Online Appendix

for

Does Rating Subjectivity Affect Corporate Debt Pricing

Cesare Fracassi, Stefan Petry, and Geoffrey Tate

In this appendix, we provide additional evidence and robustness checks to supplement the findings in the main text of the paper. In Section I, we supplement the description in the text of how we construct our datasets. In Section II, we provide evidence that firms respond to the incentives created by differences in the dispositional optimism of the analysts covering the firm by adjusting corporate policies. In Section III, we provide several robustness checks of evidence contained in the main text.

I. Data Construction

We assemble our dataset in six major steps:

Step 1: Access Thomson CreditViews. The starting point of our dataset construction is the Thomson CreditViews ratings dataset, which contains information about all announcements of rating upgrades, downgrades and affirmations, as well as changes in outlook and watches for all U.S. issuers and long- and short-term issues. For each event, Thomson CreditViews provides the event date, issuer name, cusip, rating agency, the type of event (rating, outlook, watch), the type of announcement (upgrade, downgrade, affirmation, change in watch status and in outlook), and information about the rating/watch/outlook movement. The data are sparse prior to 2000, so we restrict our sample to announcements between 2000 and 2011. We then restrict the sample to events related to long-term issuer ratings, watches, and outlooks by dropping all events related to single debt issues or short term ratings. We also require that the issuers can be found in Compustat. The initial Thomson sample thus includes 61,089 events, of which 21% are from Fitch, 27% are from Moodys, and 51% are from Standard and Poors.

Step 2: Download issuer ratings reports. The next step is to find the analyst names associated with each announcement found on Thomson CreditViews. From the S&P Global Credit Portal, we download all available U.S. issuer reports up to the end of 2011. Each report has a unique,

ascending article id. We download reports starting from article id 1 to 927,000.[1] We download Moody's ratings reports from the Moody's website (http://www.moodys.com). We use their search functionality to restrict the results to rating announcements and rating actions of U.S. issuers in the categories Corporate, Financial Institutions and Project Finance.[2] We download all available announcements and reports that resulted from these search conditions. We obtain Fitch ratings announcement reports from the Fitch Ratings website (https://www.fitchratings.com). We first download the list of all Corporate issuers in the United States. For each U.S. issuer, we download the list of all announcements, which then allows us to identify and download the "Rating Action Commentary" reports and the "Non-rating Action Commentary" reports.

We then extract from each rating report the analyst names and the announcement date. Each report has a maximum of 3 analysts; the modal report names 2 analysts. S&P and Fitch rarely report the title of each analyst in the report. Moody's is the only agency that consistently reports the role of the analyst in the organization. Thus, we do not distinguish between analysts in our analysis (e.g., "lead" or "senior" analysts vs. "junior" analysts). Within Moody's, the hierarchy of relevant titles in order of increasing seniority is: Associate Analyst, Analyst, Assistant Vice President/Analyst, Vice President-Senior Analyst, Vice-President-Senior Credit Officer, Senior Vice-President, and Managing Director.

Step 3: Match agency ratings reports with Thomson CreditViews. Each rating report includes the issuer company name and an agency-specific company ID (S&P entity ID, Moody's Organization ID, and Fitch's issuer ID). Each rating agency also provides a mapping from company IDs to cusips. We use cusips to link the events in Thomson CreditViews and in the agency reports using the cusip-date as the unique identifier. Since the announcement dates in Thomson do not always perfectly align with the actual report dates, we allow for an announcement date differential of up to 4 days. We are able to match 73% of the announcements in Thomson with a rating announcement report from the rating agencies in which at least one analyst is named.

[1] We do not end up having 927,000 actual reports because some of the reports are related either to states or countries or to foreign companies.

[2] The other choice categories available on Moodys.com are Managed Investments, Sovereign, Structured Finance, Sub-Sovereign, U.S. Public Finance, but these are not relevant for our study.

The resulting announcement dataset includes 44,829 firm rating announcements, 1,721 firms and 1,072 analysts. In the tables below we provide a breakout of the data by types of ratings announcements, and by agency.

Announcement Type	Freq.	Percent
New Rating	1,616	3.60%
Rating Affirmed	12,686	28.30%
Rating Downgraded	5,124	11.43%
Rating Upgraded	2,833	6.32%
Rating Withdrawn	670	1.49%
Rating Off Watch	3,272	7.30%
Rating On Watch Developing	270	0.60%
Rating On Watch Down	3,210	7.16%
Rating On Watch Up	1,047	2.34%
Outlook Developing	153	0.34%
Outlook Negative	3,212	7.17%
Outlook Positive	1,600	3.57%
Outlook Stable	5,601	12.49%
Outlook Withdrawn	3,532	7.88%
Unknown	3	0.01%
Total	44,829	100%

Agency	Freq.	Percent
Fitch	7,189	16.04%
Moodys	12,353	27.56%
Standard and Poor's	25,287	56.41%
Total	44,829	100%

Note that Standard and Poor's is responsible for a greater proportion of the reports in our data than the other two agencies. Part of this effect is due to the increasing coverage by Fitch over time: in 2000, only 4% of reports originate with Fitch, but the percentage increases to 22% in 2010.

Finally, we search for the analyst names in public LinkedIn profiles to extract biographical information. Of the 1,072 unique analysts in our data, we are able to retrieve data for 798.

Step 4: Convert to quarterly agency-firm dataset. The Thomson CreditViews dataset has one observation for each announcement of a rating, outlook, or watch change (including

affirmations). These announcements do not occur on a pre-established regular frequency, though there is on average roughly one announcement every two quarters. We use the announcements to generate a dataset of unique firm-quarter-agency observations. We do so by first merging the Thomson CreditViews data for each rating agency with quarterly Compustat data and retaining the last rating and analyst names before each fiscal quarter ends. We hold analyst coverage constant until a change in analysts occurs. We do not assign analysts to quarters that end after the date of the final report in which we observe the analyst covering the firm. The resulting quarterly agency-firm dataset includes 53,747 observations, 1,594 firms, and 1,050 analysts. We use this dataset in Section 3 to identify analyst fixed effects.

Step 5: Convert to quarterly firm panel data. In Section 4, we measure the relation between analyst effects and firm-level outcomes. To do so, we aggregate the data from the agency-firm-quarter level to the firm-quarter level. We average the analyst effects across all agencies that cover the same firm at the same time. The resulting dataset includes 37,776 firm-quarter observations.

Step 6: Compute credit spreads. To calculate credit spreads, we merge cleaned TRACE data with the Mergent FISD issue and redemption file using the complete cusip.[3] From the Mergent file, we remove bonds with special characteristics, i.e. bonds that are exchangeable, putable, convertible, pay-in-kind, subordinated, secured, or guaranteed, and zero coupon bonds and bonds with a variable coupon. In addition, we drop observations with missing maturity dates.

To construct daily bond prices, we compute a daily trade-weighted average price, i.e. each trade price is weighted by its size.[4] We use these daily bond prices to calculate the yield to maturity and the duration of each bond. For each daily bond price, we calculate the credit spread as the difference between the bond's yield to maturity and a benchmark Treasury yield using the daily CRSP fixed term indexes for the periods 1, 2, 5, 7, 10, 20 and 30 years. We then use linear

[3] We follow the guide by Dick-Nielsen (2009) to remove erroneous entries from the TRACE data. In particular, we pay attention to cancelled and corrected trades, and whether they are as-of trades. We follow Bessembinder et al. (2009) and replace trades with indicators +$1MM and +$5MM with the numerical vales 1,000,000 and 5,000,000. In addition, we follow Bongaerts, Cremers, and Goetzmann (2012) and delete trades that include a commission or have a settlement period of more than 5 days, and remove trades with a negative reported yield.

[4] Bessembinder et al. (2009) find that trade-weighted prices exhibit better statistical properties. This also helps to reduce the effect of any remaining data errors in the TRACE data.

interpolation of the yields of the two government bonds that have the next lower and higher duration relative to the respective corporate bond. We delete observations with a duration of less than one year. For bonds with a duration of more than 30 years, we use the 30-year treasury yield. We delete a few observations that have missing or negative yields. The approach follows Campbell and Taksler (2003), Bongaerts, Cremers and Goetzmann (2012) and Bessembinder et al. (2009).

Should firms have multiple bonds outstanding, we follow Qiu and Yu (2009)'s value-weighted approach by using the amount outstanding of each bond as the weight to aggregate credit spreads to firm-level measures. We are able to calculate our measure of spreads for 15,428 unique firm-quarter observations and 928 unique firms.

We provide a list of the variables we use in our analysis, together with detailed definitions and information on the data source in the Appendix of the main text. We tabulate the correspondence between the numerical scale we use for long-term ratings and the letter ratings scales of the three agencies in Table 1 of the main text.

II. Analyst Effects and Corporate Policies

To link the systematic dispositions of analysts toward optimism or pessimism with corporate financial policies, we use accounting and financial data from Compustat, CRSP, and SDC. We follow the approach of Leary and Roberts (2005) and Hovakimian, Opler and Titman (2001) to measure external financing episodes. The advantage of this approach relative to using SDC security issuance data is that it includes debt issuance through private sources and, thus, provides a relatively complete accounting of external financing episodes.[5] Moreover, it excludes debt issuance that simply rolls over existing debt without increasing debt outstanding and allows us to identify explicitly debt retirements. We classify a firm as making a debt issue (retirement) if total debt scaled by beginning-of-quarter assets increases (decreases) by 5% in a given quarter. Similarly, equity issuance occurs if net equity issuance (sale of common and preferred stock minus purchase of common and preferred stock) scaled by assets exceeds 5%. Following Leary

[5] A potential downside of including private debt issues in our analysis is that credit ratings may have less influence on the terms provided by private lenders, who may be more likely to do their own monitoring. To the extent that this is the case, it should attenuate our estimates.

and Roberts (2005), we classify a 1.25% decrease in net equity to assets as an equity repurchase.[6] Using these variables, we define a leverage decrease spike to occur if we observe either a debt retirement or an equity issuance in a given quarter. Similarly, a leverage increase spike occurs if we observe either a debt issuance or an equity retirement. We do not consider leverage changes due to changes in retained earnings to focus on active rebalancing of the firm's external capital. We measure investment as capital expenditures scaled by the lag of property, plant and equipment. Cash reserves are cash and short term investments scaled by assets and sales growth is the quarter over quarter percentage change in sales. Both variables are winsorized at the 1% and 99% levels to remove extreme outliers.

In the main text, we show that firms with pessimistic (optimistic) analyst coverage are likely to face expensive (cheap) debt. Here, we ask whether corporate managers respond to those incentives, shifting capital structure choices towards cheaper securities, conditional on raising finance. We also test whether there are spillovers from financial decisions to the real decisions of firms that face higher borrowing costs. These effects are not immediate given differences in the yields on outstanding bonds; if Modigliani-Miller holds, then prices properly reflect future cash flows (even if they differ across firms) and do not provide an incentive to shift the composition of the firm's capital structure. Our approach is similar in spirit to DellaVigna and Pollet (2007, 2013) who identify mispricing of predictable demographic information in equity markets and its effects on corporate capital structure choices. We instead identify a friction in debt markets, which have received less attention in existing behavioral finance literature. We do not argue that firms necessarily recognize the source of the pricing friction (analyst effects), but only that they respond to the incentives provided by relative prices.

First, we consider the choice between issuing debt and equity, conditional on making an issue of (at least) one type during the quarter. On the subsample of issuers, we estimate a logit regression using a binary indicator of debt issuance as the dependent variable.[7] We include the battery of firm-level controls from Column 2 of Table 4 in the main text: long term leverage, profit margin, market-to-book, the natural logarithm of sales, tangibility, the utilization of tax shields and carryforwards, and the ratio of R&D expenditures to sales as well as industry and quarter fixed effects. We also include the aggregate analyst effect on credit ratings and the

[6] They motivate this choice by the observation that smaller-scale repurchase programs that would fall between the 1.25% and 5% thresholds are common in practice.
[7] Here and throughout this Section, our results are robust to estimating instead a linear probability model.

residual credit rating, constructed as in Section 4.1 of the main text. Note that our main variable of interest, the aggregated analyst effect, is plausibly exogenous since it comes from a backward-looking regression that includes fixed effects for firm-quarters. We again average observations for the same firm-quarter across agencies to obtain a firm-quarter panel and cluster standard errors at both the firm and quarter levels.

We report the estimates in the form of log odds ratios in Column 1 of Table OA1. Not surprisingly, we find that firms with higher leverage and larger firms are more likely to issue debt, conditional on tapping external markets. Firms with weaker adjusted (or, observed) ratings are less likely to issue debt, suggesting that credit ratings correlate with some market friction that breaks the Modigliani-Miller result. Moreover, the portion of ratings driven by analyst effects is a strong negative predictor of debt issuance. The magnitude of the effect is more than three times the effect of adjusted ratings: a one notch increase in the analyst-driven portion of ratings would decrease the odds of debt issuance by 40%. This finding is consistent with the firm viewing worse ratings along this dimension as an undue friction.

In Column 2, we consider the prices at which new debt issues occur. For this analysis, we restrict our attention to the set of public debt issuances by sample firms available from the SDC database. We use the offering yield to maturity to measure debt terms. We regress the yield on the aggregate analyst effect, the adjusted rating, and the set of controls from Column 1. Here, the results mirror our results from Section 4.1 of the main text. The adjusted rating has a significant positive effect on yields: firms with worse ratings receive worse prices. The portion of ratings driven by analysts' dispositional optimism also has a significant effect on yields. Though the market partially adjusts (i.e., this portion of ratings affects yields less than the residual piece), roughly 80% of the effect remains. The result is nearly unchanged if we include an additional control for the size of the debt issue. Thus, firms that happen to have analysts who are systematically pessimistic do indeed experience higher costs of raising new debt capital.

Next, we consider whether these differences in financing episodes aggregate into shifts in the firm's capital structure. In Columns 3 of Table OA1, we report the results from regressing the indicator for a leverage decrease spike on the same set of controls as in Columns 1 and 2 on the full sample of firm quarters. We find that firms with a more pessimistic set of analysts (high aggregate analyst effect) are indeed more likely to decrease their leverage. In Column 4, we report estimates of a regression including the same controls but replacing the dependent variable

with the indicator for a leverage increase spike. Here, we find that firms with a more pessimistic set of analysts are less likely to increase leverage, consistent with the estimates in Column 1. In both cases it is noteworthy that the effect of analyst dispositions is economically more significant than the effect of the residual portion of ratings, even though our evidence suggests that the residual portion of ratings is a stronger predictor of credit spreads (Table 4 of the main text and Column 2 of Table OA1). The heightened sensitivity of firms to the portion of prices determined by analyst effects suggests that it is associated with a more severe market friction.

In Columns 5 and 6, we consider whether the financing frictions we identify in the first four columns feed through to real decisions. Again including the same control variables, we find that more pessimistic analyst coverage (high aggregate analyst effects) is associated with significantly weaker sales growth and smaller corporate investment. As in Columns 1 to 4, the effects are larger in magnitude than the effects of the residual portion of ratings. Finally, in Columns 7 and 8, we try to link the real effect on investment more directly to the financing channel. Specifically, we split the sample of firm-quarters at the median of cash reserves. We then reestimate the regression from Column 6 (using corporate investment as the dependent variable) on the resulting subsamples. We find some evidence that the effect of analyst dispositions on investment is particularly strong among firms with low cash reserves. In these firms, for example, it is likely to be more difficult to find substitutes for debt financing if analysts are unduly pessimistic and those dispositions are reflected in credit spreads. It is important to note, however, that while the result is clearly stronger statistically in the sample of firms with low cash reserves, the economic magnitude of the effect in the two subsamples is not significantly different.

As a robustness check, we repeat the estimations, but including firm fixed effects in lieu of the industry fixed effects. We find similar results with two notable exceptions. First, the point estimate on the analyst effects in the Column 1 specification is not statistically significant (though it is nearly identical in magnitude to the estimate in Table OA1). Recall that the sample in this column includes only firm-quarters for which we observe either a debt spike or an equity spike. Thus, there is limited within-firm variation to be exploited. In all other columns (except Column (8)), the coefficient estimate on the aggregate analyst effects is significant at the 5% or 1% level. Second, we find smaller differences between the coefficient estimates on the aggregate analyst effects and the residual ratings than in Table OA1.

III. Robustness Tests

In the remainder of this appendix, we present the additional tests and robustness checks referenced in the main text of the paper. Below we provide a table of contents with brief descriptions of the included tables.

- In Table OA2, we present separate summary statistics for the firm-level variables we report in Panel B of Table 2 in the main text on the subsamples of firms with and without split ratings. As noted in the text, the subsamples appear to be quite similar.
- In Table OA3, we report the results from replicating the regressions from Table 4 of the main text that relate credit spreads to the portion of credit ratings determined by analyst dispositions and the residual portion of ratings (along with a set of controls) using only the subsample of firms for which we (at a minimum) observe ratings from both Moody's and Standard and Poor's. We construct the aggregate analyst effects for this regression from a first stage regression in which we also limit the sample to the same subset of firms. This specification addresses concerns that "missing" ratings from one or more agencies in our main sample (and, particular, from Moody's) might bias the estimates of aggregate analyst effects if they occur on a nonrandom sample of firms. We find results consistent with those reported in Table 4 of the main text.
- In Table OA4, we test whether analyst dispositions affect the short-term watches that agencies place on issuer ratings. We use the regression specifications from Table 3 of the main text, but include indicators for (1) a positive watch during the quarter and (2) a negative watch during the quarter in place of long-term issuer ratings as the dependent variable. As with ratings, we find significant fixed tendencies to issue short-term watches up or down among different analysts.
- In Table OA5, we present a full version of Table 4 from the main text in which we tabulate the estimates of all control variables.
- In Table OA6, we present alternative specification of the main regressions from Table 4 of the main text using, separately, the sets of control variables from Blume, Lim, and MacKinlay (1998) and Baghai, Servaes, and Tamayo (forthcoming).

- In Table OA7, we reestimate the regression specifications from Table 4 of the main text, but using only the subsample of firm-quarters for which we do not observe a split rating. This specification further insulates our measure of analysts' dispositional optimism from any potential information channel, since we estimate the analyst fixed effects on a sample that does not overlap with the sample of firm-quarters on which we estimate the effect of those dispositions on credit spreads. We find similar results.
- In Table OA8, we report specifications that mirror Table OA7 except we go one step further and limit the sample only to firms for which we never observe a split rating. We do not include the sample split for firms covered by a single agency and firms covered by multiple agencies because the number of firms covered by multiple agencies that never have a split rating is small. For the other specifications, we find similar results to Table OA7.
- In Table OA9, we estimate the regression specifications from Table 4 of the main text, but replacing the analyst fixed effects with an alternative measure of relative analyst optimism that subtracts the number of relative optimists from the number of relative pessimists (*Pessimism Count*). Though we still identify relative optimism and pessimism using the fixed effects regression described in Section 3 of the text, the estimates here rely less on the exact estimates from that regression and, thus, are more robust to measurement error. We again find similar results: firms with a higher "pessimism count" face higher credit spreads in corporate debt markets.
- In Table OA10, we estimate the regression specification from Table 4 of the main text, but including firm fixed effects to account for the persistence in ratings and spreads. Again, we find similar results.
- In Table OA11, we provide the full version of Table 6 from the main text, including all control variables. Note that we see very little predictability of future changes in spreads by the additional tabulated controls, as we would expect in a semi-strong form efficient market.
- In Table OA12, we provide the full version of Table 9 from the main text, including all control variables.

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Table OA1

Corporate Policies and Aggregate Analyst Effects

The table reports coefficient estimates and the pseudo R-squared from logit regressions in columns (1), (3), and (4), and coefficient estimates and R-squared from OLS regressions in columns (2), (5), (6), (7), and (8). The dependent variable is displayed at the top of each column. All variables are defined in the Appendix. Industries are measured using the Fama-French 49 classification. Column (1) includes only firm-quarter observations in which there is at least one debt or equity issuance; Column (2) includes all public debt issuances from the SDC database. Columns in Panel B include all firm-quarer observations. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	Panel A: Conditioning on Issuing Equity or Debt		**Panel B: Fulll Sample**					
	Debt Issuance Spike Logit	Offering Yield-to-Maturity OLS	Lev Decrease Spikes Logit	Lev Increase Spikes Logit	Sales Growth OLS	Capex/PP&E OLS	Capex/PP&E Low Cash Reserves OLS	Capex/PP&E High Cash Reserves OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Adjusted Credit Rating	-0.119 ***	0.294 ***	0.151 ***	-0.067 ***	-0.006 ***	0.001 ***	0.000	0.001 ***
	(-2.85)	(7.08)	(7.66)	(-4.17)	(-6.14)	(3.41)	(0.93)	(2.82)
Aggregate Analyst Effects	-0.516 ***	0.248 ***	0.214 ***	-0.194 ***	-0.011 ***	-0.004 **	-0.004 ***	-0.003
	(-2.83)	(2.98)	(2.93)	(-3.52)	(-4.88)	(-2.22)	(-2.94)	(-1.57)
Long-Term Leverage	-2.586 ***	0.206	0.457 ***	-1.311 ***	0.006	-0.014 ***	-0.011 **	-0.014 ***
	(-6.27)	(0.36)	(2.65)	(-6.21)	(0.69)	(-3.22)	(-2.01)	(-2.60)
Profit Margin	0.256	-1.744 ***	0.372	0.561 **	-0.204 ***	0.029 ***	0.029 ***	0.031 ***
	(0.55)	(-3.73)	(1.44)	(2.17)	(-7.38)	(4.62)	(4.24)	(3.59)
Market-to-Book	0.147	-0.474 ***	0.210 ***	0.614 ***	0.018 ***	0.014 ***	0.014 ***	0.013 ***
	(0.95)	(-3.44)	(4.39)	(9.83)	(6.79)	(11.16)	(7.35)	(9.06)
Sales (log)	0.166 **	-0.468 ***	-0.068 **	-0.029	-0.022 ***	-0.002 **	-0.001 **	-0.002 **
	(2.15)	(-8.01)	(-2.18)	(-0.96)	(-9.23)	(-2.38)	(-2.19)	(-2.40)
Tangibility	-0.365	0.643 **	-0.412 **	-0.155	0.033 ***	-0.047 ***	-0.042 ***	-0.057 ***
	(-0.67)	(1.97)	(-2.20)	(-0.74)	(2.65)	(-9.22)	(-7.45)	(-7.83)
Taxshields	0.222	0.515	-2.478 ***	-0.706	0.084 ***	0.005	0.005	0.013
	(0.11)	(0.38)	(-2.83)	(-0.78)	(2.64)	(0.35)	(0.32)	(0.55)
Carryforwards	0.049	0.641	-0.154	-0.411 *	-0.020 **	0.001	-0.001	0.001
	(0.08)	(1.40)	(-0.71)	(-1.77)	(-2.07)	(0.24)	(-0.11)	(0.21)
R&D/Sales	-2.950	0.179	1.576 *	0.259	0.099	0.003	-0.011	-0.001
	(-1.25)	(0.10)	(1.93)	(0.25)	(1.37)	(0.12)	(-0.28)	(-0.04)
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 / Pseudo R^2	0.164	0.589	0.065	0.106	0.076	0.232	0.241	0.229
Observations	1,718	3,064	23,394	23,337	23,386	24,663	12,331	12,332

Table OA2

Summary Statistics for Firm-Quarters with and without Split Ratings

This table provides summary statistics of the variables used in the paper, describing separately the characteristics of firm-quarters in which credit ratings are split across the agencies and those in which they are not. All variables are defined in the Appendix.

	Firm-Quarter Obs with Split Ratings				Firm-Quarter Obs with Same Ratings			
	Obs.	Mean	Median	Std. Dev.	Obs.	Mean	Median	Std. Dev.
Aggregate Analyst Effects	10,358	0.050	0.059	0.569	13,028	0.055	0.074	0.625
Bond Age (days)	6,928	1,414	1,158	1,118	8,421	1,351	1,133	1,037
Bond Duration	6,928	5.311	5.023	2.381	8,421	5.575	5.261	2.567
Callable Bond Dummy	6,928	0.822	1.000	0.366	8,421	0.844	1.000	0.341
Carryforwards	10,358	0.059	0	0.139	13,028	0.045	0	0.122
Credit Rating	10,358	11.575	12.000	3.306	13,028	10.503	10.000	3.363
Credit Rating (Adjusted)	10,358	11.525	12.016	3.281	13,028	10.448	10.222	3.378
Credit Spread	6,928	367.784	310.909	248.278	8,421	288.913	215.191	225.219
Equity Beta	5,059	1.293	1.162	0.682	6,424	1.183	1.098	0.576
Equity Volatility	6,562	0.415	0.347	0.256	8,175	0.363	0.301	0.217
Expected Default Frequency	6,175	0.081	0	0.219	7,448	0.048	0	0.172
Interest Coverage k1	6,386	3.705	3.937	1.349	7,964	4.263	5.000	1.110
Interest Coverage k2	6,386	1.278	0	1.949	7,964	2.057	1.049	2.183
Interest Coverage k3	6,386	0.944	0	2.577	7,964	1.606	0	3.275
Interest Coverage k4	6,386	0.701	0	4.901	7,964	1.876	0	8.128
Leverage Decrease Spike	10,361	0.067	0	0.250	13,007	0.060	0	0.238
Leverage Increase Spike	10,361	0.143	0	0.350	13,007	0.177	0	0.382
Long Term Leverage	10,358	0.339	0.304	0.211	13,028	0.303	0.267	0.208
Market-to-Book	10,358	1.399	1.216	0.586	13,028	1.546	1.312	0.733
Market Value of Equity (log)	6,615	8.286	8.195	1.619	8,210	8.574	8.585	1.497
Profit Margin	10,358	0.187	0.152	0.168	13,028	0.200	0.168	0.165
R&D/Sales	10,358	0.013	0	0.037	13,028	0.015	0	0.040
Sales (log)	10,358	6.682	6.570	1.424	13,028	6.670	6.625	1.432
Sales Growth	10,358	0.030	0.019	0.187	13,028	0.030	0.019	0.184
Stock Return	6,477	0.056	0.096	0.474	8,101	0.048	0.089	0.396
Tangibility	10,358	0.332	0.291	0.252	13,028	0.315	0.241	0.254
Taxshields	10,358	0.036	0.013	0.048	13,028	0.036	0.014	0.049
Time Since Last Bond Trade	6,928	5.600	1.000	13.924	8,421	6.282	1.000	14.551
Total Leverage	10,091	0.382	0.344	0.215	12,573	0.342	0.306	0.213

Table OA3
Credit Spreads and Aggregate Analyst Effects:
Only Firm-Quarters Rated by at least S&P and Moodys

The table reports coefficient estimates from OLS regressions. The sample includes only firm-quarters in which at least Standard and Poor's and Moodys cover the firm. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. Moody's S&P Aggregate Analyst Effects are the aggregation of analyst fixed effects from an OLS regression of long-term credit ratings on analyst fixed effects, firm-quarter fixed effects, and agency-sector-quarter fixed effects for the backward-looking subsample of firm-quarters covered by at least Standard and Poor's and Moodys. All other variables are defined in the Appendix. Column (3) includes only observations in which the credit rating is between AAA and A-, and column (4) includes observations in which the rating is between BBB and BB+. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+
	(1)	(2)	(3)	(4)
Adjusted Credit Rating	46.799 ***	31.395 ***	11.939	52.400 ***
	(21.42)	(12.06)	(1.10)	(7.33)
Moody's S&P Aggr. Analyst Effects	31.674 ***	19.425 *	0.404	39.064 ***
	(2.99)	(1.89)	(0.02)	(2.81)
Bond Duration	-7.451 ***	-2.745	2.667	0.059
	(-3.34)	(-1.34)	(1.32)	(0.02)
Callable Bond Dummy	-43.888 ***	0.742	39.691	-0.171
	(-2.76)	(0.05)	(1.46)	(-0.01)
Bond Age	0.003	0.010	0.035 *	0.013
	(0.55)	(1.41)	(1.85)	(1.22)
Time Since Last Trade	0.993 ***	-0.130	-0.904	-0.494
	(4.15)	(-0.38)	(-1.16)	(-1.01)
Interest Coverage k1		-3.140	-1.070	10.986 *
		(-0.66)	(-0.07)	(1.67)
Interest Coverage k2		3.199	-6.712	-1.529
		(1.19)	(-1.27)	(-0.35)
Interest Coverage k3		-0.022	1.125	1.897
		(-0.01)	(0.45)	(0.53)
Interest Coverage k4		4.202 ***	0.098	8.808
		(5.09)	(0.18)	(1.59)
Total Leverage		39.875	-110.686	164.767 **
		(0.98)	(-1.41)	(2.35)
Mkt. Value of Equity (log)		-28.548 ***	-6.950	-10.364
		(-3.98)	(-0.48)	(-0.78)
Equity Beta		2.522	-46.545 ***	2.388
		(0.37)	(-2.85)	(0.21)
Equity Volatility		162.998 ***	328.194 ***	204.562 ***
		(4.35)	(3.09)	(2.70)
Exp. Default Frequency		162.734 ***	77.969 **	180.705 ***
		(5.84)	(2.27)	(4.14)
Stock Return (log)		-8.587	-50.351 *	-5.732
		(-0.78)	(-1.68)	(-0.29)
Standard Firm Controls	No	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
R^2	0.734	0.832	0.751	0.820
Observations	5,055	3,121	373	917
p-value for *t*-test that Adj. Credit Rating = Aggr. Analyst Effects	0.122	0.198	0.355	0.323

Table OA4
Wald Test and Placebo Simulation: Short Term Watches

The table reports the F-statistics to test the joint significance of the analyst fixed effects in an OLS regression of indicators for short-term watches on analyst fixed effects, firm-quarter fixed effects, and either agency fixed effects, agency-sector, agency-sector-quarter, or agency-firm fixed effects. The dependent variable in Panel A is Positive Watch, an indicator equal to 1 if the agency placed the firm on a watch for a rating increase during the quarter, and zero otherwise. The dependent variable in Panel B is Negative Watch, an indicator equal to 1 if the agency placed the firm on a watch for a rating decrease during the quarter, and zero otherwise. The table also reports in the row Placebo Test the percentage of 1,000 runs in which the F-statistic to test the joint significance of analyst effects in the same regression specification on a placebo sample is greater than the F-statistic in the true data. In each placebo run, we substitute the analyst name with the name of an analyst drawn randomly for each analyst-firm pair. Significance for a traditional Wald test at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Panel A.	Positive Watch			
	(1)	(2)	(3)	(4)
F-Value Analyst FE	1.44 ***	1.39 ***	1.28 ***	1.41 ***
P-Value Analyst FE	<0.1%	<0.1%	<0.1%	<0.1%
Placebo Test P-Value Analyst FE	2.7%	0.1%	0.1%	0.1%
Analyst FE	Yes	Yes	Yes	Yes
Firm-Quarter FE	Yes	Yes	Yes	Yes
Agency FE	Yes			
Agency-Sector FE		Yes		
Agency-Sector-Quarter FE			Yes	
Agency-Firm FE				Yes
N. Observations	59,005	58,612	58,612	59,055

Panel B.	Negative Watch			
	(1)	(2)	(3)	(4)
F-Value Analyst FE	1.74 ***	1.66 ***	1.55 ***	1.69 ***
P-Value Analyst FE	<0.1%	<0.1%	<0.1%	<0.1%
Placebo Test P-Value Analyst FE	<0.1%	<0.1%	<0.1%	<0.1%
Analyst FE	Yes	Yes	Yes	Yes
Firm-Quarter FE	Yes	Yes	Yes	Yes
Agency FE	Yes			
Agency-Sector FE		Yes		
Agency-Sector-Quarter FE			Yes	
Agency-Firm FE				Yes
N. Observations	59,005	58,612	58,612	59,055

Table OA5

Credit Spreads and Aggregate Analyst Effects - Full Table

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. All variables are defined in the Appendix. Columns (1) and (2) include all observations. Columns (3) and (4) include only observations in which the credit rating is between AAA and A-, and between BBB and BB+, respectively. Columns (5) and (6) include only observations in which the firm is rated only by a single rating agency, and by more than one agency, respectively. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+	Single Agency	Multiple Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Adjusted Credit Rating	48.637 ***	31.834 ***	9.260 ***	50.224 ***	33.253 ***	30.873 ***
	(26.53)	(14.30)	(2.90)	(9.33)	(11.99)	(12.44)
Aggregate Analyst Effects	35.324 ***	25.754 ***	0.001	50.850 ***	32.924 ***	19.075 ***
	(8.62)	(6.61)	(0.00)	(6.90)	(7.01)	(3.17)
Bond Duration	-2.617 **	0.936	3.546 ***	2.142	1.401	0.384
	(-1.96)	(0.85)	(3.19)	(1.62)	(1.17)	(0.26)
Callable Bond Dummy	-39.291 ***	-0.111	26.688 *	4.101	8.159	-1.248
	(-3.59)	(-0.01)	(1.90)	(0.40)	(0.87)	(-0.11)
Bond Age	0.006 **	0.010 ***	0.019 ***	0.013 ***	0.009 **	0.011 **
	(2.18)	(3.54)	(4.73)	(3.41)	(2.48)	(2.46)
Time Since Last Trade	0.778 ***	-0.055	0.412	-0.031	-0.125	0.055
	(5.09)	(-0.36)	(1.02)	(-0.16)	(-0.53)	(0.17)
Long-Term Leverage		17.030	44.434	30.788	49.312	-9.497
		(0.42)	(0.88)	(0.36)	(0.94)	(-0.23)
Profit Margin		40.560 **	44.408 *	39.489	85.510 ***	10.637
		(2.29)	(1.70)	(1.46)	(3.68)	(0.46)
Market-to-Book		1.348	0.761	-19.896 **	13.734 *	-7.961
		(0.25)	(0.11)	(-2.51)	(1.91)	(-1.19)
Sales (log)		12.196 ***	1.853	-0.840	18.605 ***	7.998
		(2.73)	(0.29)	(-0.14)	(3.56)	(1.45)
Tangibility		-29.951 **	-58.571 **	-45.897 **	-51.576 ***	-15.606
		(-2.31)	(-2.49)	(-2.54)	(-3.22)	(-1.03)
Taxshields		-33.068	145.754 *	-134.117 **	-28.139	-34.441
		(-0.59)	(1.78)	(-2.02)	(-0.44)	(-0.48)
Carryforwards		33.343 *	37.747	22.108	-15.442	61.346 **
		(1.89)	(0.36)	(0.95)	(-0.55)	(2.53)
R&D/Sales		76.134	-47.810	-153.532 *	-87.599	117.811
		(1.13)	(-1.02)	(-1.76)	(-1.01)	(1.51)

Continued on next page

Table OA5 (Cont.)

Credit Spreads and Aggregate Analyst Effects - Full Table

	All Ratings		AAA/A-	BBB/BB+	Single Agency	Multiple Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Continue from last page						
Interest Coverage k1		-8.280 **	-6.029	2.883	-15.016 ***	-3.672
		(-2.37)	(-0.70)	(0.73)	(-2.64)	(-1.02)
Interest Coverage k2		0.426	0.240	-0.525	1.829	-0.976
		(0.26)	(0.09)	(-0.24)	(0.78)	(-0.47)
Interest Coverage k3		0.941	-1.481	2.723 *	0.088	2.399
		(0.85)	(-1.55)	(1.72)	(0.06)	(1.58)
Interest Coverage k4		0.885	-0.038	0.435	-0.415	2.411 **
		(1.16)	(-0.12)	(0.45)	(-0.97)	(2.34)
Total Leverage		13.981	-51.882	64.341	-47.516	60.626
		(0.40)	(-1.21)	(0.86)	(-1.08)	(1.58)
Mkt. Value of Equity (log)		-29.468 ***	-15.153 **	-19.118 **	-36.803 ***	-24.900 ***
		(-6.29)	(-2.37)	(-2.50)	(-6.27)	(-4.26)
Equity Beta		-4.693	-22.575 ***	-3.383	-12.573 *	0.293
		(-0.92)	(-2.69)	(-0.46)	(-1.80)	(0.04)
Equity Volatility		233.308 ***	231.095 ***	213.748 ***	281.601 ***	203.759 ***
		(7.29)	(3.98)	(4.97)	(7.09)	(5.58)
Exp. Default Frequency		130.471 ***	96.795 ***	115.609 ***	95.949 ***	153.592 ***
		(6.35)	(3.34)	(3.69)	(3.47)	(5.89)
Stock Return (log)		-22.517 ***	-20.425	-21.018 *	-30.664 ***	-13.203
		(-2.79)	(-1.58)	(-1.75)	(-2.87)	(-1.30)
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.734	0.813	0.686	0.777	0.796	0.830
Observations	15,349	9,259	2,050	3,067	4,051	5,208
p-value for *t*-test Group 1 Aggr. Analyst Effects = Group 2 Aggr. Analyst Effects			<0.001		0.070	
p-value for *t*-test Adj. Credit Rating = Aggr. Analyst Effects	<0.001	0.057	0.007	0.911	0.931	0.027

Table OA6

Credit Spreads and Aggregate Analyst Effects - Alternative Specifications

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. All variables are defined in the Appendix. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	Firm Controls	Blume et al (1998) Controls	Baghai et al (forthcoming) Controls
	(1)	(2)	(3)
Adjusted Credit Rating	41.497 ***	30.017 ***	37.781 ***
	(21.86)	(13.55)	(17.38)
Aggregate Analyst Effects	34.650 ***	21.138 ***	29.722 ***
	(8.38)	(5.45)	(7.88)
Bond Duration	-0.902	0.837	-0.579
	(-0.75)	(0.72)	(-0.49)
Callable Bond Dummy	-27.083 ***	-12.307	-7.185
	(-2.68)	(-1.36)	(-1.01)
Bond Age	0.009 ***	0.009 ***	0.009 ***
	(3.01)	(3.14)	(3.68)
Time Since Last Trade	0.660 ***	0.037	0.384 **
	(4.35)	(0.23)	(2.37)
Interest Coverage k1		-9.663 ***	
		(-2.66)	
Interest Coverage k2		1.105	
		(0.68)	
Interest Coverage k3		0.885	
		(0.82)	
Interest Coverage k4		0.874	
		(1.06)	
Total Leverage		99.736 ***	56.653 ***
		(3.11)	(3.84)
Mkt. Value of Equity (log)		-21.919 ***	
		(-6.48)	
Equity Beta		-11.909 **	
		(-2.13)	
Equity Volatility		326.992 ***	243.413 ***
		(9.19)	(9.02)
Exp. Default Frequency			133.217 ***
			(7.11)
Stock Return (log)			-35.903 ***
			(-5.00)
Standard Firm Controls	Yes	No	No
Year-Quarter FE	Yes	Yes	Yes
R^2	0.751	0.796	0.802
Observations	13,317	9,425	12,681
p -value for *t* -test that Adj. Credit Rating = Aggr. Analyst Effects	0.044	0.004	0.008

Table OA7

Credit Spreads and Aggregate Analyst Effects - Only Firm-Quarters with No Split Ratings

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. All variables are defined in the Appendix. The sample includes only firm-quarter observations in which a firm does not have a split rating. Columns (1) and (2) include all observations. Columns (3) and (4) include only observations in which the credit rating is between AAA and A-, and between BBB and BB+, respectively. Columns (5) and (6) include only observations in which the firm is rated only by a single rating agency, and by more than one agency, respectively. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+	Single Agency	Multiple Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Adjusted Credit Rating	48.478 ***	32.561 ***	8.885 **	52.649 ***	35.024 ***	29.943 ***
	(24.13)	(12.80)	(2.33)	(9.91)	(11.14)	(9.81)
Aggregate Analyst Effects	35.597 ***	29.716 ***	-0.134	59.927 ***	36.259 ***	21.417 ***
	(7.96)	(6.61)	(-0.02)	(7.90)	(6.35)	(2.78)
Bond Duration	-0.901	2.307 **	3.012 **	2.918 **	3.131 **	0.609
	(-0.67)	(2.05)	(2.32)	(2.09)	(2.47)	(0.34)
Callable Bond Dummy	-30.227 ***	-2.431	24.647	11.408	4.506	4.328
	(-2.66)	(-0.25)	(1.49)	(1.01)	(0.42)	(0.32)
Bond Age	0.012 ***	0.012 ***	0.022 ***	0.013 ***	0.012 ***	0.013 **
	(3.71)	(3.54)	(4.53)	(3.92)	(2.77)	(1.97)
Time Since Last Trade	0.629 ***	-0.104	0.434	-0.088	-0.075	0.028
	(3.28)	(-0.58)	(0.79)	(-0.52)	(-0.29)	(0.09)
Interest Coverage k1		-13.124 ***	-3.285	-4.200	-19.589 ***	-5.270
		(-3.38)	(-0.39)	(-1.07)	(-3.57)	(-1.17)
Interest Coverage k2		-0.464	0.542	-0.743	1.088	-1.996
		(-0.25)	(0.20)	(-0.27)	(0.42)	(-0.79)
Interest Coverage k3		0.652	-1.475	1.949	0.842	2.063
		(0.53)	(-1.25)	(1.01)	(0.56)	(1.08)
Interest Coverage k4		0.645	-0.123	-0.345	-0.507	2.423 ***
		(0.83)	(-0.34)	(-0.48)	(-1.03)	(3.54)
Total Leverage		-22.963	-58.191	39.550	-65.354	54.306
		(-0.56)	(-1.22)	(0.49)	(-1.43)	(0.88)
Mkt. Value of Equity (log)		-25.531 ***	-13.750 *	-21.227 ***	-32.945 ***	-18.838 ***
		(-4.98)	(-1.75)	(-3.28)	(-4.90)	(-2.72)
Equity Beta		-25.587 ***	-30.489 **	-12.655	-19.672 ***	-25.835 ***
		(-4.23)	(-2.43)	(-1.46)	(-2.66)	(-3.07)
Equity Volatility		280.817 ***	240.566 ***	246.825 ***	270.489 ***	268.711 ***
		(8.12)	(3.25)	(4.36)	(6.46)	(5.79)
Exp. Default Frequency		112.047 ***	83.379 ***	144.706 ***	62.045 *	153.010 ***
		(4.69)	(2.94)	(3.26)	(1.73)	(4.51)
Stock Return (log)		-23.297 **	-21.891	-10.915	-39.606 ***	-7.398
		(-2.21)	(-1.49)	(-0.81)	(-3.12)	(-0.56)
Standard Firm Controls	No	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.725	0.806	0.673	0.800	0.796	0.833
Observations	8,421	5,064	1,449	1,833	2,771	2,293
p-value for *t*-test Group 1 Aggr. Analyst Effect = Group 2 Aggr. Analyst Effects			<0.001		0.122	
p-value for *t*-test Adj. Credit Rating = Aggr. Analyst Effects	0.002	0.455	0.049	0.230	0.795	0.251

Table OA8

Credit Spreads and Aggregate Analyst Effects - Only Firms That Never Had A Split Rating

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. All variables are defined in the Appendix. The sample includes only firm-quarter observations in which a firm does not have a split rating. Columns (1) and (2) include all observations. Columns (3) and (4) include only observations in which the credit rating is between AAA and A-, and between BBB and BB+, respectively. Columns (5) and (6) include only observations in which the firm is rated only by a single rating agency, and by more than one agency, respectively. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+
	(1)	(2)	(3)	(4)
Adjusted Credit Rating	39.778 ***	34.741 ***	5.614	27.916 **
	(13.35)	(7.79)	(1.00)	(2.42)
Aggregate Analyst Effects	27.878 ***	32.150 ***	-0.947	24.583 **
	(5.57)	(4.15)	(-0.13)	(2.21)
Bond Duration	2.088	4.135 ***	2.148	3.474
	(1.26)	(2.92)	(1.50)	(1.57)
Callable Bond Dummy	-17.761	-14.529	-20.896	30.625
	(-1.45)	(-0.96)	(-1.45)	(1.62)
Bond Age	0.017 ***	0.015 ***	0.010 **	0.020 ***
	(3.82)	(3.74)	(2.34)	(3.13)
Time Since Last Trade	0.168	-0.016	1.313	-0.129
	(0.54)	(-0.05)	(1.41)	(-0.59)
Interest Coverage k1		-33.766 ***	-11.114	1.254
		(-3.81)	(-0.88)	(0.11)
Interest Coverage k2		2.787	-1.749	2.371
		(0.90)	(-0.49)	(0.67)
Interest Coverage k3		-1.643	-1.234	-2.580
		(-1.04)	(-0.63)	(-1.30)
Interest Coverage k4		0.564	-0.613	1.181
		(0.93)	(-1.19)	(1.26)
Total Leverage		-73.228	-71.874	-174.160
		(-1.23)	(-0.84)	(-1.64)
Mkt. Value of Equity (log)		-11.166	-27.750 *	-32.762 ***
		(-1.19)	(-1.71)	(-2.60)
Equity Beta		-18.773 *	-34.155 *	3.615
		(-1.95)	(-1.69)	(0.24)
Equity Volatility		222.414 ***	222.204 **	162.176 *
		(4.22)	(2.18)	(1.85)
Exp. Default Frequency		47.956	519.618 ***	78.761
		(0.85)	(3.38)	(1.04)
Stock Return (log)		-58.296 ***	-6.957	-45.124 **
		(-3.19)	(-0.29)	(-2.03)
Standard Firm Controls	No	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
R^2	0.678	0.759	0.716	0.827
Observations	3,128	1,646	742	491
p-value for *t*-test Group 1 Aggr. Analyst Effect = Group 2 Aggr. Analyst Effects			0.056	
p-value for *t*-test Adj. Credit Rating = Aggr. Analyst Effects	0.015	0.644	0.178	0.646

Table OA9

Credit Spreads and Aggregate Analyst Effects: Pessimistic Analyst Count

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. Pessimism Count is defined as the difference between the raw numbers of relative pessimists and optimists using the estimated analyst fixed effects from an OLS regression of long-term credit ratings on analyst fixed effects, firm-quarter fixed effects, and agency-sector-quarter fixed effects on a backward-looking sample. All variables are defined in the Appendix. Columns (1) and (2) include all observations. Columns (3) and (4) include only observations in which the credit rating is between AAA and A-, and between BBB and BB+, respectively. Columns (5) and (6) include only observations in which the firm is rated only by a single rating agency, and by more than one agency, respectively. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+	Single Agency	Multiple Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Adjusted Credit Rating	48.691 ***	30.126 ***	9.205 ***	35.363 ***	30.239 ***	30.164 ***
	(26.62)	(13.81)	(3.86)	(6.81)	(10.95)	(12.24)
Pessimism Count	9.350 ***	6.370 ***	-0.485	7.984 ***	12.280 ***	2.661
	(4.73)	(3.54)	(-0.21)	(3.02)	(3.90)	(1.37)
Bond Duration	-3.063 **	0.751	3.622 ***	1.976	1.199	0.191
	(-2.30)	(0.68)	(3.34)	(1.48)	(1.02)	(0.13)
Callable Bond Dummy	-32.604 ***	1.337	26.164 *	9.269	12.405	-2.753
	(-2.85)	(0.15)	(1.82)	(0.81)	(1.20)	(-0.23)
Bond Age	0.006 **	0.009 ***	0.019 ***	0.012 ***	0.008 **	0.010 **
	(2.19)	(3.27)	(4.59)	(3.03)	(2.44)	(2.33)
Time Since Last Trade	0.837 ***	-0.067	0.406	-0.056	-0.102	0.006
	(5.38)	(-0.43)	(0.99)	(-0.29)	(-0.43)	(0.02)
Interest Coverage k1		-9.193 ***	-4.941	2.125	-16.156 ***	-4.284
		(-2.59)	(-0.58)	(0.51)	(-2.83)	(-1.19)
Interest Coverage k2		-0.266	0.554	-2.081	0.337	-1.289
		(-0.16)	(0.21)	(-0.96)	(0.14)	(-0.61)
Interest Coverage k3		0.071	-1.636 *	1.365	-0.770	1.634
		(0.06)	(-1.69)	(0.72)	(-0.48)	(1.04)
Interest Coverage k4		1.020	-0.052	0.475	-0.280	2.473 **
		(1.37)	(-0.16)	(0.42)	(-0.63)	(2.35)
Total Leverage		8.425	-53.615	70.443	-45.642	52.668
		(0.24)	(-1.23)	(0.88)	(-1.03)	(1.38)
Mkt. Value of Equity (log)		-32.819 ***	-16.567 **	-24.700 ***	-39.757 ***	-27.957 ***
		(-6.92)	(-2.50)	(-2.90)	(-6.68)	(-4.77)
Equity Beta		-2.508	-21.987 ***	1.079	-9.949	2.222
		(-0.48)	(-2.72)	(0.13)	(-1.41)	(0.33)
Equity Volatility		232.989 ***	224.082 ***	234.448 ***	291.157 ***	196.237 ***
		(7.18)	(3.90)	(4.95)	(7.21)	(5.29)
Exp. Default Frequency		130.196 ***	101.730 ***	98.356 ***	93.575 ***	154.972 ***
		(6.33)	(3.80)	(3.04)	(3.32)	(6.07)
Stock Return (log)		-21.799 ***	-22.066 *	-23.801 *	-32.644 ***	-11.288
		(-2.74)	(-1.72)	(-1.96)	(-3.05)	(-1.14)
Standard Firm Controls	No	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.728	0.810	0.686	0.766	0.791	0.828
Observations	14,902	9,039	1,968	2,998	4,051	4,988

Table OA10

Credit Spreads and Aggregate Analyst Effects - Firm Fixed Effects

The table reports coefficient estimates from OLS regressions. The dependent variable is Credit Spread, the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm. All variables are defined in the Appendix. Columns (1) and (2) include all observations. Columns (3) and (4) include only observations in which the credit rating is between AAA and A-, and between BBB and BB+, respectively. Columns (5) and (6) include only observations in which the firm is rated only by a single rating agency, and by more than one agency, respectively. Standard firm controls are long-term leverage, profit margin, market-to-book, sales (log), tangibility, tax shields, carry forwards, and R&D/Sales. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	All Ratings		AAA/A-	BBB/BB+	Single Agency	Multiple Agencies
	(1)	(2)	(3)	(4)	(5)	(6)
Adjusted Credit Rating	39.986 ***	18.439 ***	7.338 **	32.309 ***	22.801 ***	14.175 ***
	(17.69)	(7.31)	(2.27)	(4.83)	(6.28)	(3.36)
Aggregate Analyst Effects	37.041 ***	11.387 **	-2.301	22.320 ***	22.982 ***	-1.733
	(8.57)	(2.36)	(-0.42)	(2.72)	(3.51)	(-0.24)
Bond Duration	1.303	2.274 **	3.820 ***	4.195 ***	3.213 ***	2.048
	(1.25)	(2.20)	(3.55)	(2.92)	(2.87)	(1.43)
Callable Bond Dummy	14.489	10.908	47.249 *	16.607	7.676	5.707
	(1.40)	(0.84)	(1.94)	(1.03)	(0.63)	(0.31)
Bond Age	0.020 ***	0.017 ***	0.022 ***	0.017 ***	0.015 ***	0.018 ***
	(6.45)	(4.91)	(4.22)	(2.99)	(3.37)	(3.67)
Time Since Last Trade	0.519 ***	-0.121	0.244	-0.099	-0.141	-0.034
	(4.12)	(-0.72)	(0.61)	(-0.58)	(-0.61)	(-0.14)
Interest Coverage k1		2.894	1.855	12.338 **	4.282	0.202
		(0.81)	(0.21)	(2.27)	(0.59)	(0.05)
Interest Coverage k2		-2.880	-8.193 **	-5.994 *	-0.146	-6.502 **
		(-1.48)	(-2.35)	(-1.80)	(-0.05)	(-2.24)
Interest Coverage k3		0.772	-1.236	0.538	1.853	1.745
		(0.63)	(-0.93)	(0.27)	(1.11)	(1.05)
Interest Coverage k4		0.049	-0.068	-2.171	-0.975	1.830
		(0.08)	(-0.23)	(-0.94)	(-1.44)	(1.64)
Total Leverage		4.929	23.802	-0.647	-75.422	66.526
		(0.10)	(0.43)	(-0.01)	(-0.94)	(1.22)
Mkt. Value of Equity (log)		-66.788 ***	-62.651 ***	-61.255 ***	-81.902 ***	-65.448 ***
		(-6.97)	(-4.23)	(-3.16)	(-5.72)	(-5.64)
Equity Beta		-2.121	-3.412	-13.183 *	-4.838	-2.780
		(-0.49)	(-0.53)	(-1.91)	(-0.95)	(-0.46)
Equity Volatility		192.036 ***	283.876 ***	205.826 ***	208.787 ***	173.265 ***
		(7.48)	(4.19)	(5.35)	(4.02)	(6.95)
Exp. Default Frequency		117.053 ***	47.090 **	87.405 **	96.036 ***	120.813 ***
		(5.25)	(1.97)	(2.39)	(3.06)	(4.60)
Stock Return (log)		0.590	1.180	-11.059	-6.146	5.028
		(0.08)	(0.09)	(-0.89)	(-0.60)	(0.57)
Standard Firm Controls	No	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.844	0.880	0.798	0.866	0.891	0.893
Observations	15,349	9,259	2,050	3,067	4,051	5,208
p-value for *t*-test Group 1 Aggr. Analyst Effects = Group 2 Aggr. Analyst Effects			0.012		0.012	
p-value for *t*-test Adj. Credit Rating = Aggr. Analyst Effects	0.414	0.075	0.016	0.117	0.969	0.012

Table OA11

Future Bond Returns and Aggregate Analyst Effects - Full Table

The table reports coefficient estimates from OLS regressions. The dependent variable is the forward change in the natural logarithm of Credit Spread (the firm-level volume-weighted average of the credit spreads of all outstanding bonds issued by the firm), measured over the interval indicated in the column heading (in quarters). S_{av} is the firm's average credit spread from quarter t-13 to t-2. All variables are defined in the Appendix. Robust t-statistics double-clustered at the firm and quarter levels are reported in parentheses below the coefficients. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

	$\ln(S_{t+1}) - \ln(S_t)$	$\ln(S_{t+4}) - \ln(S_t)$	$\ln(S_{t+8}) - \ln(S_t)$	$\ln(S_{t+12}) - \ln(S_t)$	$\ln(S_{t+1}) - \ln(S_t)$	$\ln(S_{t+4}) - \ln(S_t)$	$\ln(S_{t+8}) - \ln(S_t)$	$\ln(S_{t+12}) - \ln(S_t)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Adjusted Credit Rating	-0.004	-0.012 *	-0.016	-0.025 **	-0.004	-0.010	-0.014	-0.027 **
	(-1.34)	(-1.78)	(-1.59)	(-2.20)	(-1.38)	(-1.51)	(-1.32)	(-2.31)
Aggr. Analyst Effects	-0.009 **	-0.025 **	-0.043 ***	-0.046 **	-0.011 **	-0.025 **	-0.041 **	-0.039
	(-2.09)	(-2.18)	(-2.60)	(-2.10)	(-2.46)	(-1.99)	(-2.46)	(-1.63)
$\ln(S_{t-1})-\ln(S_{av})$					-0.021	-0.066 **	-0.172 ***	-0.130 **
					(-0.92)	(-2.13)	(-3.43)	(-2.55)
Bond Duration	-0.011 ***	-0.018 ***	-0.030 ***	-0.040 ***	-0.012 ***	-0.020 ***	-0.032 ***	-0.042 ***
	(-3.28)	(-3.99)	(-4.29)	(-6.09)	(-3.26)	(-3.94)	(-4.25)	(-5.32)
Callable Bond Dummy	-0.029	-0.088 ***	-0.116 ***	-0.155 ***	-0.021	-0.073 ***	-0.118 ***	-0.164 ***
	(-1.50)	(-3.83)	(-3.62)	(-3.47)	(-1.33)	(-3.24)	(-3.56)	(-3.43)
Bond Age	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 **	-0.000 **	-0.000 ***
	(-2.65)	(-3.40)	(-3.79)	(-4.03)	(-2.80)	(-2.32)	(-2.46)	(-3.34)
Time Since Last Trade	0.000	0.002	-0.000	-0.001	0.001	0.002 *	0.001	0.000
	(0.24)	(1.57)	(-0.35)	(-1.16)	(1.38)	(1.83)	(0.70)	(0.18)
Long-Term Leverage	-0.076 *	-0.145	-0.218	-0.351	-0.086 **	-0.148	-0.250	-0.291
	(-1.71)	(-1.59)	(-1.21)	(-1.35)	(-2.46)	(-1.44)	(-1.26)	(-1.13)
Profit Margin	-0.034 *	-0.000	0.054	0.114	-0.037 *	0.006	0.030	0.089
	(-1.73)	(-0.01)	(0.70)	(0.98)	(-1.69)	(0.12)	(0.37)	(0.80)
Market-to-Book	-0.003	0.004	0.026	0.033	-0.005	-0.002	0.009	0.007
	(-0.31)	(0.29)	(0.98)	(0.86)	(-0.60)	(-0.13)	(0.32)	(0.18)
Sales (log)	-0.002	-0.006	-0.033 **	-0.035	-0.005	-0.007	-0.044 **	-0.050 **
	(-0.34)	(-0.59)	(-2.07)	(-1.50)	(-0.68)	(-0.60)	(-2.47)	(-1.98)
Tangibility	0.037 **	0.038	-0.001	-0.083	0.031	0.021	-0.058	-0.132
	(1.99)	(1.22)	(-0.01)	(-1.05)	(1.60)	(0.60)	(-1.05)	(-1.56)
Taxshields	0.010	0.127	0.328	0.495	0.017	0.143	0.433	0.437
	(0.13)	(0.85)	(1.16)	(1.28)	(0.20)	(0.85)	(1.36)	(1.03)
Carryforwards	-0.018	-0.088	-0.113	-0.195	-0.026	-0.077	-0.137	-0.261
	(-0.89)	(-1.62)	(-1.03)	(-1.09)	(-1.09)	(-1.31)	(-1.14)	(-1.36)
R&D/Sales	0.023	-0.232 *	-0.701 ***	-1.397 ***	-0.030	-0.223	-0.765 ***	-1.397 ***
	(0.23)	(-1.75)	(-3.21)	(-4.28)	(-0.30)	(-1.43)	(-2.91)	(-3.99)

Continued on next page

Table OA11 (Cont.)

Future Bond Returns and Aggregate Analyst Effects - Full Table

	$\ln(S_{t+1}) - \ln(S_t)$	$\ln(S_{t+4}) - \ln(S_t)$	$\ln(S_{t+8}) - \ln(S_t)$	$\ln(S_{t+12}) - \ln(S_t)$	$\ln(S_{t+1}) - \ln(S_t)$	$\ln(S_{t+4}) - \ln(S_t)$	$\ln(S_{t+8}) - \ln(S_t)$	$\ln(S_{t+12}) - \ln(S_t)$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Continue from last page								
Interest Coverage k1	0.002	0.016 **	0.025 *	0.029	0.001	0.019 **	0.032 **	0.028
	(0.44)	(2.19)	(1.83)	(1.64)	(0.25)	(2.15)	(2.11)	(1.61)
Interest Coverage k2	0.001	-0.003	-0.007	-0.006	-0.001	-0.003	-0.006	-0.006
	(0.33)	(-0.87)	(-0.94)	(-0.61)	(-0.28)	(-0.54)	(-0.65)	(-0.54)
Interest Coverage k3	-0.001	0.001	0.002	-0.002	-0.000	0.000	0.001	-0.001
	(-0.60)	(0.33)	(0.36)	(-0.30)	(-0.06)	(0.08)	(0.22)	(-0.06)
Interest Coverage k4	-0.000	-0.002 **	-0.002	-0.000	-0.001	-0.002	-0.000	0.000
	(-0.30)	(-2.00)	(-1.15)	(-0.08)	(-0.51)	(-1.34)	(-0.18)	(0.02)
Total Leverage	0.072	0.158	0.146	0.312	0.080 *	0.151	0.219	0.315
	(1.60)	(1.61)	(0.79)	(1.27)	(1.95)	(1.48)	(1.13)	(1.37)
Mkt. Value of Equity (log)	0.001	0.001	0.011	0.002	0.007	0.006	0.021	0.011
	(0.19)	(0.11)	(0.53)	(0.06)	(0.88)	(0.44)	(0.91)	(0.34)
Equity Beta	-0.002	0.005	0.021	0.081 **	0.002	0.001	0.021	0.049
	(-0.20)	(0.26)	(0.88)	(2.33)	(0.21)	(0.04)	(0.80)	(1.49)
Equity Volatility	-0.059	-0.052	-0.090	-0.431 **	-0.063 *	0.004	-0.021	0.014
	(-1.46)	(-0.64)	(-0.81)	(-1.97)	(-1.73)	(0.04)	(-0.17)	(0.07)
Exp. Default Frequency	0.023	0.041	0.064	-0.171	0.033	0.053	0.082	-0.199 *
	(0.57)	(0.48)	(0.72)	(-1.48)	(0.78)	(0.62)	(0.95)	(-1.70)
Stock Return (log)	0.010	-0.023	-0.060	-0.125 **	0.007	-0.032	-0.075 *	-0.131 **
	(0.80)	(-0.96)	(-1.53)	(-2.33)	(0.52)	(-1.30)	(-1.80)	(-2.11)
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.255	0.593	0.680	0.639	0.271	0.617	0.704	0.646
Observations	8,358	6,826	5,312	4,087	7,327	5,914	4,538	3,419

Table OA12
Accuracy: Cross-Sectional Analysis - Full Table

The table reports coefficient estimates from OLS regressions splitting the sample at the median value of the variable reported at the top of the column. The dependent variable is Accuracy, the product of -1 times Optimism and the forward change in credit spreads over 3 years, measured starting at the end of the quarter. All variables are defined in the Appendix. Robust t-statistics clustered at the firm-quarter level are reported in parentheses below the coefficients. For each split sample, we also report the two-tailed *p* -value of a two-sample *t* -test for equality of the coefficient estimates across the two subsamples. Constant included. Significance at the 1%, 5%, and 10% levels is denoted by ∗∗∗, ∗∗, and ∗, respectively.

	Total Assets		Firm Age		Number of Segments		Number of Equity Analysts		Equity Analysts' Earnings Forecast Dispersion	
	Low	High	Low	High	Low	High	Low	High	Low	High
MBA	109.603 ***	0.170	89.882 **	4.464	-22.836	68.911	94.446 **	40.541	-10.170	129.837 ***
	(2.83)	(0.01)	(2.26)	(0.18)	(-0.68)	(1.64)	(2.56)	(1.41)	(-0.37)	(3.60)
Analyst Age	-2.347	-0.137	-5.561 ***	4.738 **	-5.818 ***	2.334	1.087	-3.911 **	-2.738	1.897
	(-1.13)	(-0.07)	(-2.66)	(2.49)	(-2.60)	(1.05)	(0.45)	(-2.53)	(-1.46)	(0.75)
Female	154.720 **	-2.044	36.649	52.497 *	-87.125 *	93.484 **	70.033	15.244	12.199	70.326 *
	(2.57)	(-0.08)	(0.81)	(1.87)	(-1.65)	(2.39)	(1.33)	(0.62)	(0.40)	(1.68)
Analyst Tenure Covering the Firm	-12.791	-1.787	-26.701 ***	1.395	-0.369	-18.960 *	-16.415	-8.166	-1.011	-22.150 *
	(-1.07)	(-0.30)	(-2.61)	(0.20)	(-0.03)	(-1.94)	(-1.37)	(-1.43)	(-0.16)	(-1.85)
Agency Tenure Covering the Firm	-4.880	-4.301 **	-8.075	-0.068	-4.666	-5.135	-6.094	1.707	2.370	-21.504 ***
	(-0.99)	(-2.18)	(-1.62)	(-0.03)	(-1.21)	(-1.62)	(-1.50)	(0.66)	(1.01)	(-4.09)
Analyst Tenure Covering the Industry	20.456 *	-9.247 *	24.137 **	-8.876	8.566	18.730 *	27.439 **	-12.670 **	-5.296	10.186
	(1.81)	(-1.81)	(2.48)	(-1.42)	(0.89)	(1.73)	(2.28)	(-2.04)	(-0.82)	(0.99)
Analyst Tenure in the Agency	5.150	3.112	9.516 ***	-3.548	7.630 **	2.993	-1.642	9.745 ***	7.398 **	1.744
	(1.26)	(1.32)	(2.98)	(-1.57)	(2.49)	(0.74)	(-0.41)	(4.13)	(2.29)	(0.53)
N. of Firms Currently Covered	4.698 ***	1.013	4.045 **	5.125 ***	5.462 ***	2.109	4.628 ***	2.820 **	5.779 ***	3.193 **
	(2.69)	(0.84)	(2.14)	(3.97)	(3.20)	(1.12)	(2.75)	(2.21)	(4.10)	(2.02)
Agency = Moody's	-77.440 **	-30.890 *	-4.806	-67.925 ***	3.867	-15.275	-67.244 *	-32.984	-36.287	-27.464
	(-2.06)	(-1.65)	(-0.14)	(-3.71)	(0.13)	(-0.41)	(-1.95)	(-1.64)	(-1.46)	(-1.00)
Agency = SP	-119.776 ***	40.269 **	-36.428	17.570	-2.499	-32.222	-67.114 *	2.079	-5.505	-9.274
	(-3.36)	(2.16)	(-1.22)	(0.96)	(-0.10)	(-0.94)	(-1.84)	(0.11)	(-0.21)	(-0.31)
Firm-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.054	0.025	0.040	0.037	0.035	0.051	0.040	0.051	0.032	0.058
Observations	3,336	3,334	3,342	3,341	2,673	2,575	3,162	3,148	3,056	3,066