uses *Downside Risk*, proxies for analyst optimism and reporting incentives, and ratings, industry, and year fixed effects. Standard errors are clustered at both the firm and fiscal year level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Short model

	Subsample where both groups of analysts have the option to adjust				
	Special items	Capitalized interest	Non-standard adjustments	Pensions	Stock-based pay
Downside Risk	0.60	1.14	0.91	0.83	1.03
	(4.77)***	(5.14)***	(1.74)*	(5.82)***	(17.63)***
Proxies for analyst optimism and reporting incentives	No	No	No	No	No
Rating, industry, and year fixed effects	Yes	Yes	Yes	Yes	Yes
N	4,429	1,138	286	3,329	871
Adjusted R^2	8.2%	17.4%	26.6%	11.4%	14.4%

Panel B: Long model

	Subsample where both groups of analysts have the option to adjust				
	Special items	Capitalized interest	Non-standard adjustments	Pensions	Stock-based pay
Downside Risk	0.88	1.23	0.73	1.17	1.54
	(5.06)***	(5.98)***	(1.09)	(5.91)***	(8.23)***
Proxies for analyst optimism and reporting incentives	Yes	Yes	Yes	Yes	Yes
Rating, industry, and year fixed effects	Yes	Yes	Yes	Yes	Yes
N	4,098	1,094	256	3,095	794
Adjusted R^2	13.4%	18.9%	38.0%	16.6%	24.7%

Table 5 Bankruptcy prediction

Panel A provides descriptive statistics for the bankruptcy predictor variables used in Shumway (2001) and Campbell et al. (2008) models. Panel B reports results of Shumway's (2001) hazard model estimation of one-year-ahead bankruptcy when different earnings definitions (i.e., *GAAP*, *Moody's*, and *IBES*) are used. Panel C reports results of Campbell et al.'s (2008) hazard model estimation of one-year-ahead bankruptcy when different earnings definitions are used. Panel D reports results of Campbell et al.'s (2008) hazard model estimations when bankruptcy horizons are consecutive six-month periods for the subsequent 30 months. The standard errors in Panels B to D are clustered at the firm level. *** and ** denote significance at 1% and 5%, respectively. All continuous variables are winsorized at 1%. See Appendix 3 for variable definitions.

Panel A: Bankruptcy predictors

	Mean	Q1	Q2	Q3	Std dev
GAAP	4.31	1.23	4.40	8.41	8.34
Moody's	4.71	1.35	4.29	8.19	7.17
IBES	5.65	2.28	5.01	8.88	6.46
Book Leverage	0.64	0.51	0.63	0.75	0.20
Compounded Excess Returns	0.09	-0.18	0.01	0.23	0.50
Idiosyncratic Volatility	0.03	0.02	0.03	0.04	0.03
Relative Size	-8.85	-9.93	-8.88	-7.77	1.62
Market Leverage	0.17	0.04	0.09	0.23	0.18
Average Excess Returns	0.02	-0.05	0.01	0.07	0.13
Cash	0.02	0.00	0.01	0.03	0.04
M/B	6.11	3.97	6.37	8.35	2.87
Share Price	13.29	15.00	15.00	15.00	3.60

Panel B: Hazard model estimation of one-year-ahead bankruptcy: Shumway (2001) model

	(1)	(2)	(3)	(4)
GAAP	-0.02			0.06
	(1.70)*			(2.16)**
Moody's		-0.05		-0.09
		(4.21)***		(3.08)***
IBES			-0.05	-0.03
			(3.11)***	(1.10)
Book Leverage	2.56	2.21	2.30	2.15
	(5.35)***	(4.49)***	(4.59)***	(4.23)***
Comp. Excess Returns	-1.41	-1.32	-1.39	-1.38
	(2.38)**	(2.39)**	(2.41)**	(2.42)**
Idiosyncratic Volatility	13.68	13.07	13.07	13.26
	(4.37)***	(4.20)***	(4.07)***	(4.06)***
Relative Size	-0.45	-0.41	-0.41	-0.41
	(3.63)***	(3.35)**	(3.35)***	(3.41)***
N	8,750	8,750	8,750	8,750
N (bankruptcies)	71	71	71	71
Pseudo R^2	26.3%	27.3%	26.9%	27.9%

Panel C: Hazard model estimation of one-year-ahead bankruptcy: Campbell et al. (2008) model

	(1)	(2)	(3)	(4)
GAAP	-0.00			0.06
	(0.32)			(2.56)**
Moody's		-0.05		-0.08
		(3.19)***		(2.75)***
IBES			-0.05	-0.04
			(2.60)**	(1.54)
Market Leverage	5.34	5.29	5.16	5.21
	(5.05)***	(5.01)***	(4.92)***	(4.75)***
Average Excess Returns	-2.91	-2.69	-2.97	-2.90
	(2.01)**	(1.92)*	(2.02)**	(1.98)**
Idiosyncratic Volatility	15.24	14.62	15.16	14.30
	(5.12)***	(4.95)***	(5.06)***	(4.48)***
Relative Size	-0.68	-0.68	-0.63	-0.64
	(3.65)***	(3.50)***	(3.38)***	(3.34)***
Cash	-14.72	-17.04	-15.37	-18.08
	(1.75)*	(1.80)*	(1.75)*	(1.84)*
M/B	-0.03	-0.05	-0.04	-0.04
	(0.36)	(0.59)	(0.47)	(0.51)
Share Price	-0.10	-0.07	-0.08	-0.08
	(2.96)***	(2.16)**	(2.57)**	(2.55)**
N	8,748	8,748	8,748	8,748
N (bankruptcies)	71	71	71	71
Pseudo R^2	28.8%	29.6%	29.3%	30.4%

Panel D: Hazard model estimation of bankruptcies over different horizons: Campbell et al. (2008) model

	Months				
	[1, 6]	[7, 12]	[13, 18]	[19, 24]	[25, 30]
GAAP	0.03	0.07	0.01	0.02	-0.01
	(1.06)	(2.35)**	(0.21)	(0.89)	(0.20)
Moody's	-0.07	-0.08	-0.09	0.01	-0.02
	(1.54)	(2.32)**	(2.46)**	(0.26)	(0.58)
IBES	-0.03	-0.05	0.00	-0.07	-0.01
	(0.85)	(1.34)	(0.02)	(2.07)**	(0.16)
Firm-specific controls	Yes	Yes	Yes	Yes	Yes
N	8,748	8,721	8,677	8,652	8,611
N (bankruptcies)	27	44	25	41	25
Pseudo R^2	30.6%	26.1%	32.0%	19.5%	13.3%

Table 6 Future performance prediction

Panel A reports results of regressing one-year-ahead and two-year-ahead *GAAP* on *GAAP*, *Moody's*, and *IBES*. Panel B reports results of regressions of year-ahead and two-year-ahead operating cash flow (*oancf* in Compustat) scaled by prior year total assets on *GAAP*, *Moody's*, and *IBES*. Firm-years with fiscal year-end changes relative to the prediction year are excluded. Standard errors are clustered at both the firm and fiscal year level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. All continuous variables are winsorized at 1%. P-statistics for coefficient estimate difference tests are reported below the regressions. See Appendix 3 for variable definitions.

Panel A: Prediction of future earnings

	$GAAP_{t+1}$				$GAAP_{t+2}$			
GAAP	0.59			0.20	0.58			0.13
	(11.25)***			(9.06)***	(9.28)***			(2.10)**
Moody's		0.70		0.13		0.71		0.15
		(14.00)***		(2.49)**		(13.58)***		(2.02)**
IBES			0.81	0.48			0.83	0.55
			(23.71)***	(14.69)***			(20.23)***	(8.12)***
N	8,522	8,522	8,522	8,522	8,236	8,236	8,236	8,236
Adjusted R^2	32.0%	32.8%	35.5%	37.8%	17.5%	18.8%	20.9%	21.8%
p-values								
Moody's–GAAP				0.29				0.87
IBES–GAAP				0.00***				0.00***
IBES–Moody's				0.00***				0.00***

Panel B: Prediction of future operating cash flows

	Operating Cash Flows$_{t+1}$				Operating Cash Flows$_{t+2}$			
GAAP	0.42			-0.04	0.59			-0.05
	(8.19)***			(1.11)	(9.67)***			(1.41)
Moody's		0.54		0.20		0.76		0.18
		(13.07)***		(3.68)***		(14.68)***		(2.14)**
IBES			0.64	0.50			0.94	0.81
			(16.32)***	(9.67)***			(18.86)***	(8.61)***
N	8,522	8,521	8,521	8,521	8,235	8,235	8,235	8,235
Adjusted R^2	20.1%	24.7%	28.6%	29.2%	16.3%	19.6%	24.3%	24.5%
p-values								
Moody's–GAAP				0.00***				0.03**
IBES–GAAP				0.00***				0.00***
IBES–Moody's				0.00***				0.00***