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Large shareholders and credit ratings☆

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ABSTRACT

This paper addresses regulatory concerns that large shareholders of credit rating agencies can influence the rating process. Unlike Standard & Poor's, which is a privately held division of McGraw-Hill, Moody's is a public company listed on the NYSE. From 2001 to 2010, Moody's has two shareholders, Berkshire Hathaway and Davis Selected Advisors, which collectively own about 23.5% of Moody's. Moody's ratings on bonds issued by important investee firms of these two stable large shareholders are more favorable relative to S&P, as well as Fitch, ratings. We exploit Moody's initial public offering in 2000 to address endogeneity and to mitigate concerns that the results are driven by issuer characteristics or by the greater informativeness of Moody's ratings. S&P's parent, McGraw-Hill, has a large shareholder for much less time, and some weak evidence exists that S&P ratings are relatively more favorable toward the owners of McGraw-Hill. These findings are consistent with regulatory concerns about the ownership and governance of rating agencies, especially those that are publicly listed.

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1. Introduction

The aftermath of the 2008–2009 financial crisis has brought an intense scrutiny of the credit rating business and several proposals to address the industry's conflicts of interest. Although much regulatory and academic attention has been devoted to the conflict of interest that originates from the issuer-pay business model of rating agencies, another conflict of interest, related to ownership, has also surfaced. In 2011, a Securities and Exchange Commission (SEC) investigation found that "two of the larger NRSROs [nationally recognized statistical rating organizations] did not have specific policies and procedures for managing the potential conflict of issuers that may be significant shareholders of the NRSRO."[1] Subsequent media reports have alleged that Moody's has been slow to downgrade Wells Fargo, a portfolio company of Berkshire Hathaway, the largest shareholder of Moody's.[2]

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[1] See U.S. Securities and Exchange Commission (2011). SEC refers to the accredited rating agencies such as Moody's, S&P and Fitch as Nationally Recognized Statistical Rating Organizations.

[2] See Forbes (2012).

The concern that large shareholders can influence the rating process is not new. In 1984, Security Pacific Bank proposed acquiring Duff and Phelps, the fourth largest credit rating agency at that time. The Federal Reserve Board discouraged the acquisition, ruling that, if the merger were to take place, Duff and Phelps would be prohibited from issuing public ratings because Security Pacific Bank would be effectively rating its own borrowers (Edrington and Yawitz, 1987). Since then, regulators have underemphasized this concern, presumably under the assumption that if the rating agency were publicly held by diffuse owners, or by a nonfinancial entity, the potential for such conflicts is small.

In this paper, we study the ownership structure of Moody's and Standard & Poor's (S&P), by far the two largest credit rating agencies, and examine whether they are influenced by the economic interests of their owners. Moody's was founded as a private company in 1900, acquired by Dun & Bradstreet (D&B) in 1962, and remained one of its divisions until October 4, 2000, when it was spun off and listed on the NYSE. S&P has been a fully owned division of McGraw-Hill, a publicly traded company, since 1966. An investor with a direct stake in a rating agency, as in the case of Moody's, can exert greater influence on the rating process than via an indirect stake, as in the case of S&P through its ownership by McGraw-Hill. Consequently, we begin our analysis with an examination of Moody's ownership structure after its initial public offering (IPO) in 2000. Ten shareholders had at least a 5% stake in Moody's from the fourth quarter of 2000 to the fourth quarter of 2010. Among these ten shareholders, Berkshire Hathaway and Davis Selected Advisors are unique. First, they are the two largest shareholders. On average, Berkshire owns 16.4% and Davis owns 6.9% of Moody's. Second, their stake is stable, as both of them own 5% or more of Moody's for the entire sample period. Although both these stable large shareholders of Moody's are investment management firms, their investing styles differ. Berkshire holds an average of only 32 firms per quarter, and Davis holds 181.

Any preferential treatment by Moody's toward its shareholders is more likely to be observed when the shareholding is large and the shareholder has a long term interest in Moody's. We identify such stable large shareholders as those that hold at least 5% of Moody's for the past 12 quarters. As most of the shareholders are asset management firms with no bond issues, we examine Moody's preferential treatment of bond issues made by the large shareholders' investee or portfolio firms. We identify such large investee firms as those that account for at least 0.25% of the investment management firm's portfolio for each of the past four quarters.[3] Bonds issued by large investee firms of Moody's stable large shareholders are labeled as *Moody's Related*. We investigate whether Moody's assigns favorable ratings to *Moody's Related* bonds.

Several factors are likely to influence Moody's ratings, ranging from macroeconomic issues such as recessions or booms to competitive pressures in the industry, besides firm- and bond-specific characteristics. To control for a host of these characteristics, we use a difference-in-differences approach by benchmarking Moody's ratings to those of S&P, which is Moody's closest competitor.[4] Unobservable and omitted factors that affect credit ratings are likely to impact both Moody's and S&P's ratings and, hence are, unlikely to influence the difference between their ratings on the same bond. To capture such relative ratings, we create a variable, *S&P – Moody's Rating*, which is equal to S&P's numerical rating minus Moody's numerical rating on the same bond. Because we assign lower numerical values to higher ratings, a positive value for *S&P – Moody's Rating* means that Moody's assigns a favorable rating to the bond relative to S&P.

We begin with a study of the initial ratings on 9,550 new bonds issued from 2001 to 2010. After controlling for firm and issue characteristics and industry and time fixed effects, Moody's ratings are 0.467 notches higher than S&P for *Moody's Related* bonds. This difference is economically significant as it translates to a reduction of 12 basis points in offering yield and an annual interest saving of $400,000 per bond for the average issuer. Such relatively better ratings are robust to various criteria for identifying *Moody's Related* bonds to using Fitch as a benchmark and to Fama and Macbeth estimations instead of pooled regressions.

If Moody's relatively favorable ratings are influenced by the economic interests of its stable large shareholders, they should increase with the size of the large shareholder's stake and the time for which the large shareholder holds the investee firms. In line with this conjecture, we find that Moody's relatively favorable ratings increase in both the magnitude and the duration of the ownership stake for which the large investee is held. We also find evidence that Moody's relative ratings are more favorable for Berkshire Hathaway's large investees relative to Davis Selected Advisors. This is consistent with Moody's according greater consideration to large shareholders that hold a higher fraction of Moody's shares. Lastly, we find evidence that Moody's is more likely to assign favorable ratings to *Moody's Related* bonds when the better ratings are more valuable, as captured by bonds that fall on the boundary between speculative grade and investment grade.

Next, we investigate whether Moody's favorable treatment toward its stable large shareholders is also observed in the level and timing of its ratings on outstanding bonds. For example, focusing on instances in which Moody's and S&P change ratings on the same bonds, we find that Moody's is slower than S&P by 71 days in downgrading *Moody's Related* bonds. No significant difference exists between the two agencies in the timing of upgrades.

One possible explanation for our findings is that unobservable variables can jointly influence large shareholders' stake in investee firms and their credit ratings. The favorable ratings for *Moody's Related* bonds might not be

[3] We perform robustness around these criteria. Different cutoffs lead to qualitatively similar results.

[4] For the year 2010, Moody's and S&P have approximately 1 million and 1.2 million ratings reported outstanding, respectively. These magnitudes far exceed those of the third largest rating agency, Fitch, with approximately 500,000 ratings reported outstanding (see U.S. Securities and Exchange Commission, 2011).

due to ownership but are instead attributable to omitted firm characteristics that drive both Moody's rating decisions and its large shareholders' investment decisions. For example, improved firm performance that leads Berkshire Hathaway to increase its investment in a portfolio firm could also drive Moody's to assign a higher credit rating on this firm.

To address this concern, we examine Moody's ratings on bonds issued by large investee firms of Berkshire Hathaway and Davis Selected Advisors, both before and after Moody's IPO. The IPO event is arguably exogenous and independent of the credit rating business.[5] We find no evidence that Moody's assigns favorable ratings to large investee firms of Berkshire Hathaway and Davis Selected Advisors in the period before the establishment of the relationship with Moody's. However, after the establishment of the relation with Moody's in the post-IPO period, the same issuers get relatively favorable ratings from Moody's. This finding suggests that ownership in Moody's, as opposed to potentially omitted common firm characteristics, is more likely to account for its relatively favorable ratings.

Another interpretation of the results is that the relatively favorable ratings are due to Moody's superior information about the large investee firms, potentially through the channel of common shareholders. In this case, the relatively favorable ratings by Moody's on related bonds would reflect better information, not bias. We conduct two tests to examine this conjecture. First, following Duffie, Saita, and Wang (2007), we calculate a firm's expected default frequency and find no evidence that relatively favorable ratings for *Moody's Related* bonds are associated with a lower expected default frequency. Second, we use changes in the spreads of credit default swap (CDS) contracts around ratings changes to measure the informativeness of such changes, and we find no evidence that Moody's rating changes on related bonds are associated with greater changes in CDS spreads. In summary, little evidence exists to suggest that Moody's ratings on *Moody's Related* bonds are more informative about expected credit outcomes.

A question arises as to how the influence or expectations of these large shareholders are communicated to Moody's. Large holdings of Berkshire and Davis are publicly available via their 13F filings. Further, a large investee firm, in its interaction with Moody's around a new bond issuance, has an incentive to reveal to Moody's that Berkshire and Davis are their long term owners. We would also expect Moody's investor relations personnel to be in contact with Berkshire and Davis, given their stature as large and stable shareholders. In meetings with Moody's, Berkshire and Davis could reveal the names of their important portfolio firms that are in the process of considering a new bond issue or face prospective rating changes of existing bonds.

One can ask why a Moody's analyst would cater to such explicit or implicit influence of large shareholders. Edmans (2014) points out that large shareholders can exert influence through the threat of exit and voice instead of actual exit and voice. The threat of intervening or selling their stakes could be sufficient to induce managerial behavior so that the act of doing so is not necessary. Given the large and visible stakes held by Berkshire Hathaway and Davis Selected Advisors, the threat of exit or even of substantial sell off can be sufficient motivation for Moody's managers. Also, the favorable bias could be more implicit. A Moody's analyst could consider Berkshire Hathaway and Davis Selected Advisors as savvy investors, given their large and stable stakes in Moody's. The analyst thus could be positively biased toward other firms that these large shareholders have invested in, i.e., their large investees. Finally, anecdotal evidence suggests pressure on analysts to cater to the interests of important clients.[6] Such pressure could have spilled over to a policy of favoring the economic interests of its important shareholders.

Though S&P is not public, it is a subsidiary of McGraw-Hill, a publicly traded firm. Large shareholders potentially exert greater influence when they are direct owners, as in the case of Moody's, as opposed to when they are indirect owners, as in the case of S&P. We examine the role of indirect ownership by studying whether S&P assigns favorable ratings to large investee firms of McGraw-Hill's stable large shareholders. We find one shareholder, Goldman Sachs, that is classified as a stable large shareholder of McGraw-Hill for three quarters over the sample period. S&P assigns relatively favorable ratings to the bonds issued by large investees of Goldman Sachs. This suggests that indirect ownership is also associated with favorable credit ratings.

We find these biases in the relatively transparent world of bond ratings, in which rating models have been established for years and the potential for information asymmetry between the rating agency and bond investors is relatively small. Because structured finance products represent the fastest growing segment for rating agencies during the sample period, we also examine whether rating agencies' bias toward the economic interests of their owners is observed in structured finance products. For a sample of commercial mortgage backed securities (CMBSs) issued between 2001 and 2010 and rated by Moody's and S&P, we find that Moody's is relatively more favorable toward their related tranches. No evidence exists that S&P is relatively more favorable toward tranches issued by large investees of McGraw-Hill's stable large shareholders during the few quarters when McGraw-Hill has a stable large shareholder.

[5] The decision to spin off Moody's was one in a series of spin offs conducted by its parent, Dun and Bradstreet (D&B), as part of an overall corporate restructuring plan. Prior to Moody's IPO, D&B in 1996 had spun-off A. C. Nielson, the market research firm and Cognizant Corporation, the technology consultancy. In 1998, D&B spun-off R.H. Donnelley, a yellow pages advertiser. D&B cites continuing pressure from institutional investors to increase shareholder value by becoming a more focused firm as a significant driver of the Moody's IPO (Gilpin, 1999). Therefore, it is difficult to argue that the dramatic change in Moody's ownership structure reflects underlying forces in the credit rating business, especially as no such ownership changes have been seen for S&P.

[6] See, for example, McLean and Nocera (2010, p. 116). Kedia, Rajgopal, and Zhou (2014) discuss that Moody's culture changed after it went public in 2000. It went "from [a culture] resembling a university academic department to one that values revenues at all costs," said Eric Kolchinsky, a former managing director of Moody's (Financial Crisis Inquiry Commission, 2011, p. 207).

However, our results on CMBS, have to be interpreted with caution because they are subject to potential selection bias. Unlike corporate bonds, which tend to be rated by both Moody's and S&P, structured products are not always rated by both agencies, creating incentives for issuers to shop for ratings. Therefore, the difference-in-differences tests can be implemented only for the sample of CMBS, with ratings from both Moody's and S&P, which account for less than 50% of the full sample. Structured products potentially create greater ownership related conflicts of interest because a large majority of the structured products are opaque and require a rating from only one rating agency.

Our paper, to the best of our knowledge, is the first to identify a conflict of interest related to the economic interests of a rating agency's owners. The evidence in this study is consistent with recent regulatory concerns about the potential bias of rating agencies toward their significant shareholders. Along with conflicts of interest related to the issuer-pay model, ownership-related conflicts of interest significantly influence the rating process.

The remainder of the paper is organized as follows. Section 2 discusses the literature and Section 3 describes the data. Section 4 and Section 5 report our empirical analyses of ratings on new and outstanding bonds, respectively. Section 6 discusses alternative explanations, Section 7 examines the effect of indirect ownership, Section 8 studies structured finance products, and Section 9 discusses the economic implications of the findings and concludes.

2. Literature review

The paper is related to the literature on large shareholders and on credit ratings. Large shareholders can play an important role in firm governance as their stakes give them incentives to bear the cost of monitoring managers (Shleifer and Vishny, 1986). Admati and Pfleiderer (2010) and Edmans (2009) show that large shareholders can also exert governance through the threat of exit. A large literature empirically examines the effect of large shareholder activism and, recently, of hedge fund activism [for surveys, see Gillan and Starks (1998) and Brav, Jiang, and Kim (2010), respectively].

However, large shareholders can also extract private benefits of control and influence the firm in following objectives other than value maximization. Barclay and Holderness (1989) find that large blocks trade at a premium of 20%, reflecting the private benefits associated with them. Subsequent work by Mikkelson and Regassa (1991) and Chang and Mayers (2012) confirms the existence of such premiums. In the context of closed-end mutual funds, Barclay, Holderness, and Pontiff (1993) finds via an analysis of press reports, that blockholders receive a variety of private benefits leading to significantly larger discounts on the fund. Several papers show the importance of blockholders in tunneling resources in overseas corporations (e.g., Dyck and Zingales, 2002; Nenova, 2003; Atanasov, 2005). Therefore, whether large shareholders are associated with enhanced monitoring or private benefits is an empirical matter. In the context of Moody's, this issue impacts not just its shareholders but also potentially the financial system, because ratings affect a firm's capital structure (Kisgen, 2006), its cost of capital (Kisgen and Strahan, 2010), and capital requirements for insurers and banks. Any bias in ratings can undermine the stability and confidence of the financial system.

A vast literature exists on the conflicts faced by credit rating agencies. Researchers (e.g., Mathis, McAndrews, and Rochet, 2009; Xia, 2010; Kraft, 2011; Bonsall, 2012; Jiang, Stanford, and Xie, 2012; He, Qian, and Strahan, 2012; Cornaggia and Cornaggia, 2013) have focused on compromised ratings on account of the issuer-pay model, whereby rating agencies are paid by the issuers seeking ratings. Others (e.g., Benmelech and Dlugosz, 2009; Bongaerts, Cremers, and Goetzmann, 2012) have highlighted the impact of ratings shopping, which enables issuers to go with the agency with the most favorable ratings.

The rating agencies usually counter allegations of conflict of interest by invoking the high cost of damaging their reputation. The reputation capital view argues that as the eventual success and survival of credit rating agencies depends on their credibility, these agencies would not wantonly compromise the quality of their ratings for short-run gains (Smith and Walter, 2001; White, 2009). However, several papers question the reputation capital argument. Becker and Milbourn (2011) find that increased competition from Fitch, the third largest rating agency, is associated with poorer quality ratings from both the incumbent agencies, Moody's and S&P. Kedia, Rajgopal, and Zhou (2014) show that increased market pressures after Moody's went public in 2000 resulted in Moody's giving out relatively favorable ratings to their clients. Partnoy (1999) counters the reputation capital view by proposing an alternate regulatory license view. He argues that Moody's and S&P have survived and prospered for so long not because ratings are necessarily informative, accurate, or credible, but because ratings enable issuers to reduce the costs of complying with regulations.

Partnoy (1999) lists three prominent examples of such licenses. First, in 1991, the SEC adopted a rule that requires money market funds to invest no more than 5% of its holdings in second-tier commercial paper, in which the tier structure depends on the ratings assigned to such paper by one or more of the NRSROs. Second, insurance companies that want to avoid paying a capital charge to the National Association of Insurance Commissioners (NAIC) are required to hold securities that are highly rated by one or more of the NRSROs. A similar regulation applies to risk-based capital held by banks. Third, the vast markets in asset-based securities and structured investment vehicles would not have arisen had the regulators not sanctioned holding investments in these securities as long as they were highly rated by an NRSRO.

Moreover, as regulations impose costs on the entry of new rating agencies, the market power of the two big raters, S&P and Moody's, increased over time. Moody's, S&P, and Fitch were the first set of NRSROs to be approved. Langohr and Langohr (2008, p. 384) argue that the three rating agencies dominate the market because the process of gaining regulatory approval from the SEC to be designated as an NRSRO is onerous. Partnoy (1999) cites the example of IBCA Ltd., a British firm recognized for ratings of bank debt but not for ratings of corporate debt, which

Table 1
Summary information on Moody's ownership structure.
An institutional shareholder of Moody's is classified as a large shareholder of Moody's in a given quarter if it owned at least 5% of Moody's in the prior quarter. An investee firm of a shareholder is classified as being large if it accounts for at least 0.25% of the shareholder's portfolio in each of the past four quarters. Panel A provides summary information on Moody's shareholders and their investee firms.

Panel A: Summary information on Moody's shareholders and their investee firms

	Mean	Median	Min	Max	Std	*N*
Number of shareholders	363	356	261	474	61	40
Number of large shareholders	3	3	2	5	1	40
Number of investees of large shareholders	1,846	1,708	169	4,724	1,688	40
Number of large investees of large shareholders	90	88	50	176	36	40

Panel B: Summary information on Moody's large shareholders

Firm	*Number of quarters classified as large owner*	*Mean number of investees per quarter*	*Mean number of large investees per quarter*
Berkshire Hathaway	40	32	18
Davis Selected Advisors	40	181	44
Goldman Sachs	9	3,571	55
Capital Research Global Investors	5	488	55
Capital World Investors	5	504	58
Barclays	5	4,374	48
Sands Capital Management	4	47	18
Fidelity Management & Research	4	2,887	56
Harris Associates	2	226	66
Morgan Stanley Dean Witter & Company	2	3,680	49

Panel C: Summary statistics of Moody's large shareholders' quarterly stake in Moody's

Firm	Mean	Median	Min	Max	Std	*N*
Berkshire Hathaway	16.4%	16.2%	12.1%	20.4%	2.0%	40
Davis Selected Advisors	6.9%	6.8%	5.5%	8.1%	0.7%	40
Goldman Sachs	2.9%	2.4%	0.0%	7.2%	2.5%	40
Capital Research Global Investors	8.8%	10.3%	4.2%	11.3%	2.8%	6
Capital World Investors	6.1%	5.9%	1.2%	12.1%	4.5%	11
Barclays	3.8%	3.3%	2.9%	6.3%	1.0%	34
Sands Capital Management	3.0%	3.0%	0.4%	5.6%	1.6%	28
Fidelity Management & Research	2.6%	2.6%	0.0%	9.1%	2.2%	40
Harris Associates	2.4%	2.2%	0.0%	5.0%	1.1%	21
Morgan Stanley Dean Witter & Company	2.3%	1.8%	0.2%	8.1%	1.8%	38

is reported to have battled with the SEC for full recognition from 1988 until 1997 when it merged with Fitch. As White (2009) points out, without the NRSRO designation, any would-be bond rater would likely be ignored by most financial institutions. Because financial institutions would ignore the would-be bond rater, so would bond issuers.

3. Data description

This section describes our data sources and provides summary statistics on Moody's shareholders and their investee firms, as well as credit ratings issued by both Moody's and S&P for all bonds in our sample.

3.1. Moody's shareholders and their investee firms

To identify large shareholders of Moody's, we obtain quarterly institutional common stock holdings data from the Thomson Reuters Institutional Holdings (13F) Database for the period following Moody's IPO in October 2000 until the end of 2010. An institutional shareholder of Moody's is classified as a large shareholder of Moody's in a given quarter if it owned at least 5% of Moody's in the prior quarter. As we require one quarter of data to identify large shareholders, our period of study starts from the first quarter of 2001 and extends for 40 quarters to the end of 2010.

Panel A of Table 1 displays summary data on Moody's ownership structure. Moody's has an average of 363 institutional shareholders and an average of three large shareholders every quarter. Panel B presents the list of ten shareholders, which are classified as large shareholders for at least one quarter over our sample period. The two largest shareholders are Berkshire Hathaway and Davis Selected Advisors. Berkshire Hathaway holds on average 16.4% of Moody's, with a minimum of 12.1% to a maximum of 20.4%. Davis Selected Advisors holds on average 6.9%, with its share varying from 5.5% to 8.1% (see Panel C).

Given that the portfolio or investee firms of these large shareholders are numerous, we use various cutoffs to identify which of the investee firms are important. For most of the paper, we classify an investee firm as large if it accounts for at least 0.25% of the portfolio in each of the past four quarters.[7] Based on this criterion, 18 of the 32 portfo-

[7] We use 0.25% as the cutoff as it is the 75% percentile holding in the 13F universe for the sample period. The results are qualitatively similar with other different cutoffs.

Table 2
Distribution of new bond issues across numeric rating categories.
This table provides summary information on Moody's and Standard & Poor's (S&P) credit rating on new bonds issued between the first quarter of 2001 and the last quarter of 2010. Panel A presents the frequency distributions of the sample bonds across different rating categories by Moody's and S&P and the numerical coding of each rating category. Panel B presents the mean and median of the numerical ratings of our sample bonds assigned by Moody's and S&P.

Panel A: Frequency distribution

		Moody's		S&P	
Rating category	Numeric rating	Rating letter	Frequency (%)	Rating letter	Frequency (%)
Investment grade bonds					
Highest quality	1	Aaa	1.65	AAA	1.77
Very high quality	2	Aa1	0.98	AA+	0.03
	3	Aa2	3.2	AA	1.38
	4	Aa3	25.49	AA−	8.75
High quality	5	A1	12.74	A+	21.17
	6	A2	14.86	A	30.43
	7	A3	8.04	A−	4.04
Minimum investment grade	8	Baa1	4.14	BBB+	4.1
	9	Baa2	5.53	BBB	5.75
	10	Baa3	5.26	BBB−	5.1
High yield bonds					
Low grade	11	Ba1	2.04	BB+	2.03
	12	Ba2	1.74	BB	3.36
	13	Ba3	4.23	BB−	2.41
Very speculative	14	B1	2.57	B+	3.11
	15	B3	3.16	B	3.1
	16	B3	2.79	B−	2.28
Substantial risk	17	Caa1	0.97	CCC+	0.58
	18	Caa2	0.41	CCC	0.49
	19	Caa3	0.16	CCC−	0.07
Very poor quality	20	Ca	0.04	CC	0.03
	21	C	0.00	C	0

Panel B: Summary statistics on numerical ratings

	Moody's		S&P	
Sample	Mean	Median	Mean	Median
Full sample	7.14	6.00	7.36	6.00
Investment grade bonds	5.61	5.00	5.98	6.00
High yield bonds	14.03	14.00	13.81	14.00

lio firms of Berkshire Hathaway and 44 of the 181 portfolio firms of Davis Selected Advisors are classified as large investees (see Panel B).

3.2. Credit ratings on corporate bonds

The data on the history of credit rating changes by Moody's and S&P and other bond characteristics are obtained from the Mergent Fixed Income Securities Database (FISD). We retain all bonds that are rated by both Moody's and S&P and issued by firms covered in both the Center for Research in Security Prices (CRSP) and Compustat. We exclude government agency bonds issued by the Federal Home Loan Mortgage Corporation (Freddie Mac) and the Federal National Mortgage Association (Fannie Mae), leaving a final sample of 9,550 new bonds issued by 972 firms from 2001 to 2010.

Table 2 presents the credit rating categories used by Moody's, the equivalent ratings by S&P, and the distribution of our sample new issues across these categories. As shown in Panel A, most of the new issues are rated investment grade. The average issue size is $325 million with ten years to maturity (Table 3). On average, the issuing firm has market capitalization of $189 billion and a leverage ratio (long term debt to total assets) of 30%.

4. New bond issues

We begin with a study of the initial ratings on those 9,550 new bonds issued from 2001 to 2010.

4.1. Moody's relative ratings

We examine whether Moody's tends to assign higher ratings to bonds issued by large investee firms of Moody's large shareholders. We benchmark Moody's ratings to those by S&P on the same bonds.[8] *S&P – Moody's Rating*, which is S&P's numerical rating minus Moody's numerical

[8] Any concern for the interest of its large shareholders generates a cross-sectional bias in Moody's rating when its ratings for some related bonds are better. To the extent that S&P is not indirectly related to the same bond issuer, its rating on bond issues are unbiased and can be used as control. We also identify the much smaller group of bond issuers that

Table 3
Descriptive statistics of new bonds and their issuers.

The table presents summary information on the characteristics of our sample of new bonds and their issuers. *Issuer Size* is the market value of equity plus the book value of debt. *Leverage* is long-term debt divided by total assets. *Operating Margin* is operating income before depreciation divided by sales. *Stock Return Standard Deviation* is the standard deviation of daily stock returns in the year prior. *Issue Size* is the par value of the bond issue. *Time to Maturity* is a bond's number of years to maturity at issuance. *Moody's Ratings* and *S&P's Ratings* are the numerical values of the ratings assigned by Moody's and Standard & Poor's, coded as per Table 2. All firm characteristics are measured in the year prior to the issuance.

Characteristic	Mean	Median	Std
Issuer size (billions of dollars)	189.46	82.82	233.86
Leverage	0.30	0.24	0.18
Operating margin	0.32	0.38	4.61
Stock return standard deviation	0.03	0.02	0.06
Issue size (millions of dollars)	324.98	66.35	1,983.29
Time to maturity at issuance (years)	9.76	7.07	8.45
Moody's ratings	7.35	6.00	3.48
S&P ratings	7.14	6.00	3.82

rating, is positive when Moody's assigns a higher rating for the new issue relative to S&P.

Of the total 9,550 new bonds in our sample, 2,302 are issued by large investees of Moody's large shareholders. The dummy variable *Large Investee of Large Shareholder* takes the value of one for these bonds. The median *S&P – Moody's Rating* for these large investee bonds is one, and that for other bonds is zero (see Table 4). Results are similar when we consider means instead of medians. Further, these results are observed across the various ratings categories, i.e., for high-yield as well as for investment-grade bonds.[9]

Next, we control for firm and bond characteristics identified by the prior literature in multivariate estimation (see Pinches and Mingo, 1973; Kaplan and Urwitz, 1979; Blume, Lim, and Mckinlay, 1998; Campbell and Taskler, 2003; Jiang, Stanford, and Xie, 2012). We control for issuer size, which is the natural log of market value; leverage, which is the ratio of long-term debt to total assets; operating margin, which is operating income before depreciation divided by sales; and stock volatility, which is the standard deviation of daily stock returns in the year prior to the issuance. In addition, we control for issue characteristics by including issue size, defined as the logarithm of the par value of the bond issue, years to maturity at issuance, and a *Seniority* dummy variable that is equal to one if the bond is a senior bond. All accounting variables are of annual frequency and are drawn from the fiscal year prior to the issuance of the new bond.[10] Lastly, we include the variable of interest, the *Large Investee of Large Shareholder* dummy. In summary, we estimate the model

$$\begin{aligned}\text{S\&P} - \text{Moody's Rating}_i &= \gamma_0 + \gamma_1 \text{ Large Investee of Large Shareholder}_i \\ &+ \sum_{j=2}^{8} \gamma_j \text{ControlVar}_i^j + \varepsilon_i, \end{aligned} \quad (1)$$

where control variables are as defined above. In addition, we include quarter dummies to control for time trends and industry dummies based on a bond's two-digit industry code from FISD to control for potential differences in industry expertise of the two rating agencies.[11] We double cluster standard errors at the issuer and industry year level to account for correlations among multiple bond issues by the same firm and in a given industry year. We also adjust these standard errors for heteroscedasticity. The results from the estimation are displayed in Column 1 of Table 5. The coefficient on *Large Investee of Large Shareholder* is significant at the 1% level, implying that Moody's assigned relatively favorable ratings to bond issues by large investees of its large shareholders.

Institutional investors tend to trade frequently. If Moody's expects the large shareholding to be temporary, it is unlikely to cater to the interests of these shareholders. To understand this incentive better, we separate large shareholders that are perceived to be transient from those that are perceived to be stable. An institution is classified as a stable large shareholder of Moody's if it holds at least 5% of Moody's in each of the prior 12 quarters. Shareholders with 5% or greater stake in Moody's in at least one quarter but less than 12 quarters over the past three years are classified as transient large shareholders.[12] The dummy variable *Moody's Related* (*Large Investee of Transient Large Shareholder*) takes the value of one for bonds that are issued by large investee firms of Moody's stable (transient) large shareholders. As we require three years of data to identify large shareholders, all large shareholders are identified as transient prior to the fourth quarter of 2003. A total of 927 bonds are classified as *Moody's Related* bonds in our sample.

Only two institutions—Berkshire Hathaway and Davis Selected Advisors—that are classified as stable large shareholders in the fourth quarter of 2003, and they continue to be classified as such for the entire sample period. None of the other eight shareholders holds its minimum 5% stake long enough to ever be classified as a stable large shareholder. To examine whether favorable ratings are seen for large investees of both stable and transient large shareholders, we include them both in our next specification. As seen in Column 2 of Table 5, the coefficient on *Moody's Related* is positive and highly significant, and that of *Large Investee of Transient Large Shareholder* is not significant. The

are indirectly related to S&P and demonstrate that controlling for this does not impact the results.

[9] Only 17 Large Investee of Large Shareholder bonds are in the high-yield category. Due to this small sample size, the results are weaker with significant differences observed only in means but not in medians.

[10] As the rating agencies do not disclose whether the ratings are solicited or not, we are not able to control for this. However, the incidence of unsolicited ratings is likely low (Wall Street Journal, 2004). This is because issuers have an incentive to solicit ratings as it allows them to influence the rating by providing private information to the rating agency.

[11] For the existence of time effects, see Jorion, Liu, and Shi (2005), Becker and Milbourn (2011), Alp (2013), Bolton, Freixas, and Shapiro (2012), and Cornaggia, Cornaggia, and Xia (2012).

[12] The three-year cutoff is dictated by the data. If Moody's management observes a large stake over several years, it is likely to conclude that this represents long-term interests in the firm. In untabulated results, we try one- and two-year cutoffs with qualitatively similar results.

Table 4
Univariate analysis of relative ratings.

The sample consists of new bond issues from 2001 to 2010. The numbers displayed are mean or median values of numerical ratings given by Moody's and Standard & Poor's (S&P). *S&P – Moody's Rating* is the S&P numerical rating minus Moody's numerical rating. *Large Investee of Large Shareholder* contains bond issues by firms that are large investee firms of Moody's large shareholders. *Other Firms* are bonds issued by all the other issuers in our sample. Panel A presents the result from using the full sample. Panel B displays the results for bond issues rated as investment grade by both agencies. For Panel C, the sample includes bonds rated as high yield by at least one agency. The last column displays *p*-values from a test on the difference in means and medians of *S&P – Moody's Rating* for the two groups of bonds, i.e., *Moody's Related* and other firms. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

	Large investee of large shareholder			*Other firms*			Difference test
	Moody's rating	S&P rating	*S&P – Moody's rating*	Moody's rating	S&P rating	*S&P – Moody's rating*	
Panel A: Full sample							
Mean	4.622	5.241	0.619	7.936	8.014	0.078	(0.000)***
Median	4.000	5.000	1.000	7.000	6.000	0.000	(0.000)***
Number of observations	2,302	2,302	2,302	7,248	7,248	7,248	
Panel B: Investment-grade							
Mean	4.564	5.186	0.622	6.008	6.223	0.214	(0.000)***
Median	4.000	5.000	1.000	6.000	6.000	0.000	(0.000)***
Number of observations	2,285	2,285	2,285	5,480	5,480	5,480	
Panel C: High-yield							
Mean	12.471	12.588	0.118	13.911	13.564	-0.347	(0.085)*
Median	13.000	12.000	1.000	14.000	14.000	0.000	(0.188)
Number of observations	17	17	17	1,768	1,768	1,768	

Table 5
Moody's ratings on new bond issues.

The dependent variable for Columns 1 to 3 is *S&P – Moody's Rating*. The dependent variable in Column 4(Column 5) is Moody's (Standard & Poor's) numerical rating. The sample contains new bond issues from 2001 to 2010. *Large Investee of Large Shareholder* takes the value of one if the bond is issued by a large investee firm of Moody's large shareholders. *Moody's Related* (*Large Investee of Transient Large Shareholder*) takes the value of one if the bond is issued by a large investee firm of Moody's stable (transient) large shareholder. *Issuer Size* is the natural log of market value. *Leverage* is ratio of long-term debt to total assets. *Operating Margin* is operating income before depreciation divided by sales. *Standard Deviation of Stock Return* is the standard deviation of daily stock returns in the year prior to the issuance. *Issue Size* is the logarithm of the par value of the bond issue. *Year to Maturity* is a bond's number of years to maturity at issuance. *Seniority* is a dummy variable for whether the issue is senior debt. All control variables are measured in the year prior to the new issue. Errors are clustered at the firm and industry year level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimates. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
	S&P-Moody's rating			Moody's	S&P
Variable				Rating	Rating
Intercept	−1.850	−1.864	−1.863	8.075	6.212
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Large investee of large shareholder	0.213				
	(0.008)***				
Moody's related		0.465	0.467	-0.401	0.066
		(0.000)***	(0.000)***	(0.008)***	(0.768)
Large investee of transient large Shareholder		0.069			
		(0.393)			
Issuer size	0.062	0.060	0.071	-1.098	-1.027
	(0.021)**	(0.021)**	(0.009)***	(0.000)***	(0.000)***
Leverage	−0.567	−0.539	−0.541	5.585	5.045
	(0.015)**	(0.013)**	(0.013)**	(0.000)***	(0.000)***
Operating margin	0.001	0.001	0.001	−0.013	−0.013
	(0.444)	(0.391)	(0.448)	(0.000)***	(0.000)***
Standard deviation of stock return	−0.144	−0.136	−0.143	0.691	0.548
	(0.391)	(0.396)	(0.354)	(0.625)	(0.675)
Issue size	0.039	0.038	0.039	0.066	0.104
	(0.008)***	(0.008)***	(0.008)***	(0.124)	(0.004)***
Years to maturity	−0.017	−0.010	−0.012	−0.334	−0.345
	(0.460)	(0.634)	(0.594)	(0.000)***	(0.000)***
Seniority	−0.258	−0.247	−0.252	−1.626	−1.878
	(0.001)***	(0.001)***	(0.000)***	(0.000)***	(0.000)***
Adj. *R*-squared	0.449	0.445	0.445	0.797	0.758
Number of observations	9,550	9,550	9,550	9,550	9,550
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes

evidence of relatively favorable ratings from Moody's is confined to large investee firms of its stable large shareholders. Consequently, in the remaining analysis, we focus just on these *Moody's Related* bonds. As shown in Column 3 of Table 5, the coefficient of *Moody's Related* is still 0.467, and it is significant at the 1% level.

The analysis using the difference between S&P and Moody's ratings (*S&P – Moody's Rating*) provides evidence of Moody's favorable ratings on *Moody's Related* bonds relative to S&P. To ensure that this difference in relative ratings is attributable to favorable ratings from Moody's, not to tougher ratings from S&P, we examine absolute ratings as well. We reestimate the results using Moody's rating (Column 4) and S&P's rating (Column 5) as the dependent variable. We find significant evidence of laxer ratings from Moody's on *Moody's Related* bonds, as its coefficient in Column 4 is negative and significant at the 1% level. We find no evidence that S&P ratings for these bonds are tougher (see Column 5). In summary, the relatively favorable ratings on *Moody's Related* bonds are due to Moody's actions, not S&P's.

4.2. Robustness tests

In this section, we conduct several additional tests to check the robustness of our results.

4.2.1. Fama and McBeth estimation

The above results are based on estimating a pooled regression of Model (1) for new bond issues over the sample period. As the sample includes multiple bond issues by some firms, we have clustered the errors at the issuer and industry year level. To address any residual concerns about correlated errors, we also estimate Model (1) using Fama-MacBeth regressions. We estimate the model in the cross section every quarter and then calculate the mean and standard deviation of the parameter estimates across our sample period.[13] To ensure that the estimate of standard deviation is robust, we allow the time series of the parameter estimates to follow an AR(1) process. As can be seen in Column 1 of Table 6, this does not impact our results. The coefficient of *Moody's Related* remains positive and highly significant.

4.2.2. Different ownership cutoffs for investee firm

Next, we present results that rely on both a tighter and a looser cutoff to define a large investee firm. For the tighter cutoff, we consider an investee firm as large if it accounts for at least 1%, instead of the prior 0.25%, of a shareholder's portfolio in each of the past four quarters. One percent is the 90th percentile of a firm's weight within an institution's portfolio from the 13F universe over our sample period. Hence, this cutoff allows us to examine Moody's ratings for the group of most important investee firms. Imposing the tighter cutoff drops the number of *Moody's Related* new bond issues to 275. The empirical results are qualitatively similar to those reported earlier (Column 2 of Table 6). The looser cutoff relates to when an investee firm is classified as large if it is held by a Moody's shareholder in each of the prior four quarters. As this looser cutoff does not require any minimum investment, 2,168 bonds get classified as *Moody's Related*. As shown in Column 3 of Table 6, this change does not materially impact the results.

4.2.3. Different time criteria for investee firms

Along with different criteria for the level of holdings, we conduct robustness tests with different criteria for the length of time for which investee firms are held by the large shareholders of Moody's. We begin with a longer holding period. An investee firm is considered a large investee if it accounts for at least 0.25% of the shareholders' portfolio for each of the prior eight quarters instead of the prior four quarters. The results with this longer time window are reported in Column 4 and are not materially different. We also try a shorter holding period that requires large investee firms to account for 0.25% of the shareholders' portfolio for each of the prior two quarters. Once again, this does not materially impact the results. As seen in Column 5, the coefficient on *Moody's Related* continues to be positive and highly significant.

4.2.4. Fitch as a benchmark

We also examine the robustness of our results by using ratings from Fitch, the third largest rating agency, as the benchmark.[14] As Fitch is smaller than S&P, the number of new bond issues that are rated by both Fitch and Moody's is lower at 8,546. The dependent variable is redefined as Fitch's numerical rating minus Moody's numerical rating. This change in benchmark does not impact the results. The coefficient on *Moody's Related* is positive and highly significant (Column 6 of Table 6). Even relative to Fitch, Moody's gives higher ratings to related new bonds.

4.2.5. Shareholder-level analysis

For robustness, we conduct the analysis at the shareholder instead of at the bond level. In each quarter for every shareholder of Moody's (in that quarter), we average the *S&P – Moody's Ratings* for all new issues of its portfolio firms in that quarter. This is the average favorable rating given to new issues of all portfolio firms in the quarter. We also average all the bond-level and issuer-level characteristics. Hence, the unit of observation for this analysis is shareholder-quarter. The *Moody's Related* dummy takes the value of one for shareholders that have been classified as stable large shareholders in that quarter, i.e., for Berkshire and Davis after the fourth quarter of 2003. As seen in Column 7 of Table 6, the coefficient on the *Moody's Related* dummy is positive and significant. The evidence suggests that, on average, Moody's rating for portfolio firms of the two stable large shareholders is significantly more favorable.

[13] As the stable large shareholders and, consequently, *Moody's Related* are identified only from 2003Q4 to the end of 2010, the Fama-MacBeth regressions span 27 quarters.

[14] Fitch was founded by John Knowles Fitch in 1913. In 1997, it merged with IBCA Limited of London, a subsidiary of Fimalac, S.A., a French holding company. Hearst Corporation purchased a 20% stake in 2006 and another 20% in 2009. In 2012, Hearst increased its stake in Fitch to 50%.

Table 6
Robustness tests.

The dependent variable, for columns 1 to 6, is *S&P – Moody's Rating*. *Moody's Related* takes the value of one if the bond is issued by a large investee firm of Moody's stable large shareholders. Column 1 presents results from estimating Model (1) using Fama-MacBeth regressions. Column 2 (Column 3) present results from using a tighter (looser) criterion to define large investee firms. Column 4 (Column 5) present results from using a longer (shorter) holding period criterion to define large investee firms. Column 6 uses Fitch ratings, instead of Standard & Poor's (S&P) ratings, as the benchmark. Column 7 reports estimation at the shareholder quarter level. *Issuer Size* is the natural log of market value, *Leverage* is ratio of long-term debt to total assets, Operating Margin is operating income before depreciation divided by sales, *Standard Deviation of Stock Return* is the standard deviation of daily stock returns in the year prior to the issuance, *Issue Size* is the logarithm of the par value of the bond issue, *Years to Maturity* is a bond's number of years to maturity at issuance and Seniority is a dummy variable for whether the issue is senior debt. All control variables are measured in the year prior to the new issue. Errors, except in Columns 1 and 7, are clustered at the firm and industry year level. In Column 7, the dependent variable is the average *S&P – Moody's Rating* for all new bond issues by portfolio firms of Moody's shareholder in that quarter. The control variable are averaged across the new bond issues. *Moody's Related* takes the value of one for shareholders classified as stable large shareholders in that quarter. Heteroscedasticity adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) Fama-MacBeth	(2) Tighter criteria	(3) Looser criteria	(4) Longer holding	(5) Shorter holding	(6) Fitch as benchmark	(7) Shareholder level
Intercept	0.211	−1.832	−1.854	−1.862	−1.862	−1.251	−0.728
	(0.189)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Moody's related	0.378	0.44	0.271	0.504	0.462	0.251	0.315
	(0.000)***	(0.001)***	(0.012)**	(0.000)***	(0.000)***	(0.001)***	(0.000)***
Issuer size	0.065	0.080	0.059	0.074	0.070	0.116	0.205
	(0.000)***	(0.004)***	(0.026)**	(0.006)***	(0.011)**	(0.000)***	(0.000)***
Leverage	−0.461	−0.592	−0.569	−0.538	−0.542	−0.587	0.581
	(0.007)***	(0.008)***	(0.012)**	(0.013)**	(0.012)**	(0.011)**	(0.000)***
Operating margin	−0.511	0.001	0.001	0.001	0.001	−0.098	−0.194
	(0.077)*	(0.442)	(0.352)	(0.452)	(0.444)	(0.107)	(0.000)***
Standard deviation of	5.013	−0.130	−0.166	−0.146	−0.144	−0.071	−8.602
Stock return	(0.211)	(0.366)	(0.342)	(0.342)	(0.353)	(0.629)	(0.000)***
Issue size	−0.002	0.038	0.035	0.039	0.039	0.049	−0.052
	(0.898)	(0.010)***	(0.020)**	(0.008)***	(0.009)***	(0.002)***	(0.000)***
Years to maturity	−0.041	−0.021	−0.012	−0.008	−0.014	0.003	−0.157
	(0.153)	(0.354)	(0.580)	(0.723)	(0.521)	(0.891)	(0.000)***
Seniority	−0.202	−0.278	−0.256	−0.264	−0.250	−0.194	−0.603
	(0.164)	(0.000)***	(0.002)***	(0.000)***	(0.001)***	(0.086)*	(0.000)***
Adj. *R*-squared	0.514	0.434	0.436	0.445	0.445	0.343	0.400
Number of observations	6,041	9,550	9,550	9,550	9,550	8,546	19,374
Number of quarters	29	40	40	40	40	40	40
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Time fixed effects	N/A	Yes	Yes	Yes	Yes	Yes	Yes

4.3. Relation to Moody's: size and duration

We conduct several tests to examine whether Moody's ratings are higher for bonds issued by firms that are related to Moody's.

4.3.1. Size of the stake

Thus far, we have used a dummy variable to capture the relation with Moody's. However, the relatively favorable ratings by Moody's should be higher when the issuer is a more important investee firm of Moody's stable large shareholders. To examine this, we create a variable, *Size of Stake*, defined as the average ownership of Moody's stable large shareholders in the large investee firm over the past four quarters. As seen in Column 1 of Table 7, the coefficient on *Size of Stake* is positive and significant, implying that the favorable rating by Moody's is increasing in the importance of the large investee firm. We also create a *High Stake* dummy that takes the value of one if *Size of Stake* is above its 90th percentile; *Low Stake* dummy, below its 90th percentile. The top 10% of large investees receive, on average, a 0.73 notch higher rating from Moody's (see Column 2 of Table 7).

4.3.2. Duration of the stake

Along with the size of the stake, the duration of the stake can capture the importance of the investee firm. The variable *Duration of Stake* is the number of quarters for which Moody's stable large shareholders hold the large investee firm. The coefficient of *Duration of Stake* is positive and significant (Column 3 of Table 7), implying that the relatively better rating from Moody's is increasing in the time for which the large investee firm is held. Investee firms that are in the top 10th percentile of *Duration of Stake* receive, on average, a 0.74 notch higher rating from Moody's (Column 4, Table 7) and the remaining receive a 0.44 notch higher rating.

4.3.3. Berkshire Hathaway and Davis selected advisors

As Berkshire Hathaway's stake in Moody's is larger than that of Davis Selected Advisors, Moody's is likely to assign more favorable ratings to investees of Berkshire Hathaway. To test this, we create a *Berkshire Investee* dummy that takes the value of one if the bond is issued by a large investee of Berkshire Hathaway; *Davis Investee* dummy, Davis Selected Advisors. The coefficient on both dummies is significant, though the coefficient of the *Berkshire Investee*

Table 7
Impact of size and duration of owner's holdings.

The dependent variable is *S&P – Moody's Rating*. *Size of Stake* is the average holding of Berkshire Hathaway or Davis Selected Advisors in the investee firm in the prior four quarters. *High Stake Dummy* (*Low Stake Dummy*) takes the value of one if the size of stake is above (below) the 90th percentile. *Duration Holding* is the average number of quarters that Berkshire or Davis holds the investee firm. *High Duration Dummy* (*Low Duration Dummy*) takes the value of one if the duration is above (below) the 90th percentile. The dummy variable *Berkshire Investee* (*Davis investee*) take the value of one if the bond is issued by a Berkshire Hathaway (Davis Selected Advisors) investee in the years when Berkshire (Davis) is classified as a stable large shareholder of Moody's. *IG/HY Dummy* takes the value of one for bonds with one rating as investment grade and the other rating as high yield. *Moody's Related* takes the value of one for bonds issued by large investees of Moody's stable large shareholders. Other variables included in the estimation but not displayed are *Issuer Size, Leverage, Operating Margin, Standard Deviation of Stock Return, Issue Size, Years to Maturity* and *Seniority*. Errors are clustered at the firm and industry year level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	−1.849 (0.000) ***	−1.867 (0.000) ***	−1.871 (0.000) ***	−1.865 (0.000) ***	−1.866 (0.000) ***	−1.868 (0.000) ***
Size of Stake	5.691 (0.000) ***					
High Stake Dummy		0.726 (0.000) ***				
Low Stake Dummy		0.424 (0.000) ***				
Duration of Stake			0.014 (0.000) ***			
High Duration Dummy				0.738 (0.002) ***		
Low Duration Dummy				0.438 (0.000) ***		
Berkshire Investees					0.588 (0.000) ***	
Davis Investees					0.450 (0.000) ***	
Moody's Related						0.458 (0.000) ***
IG/HY Dummy						−0.299 (0.083) *
*Moody's Related * IG/HY Dummy*						1.443 (0.000)***
Adj. *R*-squared	0.436	0.446	0.443	0.445	0.445	0.447
Number of observations	9,550	9,550	9,550	9,550	9,550	9,550
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

dummy at 0.588 is significantly higher than the coefficient of 0.45 for the *Davis Investee* dummy at the 5% level (see Table 7 of Column 5). In summary, Moody's assigns relatively favorable ratings to important investee firms of both Berkshire Hathaway and Davis Selected Advisors, though the ratings for Berkshire investees are significantly better than that for Davis investees.

4.3.4. Investment-grade and speculative-grade boundary

The benefit of a higher Moody's rating is likely more pronounced for firms that are rated at the speculative- and investment-grade boundary. Issuers with a speculative-grade rating from S&P are likely to benefit most by obtaining a higher investment grade rating from Moody's. In this subsection, we examine if *Moody's Related* issuers at the investment-grade and speculative-grade boundary are more likely to receive a better rating from Moody's.

To this end, we identify all bonds in which Moody's and S&P disagree on ratings around the investment-grade and speculative-grade boundary. The *Split Dummy* takes the value of one for the 173 bonds in which one rating is speculative grade and the other is investment grade.[15] The interaction of the *Moody's Related* and the *Split Dummy* variables identifies borderline bonds that are related to Moody's. As can be seen in Column 6 of Table 7, the coefficient of the interaction term is positive and significant, implying that the *Moody's Related* bonds at the boundary of speculative and investment grade are significantly more likely to get a better rating from Moody's.

4.4. Economic significance

In this subsection, we attempt to shed light on the economic impact of getting a better rating from Moody's. We estimate the difference in the offering yield of new bonds with a higher rating from Moody's relative to the expected offering yield if the bond had the same rating from both

[15] Of the 173 bonds at the speculative- and investment-grade boundary, only four bonds are *Moody's Related*. These four bonds are issued by two firms, Principal Financial Group and Sealed Air Corp. Both of these firms are related to Moody's when they issue these four bonds. All four bonds have been assigned a higher rating by Moody's relative to S&P.

agencies. The expected offering yield is the average offering yield of all bonds issued in the past one year when both Moody's and S&P have the same rating as S&P's rating on the new bond in question. For example, if a new bond issue is rated BBB- by Moody's and BB+ by S&P, the expected offering yield is the offering yield of all new bonds in the past one year when both Moody's and S&P assigned a rating of BB+. We require at least five bonds to compute this expected offering yield. Consequently, we are not able to estimate the expected offering yield for many new bond issues, thereby reducing the sample size to 1,618 new bonds.

As the dependent variable is a difference in yield, we include control variables shown to be significant in explaining corporate yield spreads (e.g., Campbell and Taksler, 2003; Chen, Lesmond, and Wei, 2007). We include bond-specific characteristics such as issue size and years to maturity, and firm-specific characteristics such as issuer size, leverage, operating margin, pre-tax interest coverage, and mean daily stock returns and their standard deviation. We also include macroeconomic variables; the one-year Treasury rate, the difference between ten-year and two-year Treasury rates, the eurodollar rate, the CRSP return, market volatility index as captured by VIX, and the credit spread.[16]

Lastly, we include our variable of interest, *S&P – Moody's Rating*. Its estimated coefficient is −26 (Column 1 of Table 8), implying that bonds with a one notch higher Moody's rating enjoy a reduction in offering yield of 26 basis points. As Moody's assigns an average of 0.467 notches higher rating to *Moody's Related* bonds, this translates into interest saving of about $400,000 per year for the average size bond issue.[17] We also estimate the expected offering yield by considering bonds with the same ratings as the S&P rating that were issued in the prior two years, instead of one year. This results in a small increase in sample size with no qualitative change in the results (see Column 2 of Table 8).

Table 8
Impact on yield spreads.
The dependent variable is yield difference for new bond issues, which is the offering yield of new bonds minus the expected yield. Expected yield is the average offering yield of all bonds issued in the prior one year (two years) for Columns 1 and 2, in which both Moody's and Standard & Poor's (S&P) gave the same rating as the new bond's S&P rating. *10–2 years Treasury Rate* is the difference between ten-year and two-year Treasury rates Errors are clustered at the bond year level. Heteroscedasticity adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) Model 1	(2) Model 2
Intercept	−21.009	−162.812
	(0.743)	(0.010)***
S&P – Moody's Rating	−26.103	−23.952
	(0.000)***	(0.000)***
S&P Rating	−7.539	−9.545
	(0.000)***	(0.000)***
Years to Maturity	2.385	-0.711
	(0.573)	(0.866)
Issue Size	7.639	1.794
	(0.233)	(0.771)
Issuer Size	−22.946	−22.566
	(0.000)***	(0.000)***
Leverage	79.179	108.235
	(0.008)***	(0.001)***
Operating Margin	−15.653	−18.033
	(0.054)*	(0.013)**
Interest Coverage	−0.017	−0.028
	(0.685)	(0.539)
Stock Return	−943.646	−1888.590
	(0.741)	(0.511)
Standard Deviation of Stock Returns	14.686	238.317
	(0.945)	(0.312)
Vix	6.517	6.977
	(0.000)***	(0.000)***
One Year Treasury Rate	−10.785	17.669
	(0.236)	(0.049)**
10–2 years Treasury Rate	−54.602	−27.224
	(0.001)***	(0.096)*
Eurodollar	−9.009	28.039
	(0.489)	(0.030)**
CRSP return	963.949	3018.580
	(0.753)	(0.319)
Credit Spread	−9.513	11.133
	(0.522)	(0.454)
Adj. *R*-squared	0.196	0.275
Number of observations	1,618	1,692

5. Outstanding bonds

In this section, we investigate whether Moody's favorable ratings toward the interests of its owners are also observed in its ratings on outstanding bonds. A straightforward way to address this issue is to examine whether Moody's is relatively faster to upgrade and slower to downgrade *Moody's Related* bonds. However, investigating which agency is faster requires the identification of the same rating change by both agencies, which is challenging given that rating changes by different agencies often occur at different levels and are of different magnitudes.[18] We attempt to identify the same rating change as one in which a firm is downgraded or upgraded from the same old rating to the same new rating by both agencies within a one-year period. We identify a total of 566 such identical rating changes by Moody's and S&P, of which 398 are downgrades and the rest are upgrades.

[16] The firm stock return and its standard deviation are calculated from daily returns in the quarter. The CRSP return is measured using CRSP value-weighted index returns within each quarter. The eurodollar is the difference between the 30-day eurodollar and Treasury rates. The market volatility index, i.e., VIX, is from the Chicago Board Options Exchange. The credit spread is the Moody's corporate credit spreads between Baa and Aaa bonds. Standard errors are corrected in line with Thomson (2011).

[17] There is a 26 basis point lower offering yield for every notch that Moody's rating is higher than the S&P rating. As the average *Moody's Related* bond gets 0.467 notch better ratings, it gets a reduction of 12 basis points in offering yield. For an average bond issue of $325 million (Table 3), this translates into $0.4 million in interest savings every year.

[18] For example, consider the following typical case with three rating events: (1) S&P downgrades a bond by one notch from AA- to A+ in May 1999; (2) Moody's downgrades the same bond by two notches, from AA to A, in July 1999; and (3) S&P downgrades the bond by one notch again from A+ to A- in September 1999. This example highlights the difficulty in identifying a rating change from the same level and of the same magnitude by both rating agencies.

Table 9
Outstanding bond issues.

The sample for Columns 1 and 3 (Column 2 and 4) consists of all same downgrades (upgrades) by both Moody's and Standard & Poor's (S&P) over the period from 2001 to 2010. The sample for Column 5 consists of all outstanding bond issues over the same sample period. The dependent variable for Column 1 and Column 2 is *Lead Days*, which is the number of days by which Moody's leads S&P in making the same rating change. The dependent variable for Columns 3 and 4 is *Adjusted Lead Days* which is the number of days by which Moody's leads S&P in making the same rating change or putting the firm on a watch list. The dependent variable in Column 5 is the average daily *S&P-Moody's Ratings* for the quarter. *Moody's Related* takes the value of one if the bond is issued by a large investee firm of Moody's stable large shareholders. *Issuer Size* is the natural log of market value, *Leverage* is ratio of long-term debt to total assets, *Operating Margin* is operating income before depreciation divided by sales, *Standard Deviation of Stock Return* is the standard deviation of daily stock returns in the year prior to the issuance, *Issue Size* is the logarithm of the par value of all bonds by the same firm, *Years to Maturity* is average number of years to maturity of the issuer's bonds, and *Seniority* is the percent of a firm's bonds that are senior debt. All control variables are measured in the year prior. Errors are clustered at the firm and industry year level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
	Ratings changes		Adjusted for watch list		All issues
Variable	Downgrade	Upgrade	Downgrade	Upgrade	
Intercept	1.973	−3.203	6.962	−0.063	−0.149
	(0.762)	(0.896)	(0.147)	(0.998)	(0.379)
Moody's Related	−71.054	21.309	−73.700	17.425	0.095
	(0.072)*	(0.597)	(0.056)*	(0.673)	(0.021)**
Issuer Size	7.018	−0.604	8.207	0.395	−0.014
	(0.037)**	(0.947)	(0.008)***	(0.965)	(0.051)*
Leverage	46.994	138.615	34.974	138.888	−0.418
	(0.265)	(0.075)*	(0.393)	(0.073)*	(0.000)***
Operating Margin	−6.146	−43.197	−4.730	−43.927	0.000
	(0.151)	(0.528)	(0.300)	(0.511)	(0.049)**
Standard Deviation of Stock Return	11.728	−1.114	−2.286	−1.153	0.005
	(0.441)	(0.499)	(0.865)	(0.482)	(0.735)
Issue Size	2.452	−10.173	0.579	−8.842	0.046
	(0.613)	(0.368)	(0.893)	(0.430)	(0.000)***
Years to Maturity	−6.000	−19.439	−3.383	−21.223	0.004
	(0.595)	(0.324)	(0.790)	(0.281)	(0.000)***
Seniority	7.829	−12.982	7.408	−9.654	0.020
	(0.635)	(0.643)	(0.640)	(0.727)	(0.318)
Adj. *R*-squared	0.020	0.029	0.020	0.029	0.290
Number of observations	398	168	398	168	32,924
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes

To examine the timeliness of the same rating changes by the two agencies, we create a variable labeled *Lead Days*, which is the number of days by which Moody's leads S&P in initiating the rating change. A negative value of *Lead Days* implies that Moody's lags S&P in the ratings change. We then regress *Lead Days* on *Moody's Related* and all the control variables used earlier. For the sample of downgrades, the coefficient on *Moody's Related* is -71 and significant, suggesting that Moody's is about 71 days slower, relative to S&P, in downgrading related bonds (see Table 9). The coefficient on *Moody's Related* for the upgrade sample is positive, though not statistically significant.[19]

One possible reason for the delay in Moody's downgrades is that these firms were put on a credit watch list by Moody's prior to the rating change. We check the historical watch list updates by Moody's and S&P from the Mergent FISD database and find that, of the 398 downgrades, 26 were put on negative outlook by Moody's an average of 101 days prior to the downgrade. S&P put 29 firms on negative outlook an average of 78 days prior to the downgrade.[20] For these firms, we use the date of the watch list update, not the actual rating change, to calculate *Lead Days*. We estimate the model again with these adjusted *Lead Days* and, the results are qualitatively similar. Taking into account positive outlooks prior to upgrades also does not qualitatively impact our results.

Because we can find only a small number of identical rating changes by both agencies, we adopt an alternate approach to examine outstanding bonds. We calculate the average value of the daily *S&P – Moody's Rating* over the quarter. A positive value of this average *S&P – Moody's Rating* suggests that Moody's rating on this outstanding bond tends to be higher than S&P's. Using this as the dependent variable, we reestimate Model (1) using the sample of all outstanding bonds rated by both Moody's and S&P. As seen in Table 9, the coefficient on *Moody's Related* is positive and significant at the 1% level. Outstanding bonds issued by *Moody's Related* firms have on average bet-

[19] This is not surprising as, out of the 168 identical upgrades, only five belong to Moody's Related firms.

[20] We thank an anonymous referee for suggesting this. We examine the six month period prior to the rating change for watch list updates. Of the 168 upgrades, both Moody's and S&P put one firm each on a positive outlook 141 and 59 days prior, respectively.

ter ratings from Moody's relative to S&P. In summary, the results for outstanding bonds mirror those for new bonds and collectively point to Moody's relative laxity toward related bonds.

6. Alternate explanations

In this section, we explore several alternative explanations for our results.

6.1. Common criteria

A possible alternate explanation for our findings is that firm characteristics that lead Berkshire Hathaway and Davis Selected Advisors, the two stable large shareholders of Moody's, to increase their investment in portfolio firms (making them large investees) also affect Moody's risk assessment and its higher rating. In other words, the large shareholders and Moody's both could be good at identifying better-performing firms. If common criteria were to explain our results, the findings should hold, irrespective of whether Berkshire Hathaway and Davis Selected Advisors hold a stable large stake in Moody's.

We test this conjecture by examining the bond issues of firms that are large investee firms of Berkshire Hathaway and Davis Selected Advisors, both before and after Moody's IPO. By pooling bond issues prior to 2000 with those post-2000 for these issuers, we can ascertain the impact of the initiation of the Moody's relation within issuers. If economic interests of large shareholders explain Moody's favorable ratings, then the favorable ratings should emerge for these issuers only after the relation with Moody's is established.

In this sample of new bond issues over the period 1991–2010 by large investees of Berkshire Hathaway and Davis Selected advisors, we estimate the model for *S&P – Moody's Ratings*.[21] We include the previously defined variable *Moody's Related* to capture bonds issued while the relation with Moody's is active. We create a new variable, *Large Investee Prior to Relationship*, to capture bond issues by large investees of Berkshire or Davis prior to their relation with Moody's.

As seen in Column 1 of Table 10, the coefficient of *Moody's Related* is positive and highly significant, and that of *Large Investee Prior to Relationship* is not significant. The difference between the two coefficients is significant at less than the 1% level. This implies that Moody's rating on new bond issues by large investees of Berkshire or Davis was not favorable before they were related to Moody's, but it became significantly better after the relation was established. The results for outstanding issues, displayed in Column 2, are similar. Whereas the coefficient of *Moody's Related* is positive and significant, that of *Large Investee Prior to Relationship* is negative and significant. This analysis keeps the issuer constant and shows that the establishment of the relation with Moody's is the source of the relatively favorable rating from Moody's.

[21] The sample consists of bonds issued by firms that are classified as *Moody's Related* in at least one quarter after 2003Q3 and as large investees in at least one quarter prior to 2000Q4.

6.2. The informativeness explanation

Another possible explanation for our findings is that Moody's higher ratings reflect better information, not favorable treatment. Common ownership by Berkshire Hathaway or Davis Selected Advisors could generate private information that makes Moody's ratings relatively more informative and accurate for *Moody's Related* bonds. However, an informed Moody's does not automatically imply favorable ratings. When Moody's information about related bonds is negative, its ratings should be tougher than S&P's. However, we examine the informativeness hypothesis via the correlation of ratings with the issuer's expected default frequencies and changes in CDS spreads around rating changes.[22]

6.2.1. Expected default frequency

We follow Duffie, Saita, and Wang (2007) and estimate a distance-to-default measure for each firm-quarter based on the Black–Scholes–Merton specification. The distance to default measure estimates the number of standard deviations of asset growth by which a firm's market value of assets exceeds the firm's liabilities. We go on to estimate *Expected Default Frequency* as the cumulative standard normal distribution function valued at the negative distance to default.

We then include *Expected Default Frequency* and its interaction with *Moody's Related* in Model (1). If Moody's relatively higher ratings on bonds by related firms are more informative, they should be associated with a lower *Expected Default Frequency*, and the coefficient of the interaction of *Expected Default Frequency* and *Moody's Related* should be negative and significant. As can be seen in Table 11, the coefficient of the interaction term is insignificant for new issues (Column 1) as well as for outstanding issues (Column 2). Overall, little evidence exists that Moody's relatively higher ratings for *Moody's Related* bonds represents superior information about the credit risks of the underlying bonds.

6.2.2. Change in CDS spreads

Another way to shed light on the informativeness of credit ratings is to study bond price movements around rating changes. An informative downgrade (upgrade) should be accompanied by a significant drop (increase) in bond prices. However, due to limited trading in bonds, examining changes in bond prices is difficult within a short time window around ratings changes. Consequently, we study changes in CDS spreads around rating changes.[23] This research design allows us to capture any information that is new to the credit market.

[22] We also investigate actual bond defaults. Because none of the *Moody's Related* new bond issues defaulted within two years of issuance, we cannot ascertain whether higher Moody's ratings of these bonds was associated with lower defaults.

[23] CDSs contain useful information regarding a firm's credit risks (Longstaff, Mithal, and Neis, 2005). Blanco, Brennan, and Marsh (2005) find that corporate bond and CDS markets price credit risk equally well. Further, CDSs have been shown to lead bonds in incorporating credit risk information.

Table 10
Moody's rating bias prior to going public.

The sample consists of new bond issues (Column 1) and outstanding bond issues (Column 2) over the period 1991 to 2010. Only bond issues of firms classified as *Moody's Related* for at least one quarter over the period 2000 to 2010 and classified as large investee of Berkshire Hathaway or Davis Selected Advisors for at least one quarter over the period 1991 to 2000 are included. The dependent variable is *S&P - Moody's Rating* for Column 1 and its average value within a quarter for column 2. *Moody's Related*, as defined before, is a dummy variable that takes the value of one for bond issues by large investees of Moody's stable large shareholders. *Large Investee Prior to Moody's Relationship* takes the value of one for bond issues by large investees of Berkshire or Davis prior to them being classified as stable large shareholders of Moody's. Control variables included are as defined in previous tables. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. The errors are clustered at the firm and industry year level. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) New issues	(2) All issues
Intercept	−1.219	−0.425
	(0.004)***	(0.059)*
Moody's Related	0.485	0.283
	(0.021)**	(0.000)***
Large Investee Prior to Moody's Relationship	0.085	−0.132
	(0.434)	(0.072)*
Issuer Size	−0.047	0.206
	(0.439)	(0.000)***
Leverage	0.817	−0.322
	(0.221)	(0.164)
Operating Margin	−0.271	−0.035
	(0.004)***	(0.124)
Standard Deviation of Stock Return	−11.079	−0.138
	(0.059)*	(0.062)*
Issue Size	−0.007	−0.033
	(0.646)	(0.122)
Years to Maturity	−0.031	0.015
	(0.316)	(0.464)
Seniority	−0.264	−0.233
	(0.007)***	(0.160)
Adj. *R*-squared	0.665	0.272
Number of observations	2,403	8,447
Industry fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

We obtain daily CDS composite spreads from Markit Group Ltd.[24] Over the sample period, we have data to calculate changes in CDS spreads over a three-day window for 1,703 rating actions: 1,071 downgrades and 632 upgrades. Around 50% of both upgrades and downgrades are by Moody's and about 4% of those are *Moody's Related*. We calculate the change in CDS spreads of a five year CDS contract, from day −1 to day 1 with day 0 being the day of the rating change. We use the five-year CDS contract as it is the most actively traded contract for a given entity (Hull, Predescu, and White, 2004). We then estimate a model for the change in CDS spreads in which the variables of interest are a dummy for rating changes by S&P, a dummy for rating changes by Moody's, and its interaction with the *Moody's Related* dummy. These capture how ratings change by the two agencies impact CDS spreads. The above model for CDS changes is estimated separately for upgrades and downgrades.

In line with Hull, Predescu, and White (2004), we incorporate several control variables. To control for the CDS market's anticipation of rating changes, we include lagged change in CDS spread, which is the change in the CDS spread from day −10 to −2. We also include the magnitude of rating change, a dummy variable equal to one if the rating change crosses the investment- and speculative-grade boundary, and the natural log of the number of days since the previous rating change in the same direction. These control variables have also been used in Jorion, Liu, and Shi (2005) to examine the informativeness of rating changes.

If Moody's rating changes for *Moody's Related* bonds tend to be more informative, we would expect a positive (negative) coefficient of the interaction of *Moody's Rating Change Dummy* and *Moody's Related* dummy for the downgrades (upgrades). Column 1 of Table 12 shows that, for downgrades, the coefficient on both *S&P Rating Change Dummy* and *Moody's Rating Change Dummy* is positive and significant, suggesting that downgrades by both agencies are significant negative events associated with an increase in CDS spreads. However, the interaction of *Moody's Rating Change Dummy* and *Moody's Related* dummy is not significant. For the upgrade sample, none of the variables is significant (Column 2). Similar absence of significant results for the upgrade sample is also reported by Hull, Predescu, and White (2004). Overall, little evidence exists to suggest that relatively favorable ratings by Moody's for *Moody's Related* bonds represent more informative ratings.

[24] Markit averages daily closing prices obtained from contributing global banks and their most recent trade prices to produce its daily CDS composite spreads. See Markit (2009).

Table 11
The Informativeness of *Moody's Ratings* and *Expected Default Frequency*.

The sample consists of new bonds issues (Column 1) and outstanding bond issues (Column 2) over the period 2001 to 2010. The dependent variable for Column 1 and Column 2 is *S&P - Moody's Rating* and its average value within a quarter respectively. *Moody's Related* dummy takes the value of one for bond issues by large investee firms of Moody's stable large shareholders. Expected default frequency is estimated following Duffie, Saita, and Wang (2007). Control variables are as defined in previous tables. The errors are clustered at the firm and industry year level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) New issues	(2) All issues
Intercept	−1.874	−0.075
	(0.000)***	(0.510)
Moody's Related	0.483	0.089
	(0.000)***	(0.011)**
Expected Default Frequency	−0.523	−0.254
	(0.002)***	(0.000)***
*Moody's Related * Expected Default Frequency*	−0.435	−0.328
	(0.496)	(0.222)
Issuer Size	0.067	0.022
	(0.013)***	(0.007)***
Leverage	−0.497	0.115
	(0.022)***	(0.021)**
Operating Margin	0.000	−0.099
	(0.951)	(0.000)***
Standard Deviation of Stock Returns	−0.073	0.088
	(0.502)	(0.005)***
Issue Size	0.044	−0.001
	(0.003)***	(0.876)
Years to Maturity	−0.016	0.002
	(0.469)	(0.000)***
Seniority	−0.264	0.029
	(0.000)***	(0.228)
Adj. *R*-squared	0.451	0.089
Number of observations	9,550	32,924
Industry fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Table 12
The Informativeness of *Moody's Ratings* and credit default swaps (CDS) spreads.

The sample includes all downgrades (upgrades) by either Moody's or Standard & Poor's (S&P) with available CDS spreads over the period 2001 to 2010. The dependent variable for both columns is change in the five-year CDS contract from day −1 to day +1, where day 0 is the day of the rating change. *Moody's Related* takes the value of one for bonds issued by large investee of Moody's stable large shareholders. *S&P Rating Change Dummy* (*Moody's Rating Change Dummy*) takes the value one if the rating change is by S&P (Moody's). *Lagged Change in CDS Spreads* is the change in CDS spread from day −10 to day −2. *Magnitude of Rating Change* is the absolute magnitude of the rating change. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) Downgrade	(2) Upgrade
S&P Rating Change Dummy	0.158	0.001
	(0.094)*	(0.982)
Moody's Rating Change Dummy	0.235	0.000
	(0.040)**	(0.999)
*Moody's Related * Moody's Rating Change Dummy*	0.291	0.009
	(0.463)	(0.538)
Lagged Change in CDS Spreads	0.254	0.034
	(0.035)**	(0.745)
Magnitude of Rating Change	−0.004	0.007
	(0.937)	(0.695)
Rating Change across IG/HY Boundary Dummy	−0.147	0.034
	(0.555)	(0.440)
Log of Days from Last Rating Change	−0.019	−0.004
	(0.207)	(0.326)
Adj. *R*-squared	0.074	0.010
Number of observations	1,071	632

Table 13
Summary information on McGraw-Hill's ownership structure.

McGraw-Hill's ownership data are obtained from Thomson-Reuters Institutional Holdings (13F) Database for the period 2001 to 2010, spanning 40 quarters. A large shareholder is one who owned at least 5% of a firm in the prior quarter. A stable large shareholder is one who owned at least 5% of a firm in each of the past 12 quarters. An investee firm of a shareholder is considered large if it accounts for at least 0.25% of the shareholder's portfolio in each of the past four quarters. Panel A provides summary information on McGraw-Hill's shareholders and their investee firms. Panel B lists McGraw-Hill's shareholders that are classified as large shareholders for at least one quarter during the sample period. Panel C provides summary statistics on the quarterly holdings of these large shareholders of McGraw-Hill.

Panel A: Summary information on McGraw-Hill's shareholders and their investee firms

	Mean	Median	Min	Max	Std	*N*
Number of shareholders	496	479	392	640	74	40
Number of large shareholders	1	1	1	2	0	30
Number of investee of large shareholders	3,161	3,267	460	4,886	1,175	30
Number of large investees of large shareholders	70	65	48	130	22	30
Number of stable large shareholders	1	1	1	1	0	3
Number of large investees of stable large shareholders	59	61	52	65	7	3

Panel B: Summary information on McGraw-Hill's large shareholders

Firm	Number of quarters classified as large owner	Number of investees per quarter	Number of large investees per quarter
Goldman Sachs & Company	14	3,571	55
T. Rowe Price Associates	10	1,946	71
Barclays	8	4,374	48
Capital World Investors	4	504	58
Fidelity Management & Research	3	2,887	56
Morgan Stanley Dean Witter & Company	1	3,680	49

Panel C: Summary statistics of McGraw-Hill's large shareholders' quarterly stake in McGraw-Hill

Firm	Mean	Median	Min	Max	Std	*N*
Goldman Sachs & Company	3.1%	3.3%	0.0%	7.5%	2.8%	40
T. Rowe Price Associates	2.9%	0.7%	0.2%	10.5%	3.6%	40
Barclays	4.9%	4.2%	3.0%	10.2%	2.3%	34
Capital World Investors	9.1%	10.4%	1.8%	12.2%	4.0%	6
Fidelity Management & Research	2.6%	2.5%	0.3%	5.3%	1.4%	40
Morgan Stanley Dean Witter & Company	1.1%	0.6%	0.1%	5.6%	1.3%	38

7. Large shareholders of the parent company

Thus far, we have examined the impact of large shareholders on Moody's ratings. This inquiry has been motivated by the fact that Moody's is directly listed on a stock exchange and S&P, although a division of a public firm, is not itself publicly listed. In this section, we evaluate whether indirect ownership, through a large holding in the parent firm of S&P, McGraw-Hill, also impacts ratings.

Much like Moody's, McGraw-Hill through S&P, its ratings division, is also likely to cater to the interests of its stable large shareholders by assigning favorable ratings to its large investee firms. However, a direct listing engenders sharper incentives for Moody's executives. The value of their equity linked compensation is impacted only by the performance of the rating business instead of by the performance of other divisions, unlike the case of S&P. This clearer focus gives Moody's executives greater incentives to assign favorable ratings to cater to the interests of the company's large shareholders. For the large shareholders as well, the performance of the ratings division is likely to have a stronger impact on their decision to hold the stake for the long term, as in the case of Moody's and in contrast to McGraw-Hill. Consequently, we expect direct ownership, as in the case of Moody's, to have a stronger effect on rating than indirect ownership through the parent, as in the case of S&P.

A study of McGraw-Hill's ownership structure reveals that it has, on average, 496 shareholders each quarter (Panel A of Table 13). A total of six investment management firms are classified as large shareholders in at least one quarter over the sample period. Only one firm, Goldman Sachs, is classified as a stable large shareholder based on our criteria and that, too, for only three quarters during our sample period. We identify 179 new bonds issued by large investees of Goldman Sachs in these three quarters. The dummy variable *McGraw-Hill Related* takes the value of one for these 179 new bonds. The coefficient of *McGraw-Hill Related* should be negative if S&P gives favorable ratings to these bonds.[25]

As seen in Column 1 of Table 14, the coefficient on *McGraw-Hill Related* is negative and significant for new issues. This suggests that S&P is favorable toward the interests of its parent's stable large shareholder as well. However, some of the large investee firms of McGraw-Hill's large shareholder also could be held by Moody's large

[25] The dependent variable for Model 1 is still *S&P – Moody's Rating*. Positive (negative) values of this implies a relatively higher rating by Moody's (S&P).

Table 14
Standard & Poor's (S&P) bias toward McGraw-Hill's large shareholders.

The sample consists of new bonds issues (Columns 1 and 2) and outstanding bond issues (Columns 2 and 3) over the period 2001 to 2010. The dependent variable is *S&P – Moody's Ratings* and its average value within a quarter for Columns 1 and 2 and Columns 2 and 3 respectively. *McGraw-Hill Related* takes the value one if the bond is issued by a large investee of a McGraw-Hill stable large shareholder. *Moody's Related Only* (*McGraw Hill Related Only*) takes the value one if the bond is (not) classified as *Moody's Related* but not (is) *McGraw Hill Related*. Related to both is a dummy that takes the value of one if the bond is classified as being related to both Moody's and McGraw-Hill. Control variables are as defined in previous tables. Errors are clustered at the firm and industry year level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Variable	New issues		All issues	
Intercept	−1.810	−1.858	−0.150	−0.151
	(0.000)***	(0.000)***	(0.376)	(0.373)
McGraw-Hill Related	−0.328		−0.146	
	(0.098)*		(0.006)***	
Moody's Related Only		0.441		0.090
		(0.000)***		(0.035)**
McGraw-Hill Related Only		−0.272		−0.168
		(0.070)*		(0.001)***
Related to Both		0.599		0.107
		(0.157)		(0.355)
Issuer Size	0.093	0.074	−0.012	−0.013
	(0.000)***	(0.000)***	(0.099)*	(0.073)*
Leverage	−0.583	−0.542	−0.417	−0.416
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Operating Margin	0.000	0.001	0.000	0.000
	(0.561)	(0.339)	(0.059)*	(0.056)*
Standard Deviation of Stock Returns	−0.159	−0.144	0.005	0.005
	(0.250)	(0.320)	(0.740)	(0.733)
Issue Size	0.043	0.040	0.047	0.046
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Years to Maturity	−0.023	−0.014	0.004	0.004
	(0.136)	(0.386)	(0.000)***	(0.000)***
Seniority	−0.269	−0.255	0.020	0.019
	(0.000)***	(0.000)***	(0.309)	(0.321)
Adj. *R*-squared	0.431	0.446	0.290	0.291
Number of observations	9,550	9,550	32,924	32,924
Industry fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

shareholders. To understand this overlap better, we identify bonds that are only *McGraw-Hill Related*, bonds that are only *Moody's Related*, and those that are related to both rating agencies. Twenty-five bonds issued by firms are related to both McGraw Hill and Moody's. As seen in Column 2, this does not materially impact the results. Significant evidence shows that S&P assigns relatively better ratings to the *McGraw-Hill Related* bonds and that Moody's gives favorable ratings to *Moody's Related* bonds. For bonds that are related to both Moody's and McGraw-Hill, the biases counter each other and no significant observed relative bias emerges. The results are qualitatively similar for outstanding bonds (see Columns 3 and 4). In summary, significant evidence exists that indirect ownership in the parent firm of the rating agency is associated with favorable treatment.

8. Structured finance products

Finally, we examine whether Moody's favorable treatment of its large shareholders is observed in its ratings of structured finance products. Unlike corporate bonds, structured products are not always rated by both major rating agencies. This creates incentives for issuers to shop for ratings and makes our research design of difference-in-differences between Moody's and S&P's ratings difficult to implement. Even for those structured products that are rated by both agencies, ratings shopping can create pressure on the more pessimistic ratings agency to update its model based ratings of structured finance products to match that of the more optimistic agency. Therefore, the rating difference between Moody's and S&P might not be able to capture the potential conflict of interest for the structured finance products as well as for corporate bonds. However, structured products represent the fastest growing segment for credit rating agencies during the sample period, and issuers are likely to substantially benefit from favorable ratings. With these caveats in mind, we study the effect of large shareholders in Moody's ratings of structured products.

We choose to study commercial mortgage backed securities for several reasons. First, the majority of CMBS issues are non-agency securities or private label securities. In contrast, residential mortgage backed securities (RMBSs) are mostly issued by a government agency [e.g., Government National Mortgage Association (Ginnie Mae)], or by government sponsored enterprises (e.g., Fannie Mae and Freddie Mac). Consequently, credit risk is the main pric-

Table 15
Summary: commercial mortgage backed securities (CMBSs).
This table provides summary information on the issuance of CMBSs from 2001 to 2010. Percentage rated by Moody's (percentage rated by S&P) refers to the percent of total number of CMBS tranches rated by Moody's (Standard & Poor's). Similarly, percentage rated by both refers to the percent of total number of CMBS tranches rated by both rating agencies. The data are obtained from Bloomberg.

Year	Number of deals	Par amount (billions of dollars)	Total number of tranches	Percentage rated by Moody's	Percentage rated by S&P	Percentage rated by both
2001	106	153	1,705	57	54	31
2002	76	138	1,342	61	75	49
2003	104	224	1,794	57	73	44
2004	109	273	2,078	59	72	47
2005	116	464	2,524	58	73	46
2006	133	527	2,743	63	69	45
2007	117	530	2,485	58	73	43
2008	22	46	350	61	73	54
2009	22	16	197	45	8	2
2010	35	43	323	35	18	2
Total	840	2,424	15,681	58	68	42

ing characteristic for CMBSs. Second, CMBSs benefit from a standardized rating process that is analogous to the corporate bond market (Fisher and Maxam, 2001). Lastly, sufficient overlap exists between firms that are related to Moody's and CMBS issuers to allow us to comment on whether Moody's is favorable toward them.[26]

We collect both deal-level and tranche-level information on CMBSs from Bloomberg over the 2001–2010 period. The initial sample consists of 1,043 CMBS deals with a total of 17,364 tranches. After removing agency-related CMBSs (Freddie Mac and Fannie Mac), we are left with a final sample of 840 CMBS issues that span 15,681 tranches. The issuance of CMBS increased from $138 billion in 2002 to $530 billion in 2007 and dropped dramatically after the onset of the 2008–2009 financial crisis (Table 15). S&P has a larger market share in CMBSs before the financial crisis. About 70% of the tranches were rated by S&P compared with about 60% by Moody's.

In line with the previous analyses on corporate bonds, we benchmark Moody's ratings on a CMBS tranche to that assigned by S&P. Consequently, we examine only 6,606 or about 42% of the total tranches that are rated by both Moody's and S&P. The relative rating of a CMBS tranche is captured by *S&P – Moody's Rating*.[27] In line with prior analyses, we create a dummy variable, *Moody's Related*, if the deal was issued by a large investee of Moody's stable large shareholders. Six CMBS issuers are classified as *Moody's Related* for at least one quarter (Panel A of Table 16) and account for 55% of our sample tranches. About a third of the tranches issued by these six issuers were in periods when they are related to Moody's. Of these six firms, the largest is JP Morgan, which issues 23 deals in the quarters when it is related to Moody's and 30 deals in quarters when it is not related to Moody's. Although Berkshire Hathaway and Davis Selected Advisors are stable large shareholders of Moody's for most of the sample period, JP Morgan is not always a large investee firm for them, with its weight in their portfolios falling below 0.25% in some quarters.

In a similar vein, we identify CMBS issues by large investee firms of McGraw Hill's stable large shareholders and refer to them as *McGraw-Hill Related*. As seen in panel B, five issuers are classified as related to McGraw-Hill in at least one quarter in our sample. Four of the five issuers that are related to McGraw-Hill are also related to Moody's. As we examine relative ratings, if the issuer is related to both rating agencies they are likely to get favorable ratings from both, leaving little observable bias in the relative ratings. To isolate such cases, we create *Moody's Related Only* (*McGraw-Hill Related Only*) that takes the value of one for tranches that are issued by large investees of only Moody's (McGraw-Hill's) stable large shareholders. The dummy variable *Related to Both* takes the value of one for tranches by issuers that are related to both rating agencies.

We then regress *S&P – Moody's Rating* on *Moody's Related Only, McGraw-Hill Related Only*, and *Related to Both*. In addition, we control for several tranche and deal characteristics, such as the seniority of the tranche (*Seniority*), par amount of the tranche (*Tranche Size*), the par amount of the deal (*Deal Size*), and time fixed effects. The results are displayed in Table 17. As shown in Column 1, the intercept is negative and highly significant, suggesting that, in the CMBS market, Moody's is significantly tougher than S&P on average. The coefficient for *Moody's Related Only* is positive and highly significant, while both *McGraw-Hill*

[26] We also examine collateralized debt obligations (CDOs) issued during our sample period, only to find that fewer than ten CDOs were issued by firms that are related to Moody's.

[27] A typical CMBS uses a waterfall payment structure, in which cash flow in the form of principal and interest from underlying commercial mortgage pool is distributed first to the senior tranches and continues down the security waterfall until no remaining cash is left for distribution. A careful examination of the data reveals that most CMBSs issued in our sample have a much more complicated structure. For about 65% of the sample CMBS, we find that some of the lower tranches carry a AAA rating and some higher tranches either are not rated or receive a lower than AAA rating. This is mainly because those lower tranches have priority on the cash flows from a certain subgroup of loans within the underlying pool, which differs from other structured products such as CDOs. Therefore, we conduct our analysis for each tranche rated by both Moody's and S&P, instead of for aggregate ratings across tranches as done in some of the prior studies on CDOs (e.g., Griffin and Tang, 2011).

Table 16
List of commercial mortgage-backed security (CMBS) issuers and their relation to Moody's and Standard & Poor's (S&P).

Panel A presents a list of CMBS issuers that are classified as being *Moody's Related* for at least one quarter over our sample period, from 2001 to 2010. *Moody's Related* takes the value one if the bond is issued by a large investee of Moody's long-term large shareholders. We present the number of deals (Ndeals), total par amount (Par amount), and number of tranches (Ntranches) of the CMBSs issued by each firm both when it is related to Moody's and when it is not. Panel B reports the same information for the list of CMBS issuers who are classified as being *McGraw Related* for at least one quarter over our sample period. *McGraw Related* takes the value of one if the bond is issued by a large investee of McGraw-Hill long-term large shareholders. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

	In quarters when a firm is related to a rating agency			In quarters when a firm is not related to a rating agency		
Firm	Ndeals	Par amount (billions of dollars)	Ntranches	Ndeals	Par amount (billions of dollars)	Ntranches
Panel A: List of CMBS issuers related to the stable large shareholders of Moody's						
JP Morgan	23	138	473	30	95	478
Morgan Stanley	15	46	264	15	22	156
Citigroup	14	81	306	9	17	178
Bank of America	2	4	53	46	181	747
General Electric	2	13	31	16	29	153
Wachovia Bank	1	3	23	39	204	746
Sum	57	285	1,150	155	548	2,458
Panel B: List of CMBS issuers related to stable large shareholders of McGraw-Hill						
JP Morgan Chase	16	104	335	46	181	801
Wachovia Bank	16	66	302	34	171	649
Citigroup	26	162	550	20	71	436
Bank of America	9	64	193	46	173	752
General Electric	8	23	82	16	29	153
Sum	75	419	1,462	162	625	2,791

Table 17
Rating differences on commercial mortgage-backed securities (CMBSs).

The dependent variable for both columns is *S&P – Moody's Ratings*. This is the difference between Standard & Poor's (S&P) numerical rating and Moody's numerical rating for tranches that are rated by both agencies. The sample includes tranches of CMBSs issued from 2001 to 2010 that were rated by both Moody's and S&P. *Moody's Related Only is* a dummy that takes the value of one if the tranche is issued by a large investee firm of Moody's stable large shareholders, but not of McGraw-Hill's. *McGraw-Hill Related Only* is a dummy that takes the value of one for tranches issued by large investee of McGraw-Hill stable large shareholders but not of Moody's. *Related to Both* is a dummy that takes the value of one for tranches that are issued by large investee of both Moody's and McGraw-Hill stable large shareholders. *Seniority* is the ranking of the tranche in the deal. *Tranche Size* and *Deal Size* are the dollar value, in billions, of the tranche and deal, respectively. Errors are clustered at the deal level. Heteroscedasticity-adjusted robust *p*-values are provided below each estimate. ***, **, and * represent significance at 1%, 5%, and 10% level, respectively.

Variable	(1) Model 1	(2) Model 2
Intercept	−0.102	−0.119
	(0.000)***	(0.000)***
Moody's Related Only	0.076	0.092
	(0.000)***	(0.002)***
McGraw Hill Related Only	0.033	0.002
	(0.233)	(0.944)
Related to Both	−0.004	−0.038
	(0.914)	(0.369)
Seniority	0.004	0.003
	(0.002)***	(0.022)**
Tranche Size	0.022	0.025
	(0.000)***	(0.000)***
Deal Size	0.044	0.034
	(0.000)***	(0.000)***
Adj. *R*-squared	0.019	0.103
Number of observations	6,606	6,606
Time fixed effects	Yes	Yes
Issuer fixed effects	No	Yes

Related and *Related to Both* are not statistically significant. These findings indicate that Moody's assign more favorable ratings than S&P, though only for tranches by related issuers.

These results could be driven by the characteristics of the issuers instead of by their relation to Moody's. For example, the findings could merely reflect stronger credit characteristics of CMBS issuers that make them important investees of Moody's stable large shareholders as well as garner a better rating from Moody's. To address this concern we estimate the model with issuer fixed effects. This entails comparing, for example, CMBS issues by JP Morgan in quarters when it is related to Moody's with issues by JP Morgan when it is not related to Moody's.[28] As shown in Column 2, the results are qualitatively similar.

In summary, Moody's assigns relatively favorable ratings to tranches issued by large investees of its stable large shareholders. No evidence exists that S&P gives relatively favorable ratings to the large investee firms of its parent's stable large shareholders.

9. Discussions and conclusions

The conflict of interest that can arise due to the economic interests of the large owners of credit ratings agencies has been underemphasized, possibly because of the belief that owners of credit rating agencies are nonfinancial entities or dispersed. Contrary to this belief, the results in the paper show that ownership in Moody's is concentrated in the hands of two large financial institutions

[28] This arises as in some quarters JP Morgan is classified as an important portfolio firm of Berkshire Hathaway or Davis Selected Advisors, while in other quarters it is not classified as such.

and that Moody's ratings are biased toward economic interests. The results also show that these ownership related conflicts of interests are more pronounced when credit rating agencies are directly listed, as in the case of Moody's, than when they are a division of a public firm, as in the case of S&P. The findings suggest that ownership related conflicts of interest increased substantially after Moody's IPO in 2000. Moody's ownership structure, i.e., two large shareholders over the entire sample period from 2001 to 2010, is seen in less than 1% of public firms.[29]

Concerns about Moody's ownership structure arguably are exaggerated as the largest owner of Moody's, Warren Buffett, is a highly regarded investor with a special status in the market. Prudent policies of Warren Buffet could limit the negative effect of the shown bias in credit rating on financial markets. However, our results are not confined to just Buffett's firms. Evidence of Moody's bias is also seen for the important investee firms of the other stable large shareholder (Davis Selected Advisors). In addition, nothing prevents another large shareholder, possibly opportunistic, to emerge in the future. Whereas Buffett can exercise prudence, other large shareholders could exploit these conflicts of interest to the hilt. Further, though our paper studies the two large credit rating agencies, ownership-related conflicts of interest are likely to impact other agencies as well. In 2015, Wharf Street, a private equity firm, acquired a majority stake in Kroll Bond Rating Agency, one of the smaller NRSROs, raising concerns about ownership-related conflicts of interest.[30] In summary, the results show the existence of ownership-related conflicts of interest in credit rating that are likely to continue over time, are relevant for all rating agencies, and have the potential to get more severe.

Though credit ratings agencies have been subject to regulatory change in the aftermath of the financial crisis, ownership-related conflicts of interest have not received sufficient attention. In 2014, the SEC adopted new requirements for credit rating agencies to enhance governance, protect against conflicts of interest, and increase transparency as per the requirements of the Dodd-Frank Wall Street Reform and Consumer Protection Act. The SEC states "the Commission shall issue rules to prevent an NRSRO's sales and marketing considerations from influencing the production of credit ratings."[31] The SEC has been criticized for the narrow definition of conflict of interest and the inadequacy of its proposals.[32] The findings of our paper underscore the need for a much broader acknowledgement of the conflicts of interest at the rating agencies, specifically with respect to the inclusion of the ownership-related conflicts.

A few existing proposals attempt to address ownership conflicts of interest in credit rating agencies. The Bertelsmann Foundation proposes the creation of an international not-for-profit credit rating agency supported by a broad coalition of funders, including governments, as this would "separate the funders from the operational business."[33] In November 2012, the European Parliament and member European Union states proposed measures that would force rating agencies to abstain from rating products associated with their large shareholders and would ban investors from buying more than 5% of the two rating agencies.[34] Other avenues could require credit rating agencies to disclose the relation with the issuer along with their ratings.

An alternate way to mitigate the effect of ownership-related and other conflicts of interest is to reduce the regulatory reliance on credit ratings. The Dodd–Frank Act requires every federal agency to remove any references to credit ratings. Though this reduced regulatory reliance on credit ratings mitigates the effect biased ratings have on the financial system, it is not clear that suitable alternatives to credit ratings are available. [35] In addition, regulation of insurance companies, the major player in the corporate bond market, continues to rely on credit ratings because the insurance industry is regulated at the state level. If the push toward removal of reliance on credit ratings continues to be as challenging as it has been, understanding and mitigating conflicts of interest in the credit rating process, including those related to ownership, remains a priority.

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[29] Over the sample period 2001 to 2010, only 19 firms have two or more same large shareholders (with at least 5% ownership) over the entire period. There are 225 firms with at least one large stable shareholder. This period has 23,098 unique firms (2,699 firms with data for the entire period) and 6,401 institutions.

[30] See Housing Wire (2015).

[31] For further details, see U.S. Securities and Exchange Commission (2014).

[32] See New York Times (2014).

[33] See Bertelsmann Foundation (2012).

[34] See Financial Times (2012).

[35] See Van Der Weide (2011). Mark E. Van Der Weide is the senior associate director, at the Federal Reserve Board. http://www.federalreserve.gov/newsevents/testimony/vanderweide20110727a.htm

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