The Implications of Hedge Fund Activism on the Target Firm's Existing

Bondholders

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November 2008

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Abstract

This paper examines the effects that hedge fund activism has on existing bondholders by examining a comprehensive sample of corporate bonds for 253 U.S. firms targeted between 1996 and 2006. We find that 29 percent of these firms have their corporate credit rating lowered by a U.S. credit agency within one year of the initial 13D filing. This compares to 10 percent for a control sample of bonds within the same industry and initial credit rating. In addition, almost 50 percent of the sample bonds have their ratings discontinued within one year of the initial 13D filing. In terms of bond returns, we find a mean (median) -8.19 (-5.26) percent change in bond prices around the initial 13D filing date. To understand the reasons behind these changes in bond ratings and bond prices, we examine one-year changes in key ratios used by the rating agencies. Consistent with their bond rating criteria, we find statistically significant declines in profitability and cash on hand ratios, as well as significant increases in debt-based ratios. We conclude that the intervention of the hedge fund activist results in a short-term increase in the risk of the existing bondholder.

I. Introduction

This paper examines the effects that hedge fund activism has on existing bondholders for targeted firms. Previous studies concentrate primarily on target shareholder returns, consistently showing positive returns of 7 to 10 percent around the filing of the Schedule 13D (e.g., see Klein and Zur (2009) and Brav et al. (2008)). One source behind these returns is that hedge funds elicit substantive financial changes in the target firms, often increasing leverage ratios and decreasing cash on hand within one year of the initial filing date. In addition, target firms often undertake major corporate governance changes as a result of the activism. For example, Klein and Zur (2009) document that 44 percent of hedge fund activism campaigns result in the hedge fund gaining at least one seat on the target's board of directors; Greenwood and Schor (2009) report that almost 30 percent of target firms eventually are acquired by an outsider within 18 months of the initial engagement. The question we propose is whether these changes have a positive or adverse effect on the firms' existing bondholders.

If the activism, on average, increases the expected value of the firm through better governance and/or higher future cash flows, then the activism should positively impact the existing bonds. However, if hedge fund activism increases the risk of the firm and/or reduces its future cash flows (even in the short-term), then the credit ratings and prices of existing bonds should decline.

We conduct an analysis of hedge fund activism on a comprehensive sample of corporate bonds for firms targeted between 1996 and 2006. Since hedge fund targets tend to be comparatively small in assets and market equity, relatively few targets have outstanding, rated corporate debt. Nevertheless, we find that from an original sample of 635 firms, 253 firms (40%) had at least one bond rated by Standard and Poors' (S&P),

Moody's or Fitch in its capital structure in the period prior to the hedge fund investment. Using Mergent-FISD on WRDS and Standard and Poors' RatingsDirect reports on issuer credit ratings, we find that 29 percent of these firms have their corporate credit rating lowered within one year of the initial 13D filing. This compares to 10 percent for a control sample of bonds within the same industry and initial credit rating. In addition, almost 50 percent of these bonds have their ratings discontinued within one year of the initial 13D filing. Thus, it appears that the intervention of the hedge fund activist results in a short-term increase in the risk of the existing bondholder.

To understand the reasons behind these reductions in bond credit ratings, we read through the available Standard and Poors' (S&P) RatingsDirect reports for all firms to ascertain the factors that credit analysts use to assess creditors' risk. These factors include accounting ratios, such as operating margins, debt ratios, and interest coverage, as well as accounting data, for example, earnings before interest, taxes, depreciation and amortization (EBITDA), net income total debt. We also derive a bond rating model using the factors cited in Kaplan and Urwitz (1979) as well as the ratios cited by S&P.

We begin our analyses by fitting the bond rating model on a combined sample of activist targets and control firms. We find that, prior to the hedge fund initial 13D filing, there is no association between the bond's rating and whether the firm is a hedge fund activist target or a control firm. In contrast, we find that, one year after the Schedule 13D filing, the coefficient on the dummy variable separating the activist targets from the control sample firms is significantly negative, indicating that the advent of the activist results in a lower (more risky) bond rating. Next, we compare one-year changes in some key ratios for our sample and control firms. Consistent with the stated criteria, we find significant differences between groups in key ratios, with the sample firms being

accompanied by a reduction in profitability, cash on hand, financial health and an increase in the relative amount of debt in the firm. We also examine changes in ratios by whether the firms were upgraded, downgraded or had no change in their bond ratings over the year following the hedge fund targeting date. We find some evidence of differences in the changes in ratios, specifically those relating to total debt and the financial health of the firms.

To investigate whether the bond market anticipates rating declines, we calculate bond price changes around the initial Schedule 13D disclosure. Overall, bondholders lose, on average, 8.2 percent of their wealth around the 13D filing date, compared to an average gain of 1.5 percent for the control sample's bonds. Differences in means (and medians) are significantly different at the 0.01 level, suggesting that the activism negatively impacts the bonds' values. Further, when we divide the bonds into eventual one-year downgrades, upgrades and no change in ratings, we find evidence to suggest that the market differentiates between subsequent rating reductions and non-reductions. Bondholders lose, on average, 13.9 percent of their wealth for firms that subsequently have their bond ratings decreased, whereas bonds fall only 7.12 percent for firms that have bond ratings that remain the same, and rise by 1.06 percent for eventual upgrades. Using an ANOVA test to test for differences in the means yields a significant F-statistic, supporting the hypothesis that the returns differ by outcome. Further, preliminary tests on whether the reduction in bondholder wealth is due to a subsequent deterioration in future value or to an expropriation of wealth from the bondholder to the shareholder yield results consistent with the latter interpretation.

Overall, the results in this study are consistent with the view that hedge fund activism is not, on average, beneficial in the short-term to existing bondholders.

Specifically, we find evidence that key liquidity, debt, and profitability factors decline in the short-run, thus adding risk to the firm as a whole and to the existing bondholder in particular.

II. Hedge Fund Activism: Sample Selection and Data Description

There is no legal definition of what a hedge fund is. Further, many so-called hedge funds do not engage in hedging activity to a great extent. Following previous papers, we define a hedge fund as an investment vehicle that is relatively free from the regulatory controls of the Securities Act of 1933, the Securities Exchange Act of 1934, and most notably the Investment Company Act of 1940.[1] They maintain their exemption from securities and mutual fund registration by limiting the number of investors and by allowing only experienced investors with significantly high net worth.[2] The funds are almost always organized as limited partnerships (LPs) or occasionally limited liability corporations (LLCs) and are managed by a small group of highly incentivized managers who are free from pay-for-performance restrictions imposed for mutual fund managers in the Investment Advisors Act of 1940.

We use initial Schedule 13Ds to identify hedge fund activism. We begin by including all initial filings between 1994 and 2006 that identify a hedge fund as the investing party. Investors are required to file a schedule 13D with the SEC within 10

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[1] They are not exempt, however, from filing SEC Form 13D or 13G when crossing the 5% threshold of ownership or from filing an SEC Form 13F. The 13G filings are required for passive investors who acquire at least a 5% interest in a publicly traded equity security. See Clifford (2007) for an examination of 13G filings by hedge funds. A form 13F must be filed within 45 days after the end of March, June, September, and December by all institutional managers who exercise investment discretion over $100 million or more in total securities. The 13F lists the securities, the number of shares owned, and the market value of each investment. It does not contain any indication of investment purpose.

[2] The investments are organized as "3(c)(1)" or "3(c)(7)" funds, referring to exemptions from mutual fund registration. Funds organized as 3(c)(1) funds are limited to 99 "accredited" investors. Section 3(c)(7) funds may have up to 499 "qualified" investors, but the net worth requirement is higher.

days after acquiring more than five percent of any publicly traded equity security class with the intent of influencing the firm's management.[3]   We rely on several sources to verify the blockholder's classification. These include the funds' Internet web sites, investor journals, Factiva, and newspaper and magazine articles to determine if the filer is recognized as being a hedge or other type of fund. We also rely on the information in the 13D filing itself to help us decide the identity of the actual investor. When in doubt, we eliminate the filing, a rare event. We recognize that this search process may be imperfect, but we are confident that we correctly classify almost all (if not all) of our investors.

This search yields 635 activism events between 1994 and 2006. From these events, we identified 253 firms (40 percent) that had outstanding bonds over the year prior to the initial Schedule 13D filing. Table 1 contains descriptive statistics for the bond sample.

As Panel A shows, there was a rise in the incidence of hedge fund activism over time, a finding consistent with previous longitudinal studies (e.g., Brav et al. (2008)).   In Panel B, we present the bond ratings in the period prior to the initial 13D filing. These ratings are taken from the WRDS Mergent-FISD file or directly from S&P's RatingsDirect reports. We note that the ratings agencies are invited initially to rate a firm's bonds and will change the ratings when they believe that circumstances warrant the upgrade or downgrade of the bond's risk. Thus, the ratings in Panel B vary from 0 to 12 months prior to the initial 13D filing. Prior to the 13D filing, 190 of the 253 bonds

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[3] Specifically, Rule 13d-1(a) states that "Any person who, after acquiring directly or indirectly the beneficial ownership of any equity security of a class which is specified in paragraph (i) of this section, is directly or indirectly the beneficial owner of more than five percent of the class shall, within 10 days after the acquisition, file with the Commission a statement containing the information required by Schedule 13D." Rule 13d-2(b) further states that the investor could file a Schedule 13G if "such person has acquired such securities in the ordinary course of his business and not with the purpose nor with the effect of changing or influencing the control of the issuer…" In addition, the intention to influence could be specific, which we define as confrontational, or reserved for a future date, which we define as non-confrontational (see Klein and Zur (2009)).

(75 percent) were rated BB+/Ba1/BB+ or below (non-investment grade), with only 63 bonds (25 percent) rated BBB-/Baa3/BBB- or above (investment grade).[4] Therefore, most of the bonds in the sample can be considered speculative grade prior to the advent of the 13D filing. No bond is rated A+/A1/A+ or above; similarly, no bond is in default at the time of the filing.

We also create a sample of matching seasoned bonds. Specifically, we choose a seasoned bond from the same Fama-French 48 industry classification that has the same bond rating as the activist target bond on the initial 13D filing date and a similar market-to-book ratio. This yields a sample of 253 bonds with the same yearly breakdown and bond ratings as shown in Panels A and B. We refer to this sample as the control sample throughout the study.

III. Changes in Bond Ratings After the Hedge Fund Invests in the Firm

We begin our investigation into possible effects of hedge fund activism on existing bondholders by examining ex post changes in bond ratings in the one year period following the initial 13D filing. The results are contained in Table 2, Panel A. Seventy four bonds (29.2 percent) were downgraded within a year. One hundred twenty five additional bonds (49.4 percent) had their ratings discontinued within a year.[5] Only 13 companies had their credit rating increased within a year (5.1 percent) and 41 companies (16.2 percent) experienced no change in their bond ratings. Thus, most firms either had a ratings decline or chose to discontinue the ratings process.

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[4] The three rating agencies have their own classifications of bond ratings. The first rating in Panel B is from S&P; the second rating is from Moody's; and the third rating is from Fitch.

[5] Rating agencies generally rates bonds only for companies that request a rating from the credit agency.

In contrast, only 9.2 percent (23 bonds) of the control sample had their bonds downgraded one year hence. Forty-three bonds (28.8 percent) were upgraded, 73 (28.8 percent) had no ratings change, and 114 (45.1 percent) had their ratings discontinued within a year. To determine if the percentages of subsequent changes in bond ratings are similar between sample and control firms, we conduct a Chi-square test on the percentage breakdowns between the two groups. This test yields a χ^2 value of 33.17, significant at the 0.01 level, suggesting that subsequent changes in bond ratings differ between hedge fund targets and the control group. We also compare the percentage of downgrades for the target firms with downgrades for all bonds rated by S&P between 1994 and 2006.[6] Over this time period, S&P reports yearly downgrades ranged from a low of 7.32 percent in 2004 to high of 18.77 percent in 2002. Thus, the overall percentage of downgrades for the hedge fund target sample (29.2 percent) exceeds all yearly averages for the universe of S&P rated bonds.

In Panel B, we document changes in bond ratings by their bond ratings prior to the downgrade. Of the 74 firms that had their bonds downgraded within a year of the initial 13D filing, 53 (71.6%) were originally rated B+/B1/B+ or lower. In contrast, 18 of the 41 firms (43.9%) whose bond ratings stayed the same, and only 2 of the 13 firms (15.3%) experiencing bond rating upgrades had bonds rated B+/B1/B+ prior to the hedge fund activism. These results suggest that the activism increased the default risks of the bonds disproportionately for the firms with already weaker-rated bonds.

IV. Hedge Fund Activism within the Context of Bond Rating Models

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[6] We thank S&P for supplying us with this data.

To further understand the possible influence that hedge fund activism has on the bond ratings of existing bonds, we use multivariate analyses to examine the associations between bond ratings, and firm-specific characteristics, where one of the characteristics is whether the firm is a hedge fund target. Three separate bond ratings predictive models are estimated. The first model is from Kaplan and Urwitz (1979) who examined bond ratings for seasoned bonds in the early 1970s. They report a parsimonious model that correctly predicted bond ratings 62 percent of the time. The second model is derived by examining the factors presented by S&P in their Ratings/Direct Reports for the sample of bonds targeted by hedge funds during the 1990s.[7] These multipage reports present the rationale by the individual S&P analyst for the current bond ratings. From these reports, we use the most frequently stated accounting ratios as inputs in a separate prediction model. Finally, we combine the factors from the Kaplan and Urwitz (1979) model and the S&P derived model into a third predictive model, which we call the combined model.

A. Bond Rating Models

Kaplan and Urwitz (1979) use ordinal ranking models to predict Moody's bond ratings for two bond samples — (1) all seasoned industrial bonds with unchanged ratings in the 1971-1972 time period and (2) all new industrial bond issues between 1970 and 1974. Using different combinations of thirteen different financial ratios, a dummy for bond subordination, and accounting and market risk measures, they estimate and compare various ordinal regression models for both sets of bond data. Since our bond sample contains only seasoned bonds, we use the Kaplan and Urwitz (1979) estimation model

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[7] We thank S&P for making these reports available to us. We use those reports surrounding the initial 13D filings only.

that best predicts the bond ratings for seasoned bonds.[8] Their final (best) estimation

model is:

(1)   Bond Rating = f(LTD/TA, TA, Subordination, σ^M),

where LTD/TA = long-term debt/total assets, both measured at fiscal year end; TA =

total assets; Subordination = dummy variable equal to one if the bond is subordinated;

and zero otherwise, and σ^M = standard deviation of the error terms from an OLS

regression for the Sharpe market model using 60 monthly observations. For their sample

of 120 seasoned bonds, Kaplan and Urwitz (1979) find that higher rated (less risky)

bonds are negatively related to the long-term debt-to-assets ratio, to whether the bond is

subordinated and to the firm's unsystematic risk, and are positively related to the total

assets of the firm. Kaplan and Urwitz report a 62 percent concordance between the

predicted bond rating and the actual bond rating for their sample of new-issue bonds.

       We modify their model in two ways. First, we use the natural log of TA instead

of total assets as an independent variable. Second, to examine the effect of hedge fund

activism on bond ratings, we add a dummy variable, hedge fund activism, as a separate

independent variable. Our final model is:

(2)   Bond Rating$_i$ = $\Sigma_k \alpha_{ki} + \beta_{1(}LTD/TA)_i + \beta_2 \ln(TA)_i + \beta_3 Sub_i + \beta_4 \sigma^M + \beta_5 HFA_i + \varepsilon_i$,

where i is firm i, α_{ki} is an intercept term for each bond rating k, ε_i is the error term for the

estimation model and the other terms are defined as before and HFA is a dummy variable

equal to one if the firm is a hedge fund target and zero if the firm is in the control sample.

       We use an ordinal logistic model to estimate equation (2) for the combined

sample of the 253 hedge fund activism sample bonds and the 253 control sample bonds

for the period prior to and one-year after the initial Schedule 13D filing, respectively.

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[8] We also estimated their new industrial bond model, but found it inferior to the seasoned bond model.

The ordinal rankings range from 1 to 20, where 1 is a "D/Ca/D" rating and 20 is an AAA/Aaa/AAA rating, and each of the intermediate ratings are assigned the numbers from 2 through 19. Our expectation is that if the model is still representative of how bond ratings are established, the Kaplan and Urwitz variables should be statistically different from zero. Our test variable is HFA, which examines what, if any affect, hedge fund activism has on bond ratings after controlling for the Kaplan and Urwitz variables.

The second bond rating prediction model is based on variables suggested by Standard and Poors' DirectRatings Reports. These reports contain detailed information on the reasons behind the individual firms' ratings. Each report is written by the primary credit analyst for the firm and contains, at a minimum, sections on "major rating factors," "rationale" (for the rating), and "outlook." The reports also present a history of the firm's corporate and bond credit ratings. Sometimes, but infrequently, when a bond is upgraded or downgraded, the reports contain explicit reasons for the ratings change.

Table 3 presents three panels of information taken from RatingsDirect reports for the 61 firms we have in our sample that have S&P bond ratings and corresponding reports. Panel A contains some of the strengths and weaknesses as delineated by the analyst in the "Major Ratings Factors" section of the report. Panel B has some of the accounting ratios and data that the analysts discuss throughout the reports. Panel C contains explicit reasons, if stated, behind S&P's subsequent downgrading of a particular bond. Since there are numerous factors cited in each report, the numbers in the panels reflect the number of times that the item was mentioned

As the three panels show, credit analysts assess overall economic conditions, as well as factors that impact the firm's industry and the firm itself. The two most commonly cited strengths in the RatingsDirect Reports as shown in Panel A are market

share/position (28) and diversification within the company (14). Other strengths include liquidity, brand name recognition, and operating performance measures. Among the weaknesses, analysts most often cite competitive industry conditions (17) and significant company debt (17) as well as operating performance measures (13) and liquidity and future funding considerations (12).

The ratios and accounting measures listed in Panel B support these analyst concerns. Debt measures frequently are cited in the reports – Total debt/EBDITA appears in 30 reports; FFO/debt appears in 11 reports; and the debt-to-assets or the debt-to-equity ratios are cited 8 times. Cash on hand (29) or the ability for firms to tap future credit lines (29) are prime considerations. Operating performance measures, for example, operating margins or growth in sales also are frequently mentioned as rationale behind the current credit ratings.

Twenty-one reports explicitly present reasons behind the analyst's decision to downgrade in the company's credit rating. As Panel C shows, many of these credit declines are due to legal or structural changes in the company, for example, current or possible violations of debt covenants, internal control weaknesses, or the firm spinning off or divesting some of its assets. Four reports specifically mention declines in operating performance as a reason behind the ratings reduction.

Based on these reports, we use ordinal logistic regressions to estimate bond ratings using the most frequently mentioned accounting ratios from Panel B. Specifically, we estimate:

(3) $\text{Bond Rating}_i = \Sigma_k \alpha_{ki} + \beta_1 (\text{TD/EBITDA})_i + \beta_2 \ln(\text{Interest Coverage Ratio})_i + \beta_3 \text{Operating Margin}_i + \beta_4 \text{HFA}_i + \varepsilon_i,$

Where TD = total debt, defined as short-term plus long-term debt; EBITDA is earnings before interest, taxes, depreciation and amortization; Interest Coverage Ratio = earnings before interest and taxes divided by interest expenses, Operating Margin = EBITDA divided by net sales, and the other variables are defined as before.[9]

Our combined model includes both the Kaplan and Urwitz and the S&P independent variables. That is:

(4) $\text{Bond Rating}_i = \Sigma_k \alpha_{ki} + \beta_1(\text{LTD/TA})_i + \beta_2\ln(\text{TA})_i + \beta_3\text{Sub}_i + \beta_4\sigma^M +$

$\beta_5(\text{TD/EBITDA})_i + \beta_6\ln(\text{Interest Coverage Ratio})_i + \beta_7\text{Operating Margin}_i + \beta_8\text{HFA}_i + \varepsilon_i.$

B. Empirical Results

Table 4 presents summary statistics for the independent variables used in equations (2) through (4). We present the data for the hedge fund and control firms. Recall that we match firms by industry and initial bond ratings. Consistent with Klein and Zur (2009) and Brav et al. (2008), we find that hedge find target firms tend to be relatively small in terms of assets. The mean total assets for the target firms are 638.719 million dollars, which compares to 946.81 million dollars for Klein and Zur's sample of confrontational hedge fund targets and 726.56 million dollars for Brav et al's sample of all 13D filings. We also find, consistent with Klein and Zur, that hedge fund targets have positive earnings prior to the fund's intervention (mean EBITDA/Assets = 0.095) and are relatively financially healthy in terms of the firms' interest coverage ratio. Similar to Klein and Zur and to Brav et al., hedge fund targets have relatively low market-to-book ratios; the mean [median] ratio is 1.619 [1.275].

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[9] We alternatively use TD/EBITDA as the debt variable, but find that it is less significant than the Kaplan and Urwitz (1979) debt measure.

We also present the mean and median values for the control sample. An interesting finding is that, with exception of the mean operating margin, there are no statistically significant differences between target and control firms in terms of assets, long-term debt to assets, cash to assets, EBITDA/Assets, interest coverage ratio, the median operating market and the market-to-book ratio. These findings suggest that matching firms by industry, market-to-book ratios and *a priori* bond ratings may be equivalent to matching by these other accounting and financial ratios.[10]

Table 5 contains the empirical results for the multivariate models. We present the ordinal logistic regression results with and without HFA, the dummy variable representing hedge fund activism, in the model. This allows us to assess the models without including HFA, as well as to examine how the inclusion of HFA affects the coefficients of the other independent variables. Since we use ordinal logistic regression models, we report coefficients, Wald Chi-square values, and the percentage of observations that are concordant with predictions. The table does not show coefficients or Chi-square values for the intercept terms.

Panel A contains the regression results for the combined 128 hedge fund targets that have bonds with continuous ratings for at least one year after the initial SEC 13D filing date and their 128 control firms. For these firms, we have actual bond ratings both before and after the 13D filing. Panel B uses all bonds in the sample, including the 125 bonds that discontinue active ratings within one year of the 13D filing date. For these firms, we use the last available bond rating in the post-intervention period.

Columns (1) through (6) contain the results for the pre-activism time period. As Columns (1) Panel A shows, the coefficients on Long-term-Debt-to-Assets and $\sigma(\varepsilon)$ are

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[10] These findings are also consistent with the view that hedge funds do not target firms solely on the perception that the bond ratings for those firms are biased upwards and downwards. The results in Table 5 lend further evidence to this assertion.

significantly negative, and the coefficient on the log of total assets is significantly positive. The coefficient on Subordinated Debt is insignificantly negative. These findings, with the exception of the significance level of Subordinated Debt, are consistent with Kaplan and Urwitz's results, suggesting that the risk factors associated with bonds have not changed dramatically over time. Recall that Kaplan and Urwitz's model produced a concordance rate of 62 percent. As column (1) shows, their model on our data results in a concordance rate of 68 percent.

In column (2), we add the hedge fund activism variable; we find it to be insignificantly different from zero. This finding suggests no a priori association between bond ratings and hedge fund activism. In addition, comparisons between the coefficients and Chi-square values for the other independent variables suggest little to no association between the future hedge fund activism and the bonds' risk factors. These findings are consistent with those reported in Table 4, which demonstrates no significant differences in the means or medians of the Kaplan and Urwitz independent variables between hedge fund target and control firms.

In columns (3) and (4), we estimate the S&P derived model for bond ratings. For this model, the coefficients on cash and interest coverage ratio are significantly positive, suggesting that bond ratings are positively impacted by cash and the ability to pay short-term interest. The coefficient on the operating margin is significantly negative, a result that is intuitively inconsistent with expectations. We also find an insignificantly negative coefficient on Total Debt-to-EBDITA. The concordance percentages for the S&P model are lower than that reported for the Kaplan and Urwitz models, 55.9 and 57.6 percent vs. 66.8 and 67.7 percent suggesting that the S&P derived model may be an inferior predictor of bond ratings than the Kaplan and Urwitz model. The coefficient on HFA in column

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(4) is insignificantly negative, a finding consistent with the Kaplan and Urwitz formulation, suggesting again that there is no association between current bond ratings and future hedge fund activism.

In columns (5) and (6), we present the combined model and find evidence that both the Kaplan and Urwitz and the S&P derived models contribute explanatory value to predicting bond ratings. From the Kaplan and Urwitz model, long-term debt and total assets retain their significance levels and that their coefficients differ little from those presented in columns (1) and (2). From the S&P derived model, the coefficients on cash and the operating margin are significantly different from zero, with the coefficients on operating margin being similar to those presented in columns (3) and (4). Again, HFA is insignificantly different from zero. Comparisons with the other models show that the percent concordant increases to 73.6 percent for model (5) and 68.8 percent for column (6).

Columns (7) through (12) present the regression results for the year after the 13D filing. As Table 2 showed, many of the ratings on these bonds changed over the year since the activists' intervention. Two major conclusions can be gleaned from these estimations. First, for all three models, the coefficients and significance levels on the explanatory are consistent with those reported in columns (1) through (6). Second, the coefficient on HFA is significantly negative, supporting the view that *ceteris paribus* the advent of a hedge fund activist results in a lower bond rating for a firm within one year of the intervention. Thus, we conclude that hedge fund activism is associated with a subsequent deterioration in the bond's rating.

In Panel B, we include all 253 bonds and their control firms. The full sample includes those bonds that discontinue their ratings within one year of the 13D filing date.

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For these bonds, we use the latest bond rating as a proxy for the post 13D filing date bond rating. The findings with this enlarged sample are similar to those reported for the smaller sample. First, the three models capture the bond ratings process fairly successfully, with the Kaplan and Urwitz (1979) model outperforming the S&P derived model in terms of concordance. Second, the coefficient on HFA is insignificantly different from zero in the prior period (columns 2, 4 and 6), but is significantly negative in the post 13D period (columns 8, 10 and 12). We do note, however, that the results with the full sample are somewhat weaker than those reported in Panel A, suggesting that there might be some errors in our bond ratings as implied by the rating stoppage and/or the two samples may not be rated the same way. Nevertheless, the results in Table 5 support the view that hedge fund activism is associated with a subsequent deterioration in the firm's bond ratings.

V. Changes in Accounting Ratios

In this section, we examine one-year changes in various accounting and financial ratios and values for the fiscal year following the initial 13D filing. We conduct this analysis for two primary reasons. First, Klein and Zur (2009) and Brav et al. (2008) present evidence that hedge fund activists change the complexion of the target firm in many ways. Specifically, within a year of the initial 13D filing, these changes include increases in debt-to-assets, dividend payout ratios, CEO turnover, and reductions in cash on hand and operating performance measures. Their findings suggest that the cash and risk profiles of hedge fund targets change in a way that might be disadvantageous to existing bondholders. However, neither study dichotomizes their sample on whether the firm has seasoned, publicly-traded debt. In this section, we do that analysis. Second, the

results reported thus far in this study suggest deleterious changes in accounting and financial ratios that are key to bond risk. By examining the one-year changes in ratios, we can glean some evidence as from where the changes are coming.

We conduct our analyses initially by comparing changes in accounting ratios between the sample of hedge fund targets and the control firms for our sample of firms that have bonds with bond ratings both before and after the 13D filing. We then compare the changes in accounting ratios among target firms that had rating increases, decreases, and no rating changes. Our first hypothesis is that the sample firms will have greater adverse changes in profitability, debt, and cash ratios than the control firms. Our second hypothesis is that there will be distinct, significant differences in the change in ratios among the three ultimate outcomes (upgrades/downgrades/no change).

A. *Changes in Accounting Ratios: Sample vs. Control Firms*

Table 6 presents one-year changes for various accounting ratios, where the change is the difference in the ratio from the fiscal year ending *after* the initial Schedule 13D and the fiscal year immediately prior to the filing. All data are from Compustat. The ratios examined are based on the Kaplan and Urwitz (1979) model, the criteria used by Standards and Poors' as delineated in Table 3, as well as other accounting ratios examined in the accounting and financial literature.

We divide the ratios into six generic categories: profitability, debt, cash on hand, ability to pay off debt and interest, discretionary spending and other ratios. Column (1) contains the mean [median] ratios for the sample firms; column (2) presents the mean [median] ratios for the control firms. We test for differences between columns (1) and (2) and indicate through asterisks whether the mean or medians are different between

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samples. For all tests, the difference in means yields a t-statistic, assuming unequal variances between samples. The difference in sample medians is from a Wilcoxon signed rank test, which does not require the assumption that the populations are normally distributed, and yields a Z-statistic.

The findings in Table 7, in general, are consistent with the proposition that hedge fund activists change the structure of the target firm in many ways that are harmful to existing shareholders. In terms of future profitability, there are statistically significant differences in the changes in EPS and EBITDA between the bond sample and control sample firms. The mean [median] ΔEPS is -0.099 [-0.011] for the bond sample, compared to 0.006 [0.000] for the control sample. The mean [median] EBITDA drops by $109.26 million [$3.661 million] for the bond sample, but increases by $32.869 million [$5.345 million] for the control sample. Thus, there is some evidence that hedge fund activism results in a one-year decline in firm profitability vis-à-vis the control sample, although we note no statistical differences in changes in ROA, operating margins, sales, or CFO between samples.

In terms of debt, the debt-to-assets ratios, as measured by current, long-term, or total debt, rises in the year after the hedge fund 13D filing. In contrast, these ratios decline for the control sample. Testing for differences between the two samples result in statistically significant t- and z-statistics, thus providing evidence that total debt and hence the riskiness of the bonds on hand prior to the hedge fund activism increases in the year following the 13D filing.

When examining cash on hand, the mean [median] cash-to-asset ratio for the hedge fund activism sample declines by -0.015 [-0.004], whereas the ratio changes by 0.005 [0.000] for the control sample. Similarly, when including short-term investments

to the cash balances,[11] we find that cash (broadly defined) decreases for the bond sample, but increases for the control sample. Given that cash and cash equivalents balances are the second most commonly cited factor by S&P in determining their bond ratings (see Table 3), these findings are consistent with why many of these bonds were downgraded within a year.

We examine four ratios that help gauge the firm's ability to pay off its debt and interest. Three of these ratios, Total Debt/EBITDA, FFO/Debt and the interest coverage ratio are taken from the S&P rating agency. The fourth ratio, Altman's (1976) Z-score measures the risk of bankruptcy for an individual firm. We find an increase in the total debt-to-EBDITA ratio for the sample firms, but a decrease in the ratio for the control sample. Testing for differences between groups yields t- and z-statistics that are statistically significant at the 0.05 levels, respectively. As Table 3 indicates, the total debt-to-EBDITDA ratio is the most commonly cited ratio in the RatingsDirect documents, suggesting that the increase in this factor is partially responsible for the subsequent downgrading of many bonds in the sample. We also find a decline in the bond sample's Altman's Z-score – the mean [median] change is -1.568 [-0.010]; in comparison the control sample's mean [median] change in 0.831 [0.027]. Testing for differences between groups yields statistically significant test statistics at the 0.05 level. In contrast, we find no differences in the funds from operations-to-debt ratios between groups, and we report an anomalous improvement in the interest coverage ratio vis-à-vis the control group.

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[11] Cash is from the firm's balance sheet and, following generally accepted accounting rules (SFAS 95), is defined as cash plus interest-denominated investments with maturities of three-months or less. Cash plus short-term investments is defined as cash plus interest-denominated investments with maturities between three months and one year, or passive equity instruments. We include short-term investments since firms tend to place their excess cash in these securities

In terms of examining discretionary spending, we find weak evidence that the bond sample firms cut spending on capital expenditures in the year following the hedge fund activism. Finally, we find that hedge fund targets reduce their total assets by an average [median] value of $96.16 [-62.10] million, which is significantly different than the increase in total assets for the control sample firms.

In summary, when compared to its paired control firm sample, hedge fund targets experience decreases in profitability, cash on hand, capital expenditures and total assets within one year of the hedge fund intervention. Further, hedge fund targets have increases in debt, primarily long-term debt, when compared to the sample of control firms. These findings are consistent with those reported in the last section, in that they present a picture of hedge fund interventions resulting in substantial changes to the target firms' balance sheets and income statements that may be detrimental to existing (pre-13D filing) bondholders. These findings are also consistent with Klein and Zur (2009) and Brav et al. (2008) who examine changes in key accounting ratios for different samples of hedge fund activists (and control samples) after the funds' initial 13D filing dates.

B. Changes in Accounting Ratios: Comparison Among Upgrades, Downgrades and No Changes in Bond Rating Firms

In Table 7, we compare ratios across the hedge fund activism sample by whether the firm experiences a bond rating decrease, increase, or no rating change. To test whether the differences in mean changes across the three groups are different from each other, we perform an ANOVA across groups and report F-values and their significance levels in column 4. We find significantly different changes in one-year long term debt/assets and total debt/assets ratios among groups. In particular, we note that firms

that eventually have their bonds downgraded experience large increases in both ratios when compared to the other two groups. We also find significantly different changes in the firms' Altman Z-scores, with eventual downgrades recording a mean change of -2.628, compared to a decrease of -0.138 for the "Same" group and 0.043 for those firms with bond upgrades. None of the other F-values are significant at the 0.10 level, although we find that in almost all cases, the ratios for the downgrades are consistent with an increase in default risk (in terms of profitability or cash on hand) .

VI. Bond Market Price Responses to Initial Activism

A. Changes in Bond Prices

Thus far, we document a large number of credit rating decreases within one year of the initial activism, as well as significant changes in accounting and financial ratios that are correlated with increased bond risk. However, our findings may be endogenous to how credit agencies rate their bonds, and may not be a reflection of how the market reacts to the initial activism. In this section, we examine the bond market response around the initial Schedule 13D filing. If most bonds are downgraded within a year, and if these downgrades have market-wide implications, our expectation is that the bond market, on average, will reduce the firm's bond prices around the initial filing.

Until recently, it was difficult to obtain accurate bond price data. This changed in July 1, 2002 when the National Association of Securities Dealers (NASD) initiated a program of post-trade bond transparency, known as the Trade Reporting and Compliance Engine (TRACE) system. We use this dataset, available on Datastream, to calculate bond returns around the initial 13D filing date. We define the bond return as the first price after the filing date minus the first price before the filing date divided by the first price

before the filing date. We note that, unlike the equity markets, bond trading is relatively thin, with many bonds not trading for several days. Further, Goldstein and Hotchkiss (2007) report that non-investment grade bonds trade less frequently than investment grade bonds, and since many of our bonds are non-investment grade, our results will be biased by these non-trading effects. [12] Nevertheless, Bessembinder, Maxwell and Venkataraman (2006) report that trade execution costs fell for both TRACE and non-TRACE bonds after the initiation of the TRACE reporting system, suggesting an increase in market transparency and a reduction in trading costs in corporate bonds.

We begin by calculating the change in bond prices for all listed bonds on the TRACE dataset. Due to missing data, we examine 61 companies only. Table 8, Panel A contains the mean and median percent changes for the bond and the control samples. We report a mean bond return of -8.19 percent, significant at the 0.01 level and a median return of -5.26 percent, also significant at the 0.01 level. In contrast, the control sample's mean bond return is 1.54 percent, significant at the 0.10 level, and the median return is 2.14 percent, significant at the 0.05 level. [13] Testing for the difference in the means between the two samples yields a t-statistic of -3.88 (p-value < 0.01). The z-statistic for the difference in the medians is -4.20 (p-value < 0.01). Thus, we find evidence that the hedge fund activism results in a decline in the bond's trading value around the initial 13D filing date, and that this decline is significantly different than the return for the control sample's bonds.

We also examine bond returns by whether the bond rating was subsequently upgraded, downgraded, or had no change in bond rating within one year of the original

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[12] Alternatively, we have access to a proprietary dataset of credit derivative prices and trades. We intend to use this data to re-calculate bond returns and compare these returns to those reported in this paper.

[13] Unlike publicly traded stocks, which almost always trade every day, bonds display a more discontinuous trading pattern over time. This will introduce some noise into our measures.

13D filing. As Panel A shows, for the 32 downgraded companies, the average bond return around the initial 13D filing date is -13.92 percent (p-value < 0.01). The median return is -13.07 percent; a Wilcoxon signed rank test yields a p-value less than 0.01, supporting the view that the market anticipates the subsequent downgrades (with error). In contrast, the average bond return for the 10 upgraded bonds is 1.06 percent, and the median return is 2.52 percent. Neither return is significantly different at the 0.10 level. Bonds that are neither up- nor downgraded experience mean (median) bond returns of -7.12 (6.42) percent; both are significantly different from zero at the 0.01 levels. When we test for the differences among groups, we get an F-value equal to 2.75, which is significant at the 0.10 level. Thus, there is evidence that the market anticipates (with error) the subsequent change in the firm's bond rating.

B. Expropriation from Bondholders to Shareholders

Klein and Zur (2009) and Brav et al. (2008) show significantly positive abnormal returns to shareholders around the initial 13D filing. Klein and Zur (2009) report mean [median] size-adjusted abnormal returns of 7.3 [4.9] percent for the period encompassing 30 trading days prior to and 5 days after the initial 13D filing date for a sample of 134 confrontational hedge fund activism targets.[14] Brav et al. (2008) report a mean market-adjusted abnormal return of 7.2 percent over a window beginning 10 days before the initial 13D filing and 20 days after. Brav et al (2008) include both confrontational and non-confrontational hedge fund activism in their sample. Klein and Zur (2009) attribute their results primarily to a reduction in the free cash flow agency problem, as articulated by Jensen (1986). Brav et al. (2008) state that their results are consistent with the view

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[14] Confrontational activism, as defined by Klein and Zur (2009), is when the Schedule 13D purpose statement contains a specific activism demand, for example, representation on the target's board of directors or a reduction in the CEO's pay.

that the market anticipates that the hedge fund activism will result eventually in an increase in overall firm value. Most germane to this study, Brav et al. (2008) rule out the alternative hypothesis that the significantly positive shareholder return is due to an expropriation from the bondholder to the shareholder. Their conclusion is based on comparing shareholder returns between targets that have no long-term debt to those with some long-term debt. They report mean abnormal shareholder returns of 9.46 percent for those firms with no long-term debt vs. 7.21 percent with those firms with some long-term debt.

In this section, we expand on Brav et al.'s analysis of whether an expropriation (or expected expropriation) from bondholder to stockholder exists around the 13D filing. The abnormal stock return is the difference between its buy-and-hold stock return and the return on the matched Fama-French 5 size portfolio as calculated on Eventus (see Klein and Zur, 2009). In Table 8, Panel A, the abnormal stock return is calculated over the same time period as the bond sample. For this panel, we use only the 61 firms in the TRACE sample. In Panel B, stock returns are from 10 days prior to the initial 13D filing to 10 days after the filing (21 days in total).

The results, in general, do not support an expropriation explanation for the negative bond price reaction around the initial 13D filing date. Specifically, although the sample mean and median abnormal stock returns are significantly positive around the 13D filing, we find, in Panel A, that the positive stock returns are seen only for those companies that do not experience a subsequent bond downgrade. That is, whereas the mean [median] abnormal stock return is -1.98 [-1.45] percent for the downgraded sub-sample, the mean [median] abnormal stock returns are 5.16 [3.87] percent for the eventual upgrades and 4.01 [3.57] percent for the "no change" group of firms. These

findings are also consistent with the view that the stock market differentiates between eventual downgrades/non-downgrades and that downgrades are associated with poorer prospects for shareholders as well as for a bondholders. However, we also note that the F-value from an ANOVA testing for differences among means yields an insignificant value of 1.84.

The abnormal stockholder returns reported in Panel A are significantly less than those reported by Klein and Zur (2009) and Brav et al. (2008) in their papers. Two possible explanations for the discrepancy in our findings to theirs are offered. The first is that there is a difference in the "event" window that is used among studies. Because stocks are traded every day, papers examining stock returns only can use set windows, for example [-10, +10] to measure the immediate impact of the informational event that is studied. Bond prices do not trade daily – thus, to match shareholder returns to bondholder returns require that we use a specific window for each company that we examine. This will introduce noise and bias into the stock return measure. Second, we examine only 61 firms, a significantly smaller sample than that examined by Brav et al. (2008) or Klein and Zur (2009), which may introduce some sample-selection bias into our metrics.

To account for these possible biases and noise in the data, we calculate abnormal stock returns for all firms in our sample of firms in which we have definitive data on both before and after bond ratings. Further, to calibrate how these shareholders fared around the Schedule 13D filing date, we calculate the abnormal returns for the time period of -10 days to +10 days around the filing date. These abnormal returns are reported in Panel B. As the panel shows, the 21-day mean [median] abnormal stock return for the hedge fund target sample is 5.27 [4.91] percent, a finding that is more in line with those reported by

Klein and Zur (2009) and Brav et al. (2008). Further, when we dichotomize by eventual change in bond rating, we find no difference in means among the three groups. The mean and median abnormal returns range from 4.39 percent to 6.59 percent, and testing for differences among the means yields an insignificant F-value of 1.45. These findings suggest that an expropriation effect from bondholder to shareholder might be taking place, although we caution the reader that these results and interpretations are very preliminary.

VII. Summary and Initial Conclusions

We examine the impact that hedge fund activism has on 253 rated bonds for companies targeted between 1994 and 2006. Our results suggest, on average, bondholders are disadvantaged by the activism in the immediate and short-run. First, we find that within a year, 29 percent of the firms' credit ratings are downgraded and another 49 percent of the firms choose to discontinue rating coverage of their bonds. Next, we find that the bond market reacts negatively to the initial Schedule 13D filing for those bonds that are downgraded within a year. Downgraded bonds experience a 13.92 percent drop in bond prices around the 13D filing date, whereas eventually upgraded bonds have a 1.06 percent return and those bonds with no change in ratings have a 7.12 percent decrease in value. An ANOVA test for differences in means yield a statistically significant F-value, supporting the view that these returns are different from each other.

Using the S&P's credit reports and the Kaplan and Urwitz (1979) bond rating model as input as to what criteria are used to rate bonds, we examine whether the activism affects bond ratings in a positive or negative way. Consistent with the changes in bond ratings and the bond price changes, we find that hedge fund activism has a negative effect on bondholders, both in terms of subsequent bond ratings and in one-year

changes in operating performance, leverage within the firm, cash on hand, financial health and future investments. We also find evidence that downgraded firms have lower Altman Z-scores and higher debt within one year of the initial activism than firms that do not have their bonds downgraded.

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Table 1

Descriptive Statistics

This table reports descriptive statistics for the final sample of bonds held by targets of hedge fund activists. Panel A summarizes the number of firms targeted in each year by the hedge fund.   Panel B summarizes the target firms by their initial S&P/Moody's/Fitch credit ratings.

Panel A: Year of Initial Schedule 13D Filing

Year	Number of Filing	Bond Sample
1994	5	5
1995	21	10
1996	28	15
1997	38	27
1998	41	15
1999	42	13
2000	44	12
2001	36	10
2002	50	19
2003	61	22
2004	70	37
2005	98	51
2006	101	17
Total	635	253

Panel B: Initial Ratings of Bonds by S&P/Moody/Fitch

Rating (S&P/Moody/Fitch)	Number
Investment Grade	
AAA/Aaa/AAA	0
AA+/Aa1/AA+	0
AA/Aa2/AA	0
AA-/Aa3/AA-	0
A+/A1/A+	0
A/A2/A	3
A-/A3/A-	16
BBB+/Baa1/BBB+	12
BBB/Baa2/BBB2	14
BBB-/Baa3/BBB-	18
Non-Investment Grade	
BB+/Ba1/BB+	14
BB/Ba2/BB	18
BB-/Ba3/BB-	12
B+/B1/B+	24
B/B2/B	30
B-/B3/B-	34
CCC+/Caa1/CCC	34
CCC/Caa2/DDD	18
CCC-/Caa3/DD	6
D/Ca/D	0
Total	253

Table 2

Changes in Credit Ratings Within One Year of Initial 13D Filing Date

This table documents the changes in the sample's and control sample's credit ratings by S&P/Moody's/Fitch within one year of the hedge fund's initial 13D filing date. Panel A contains the changes for the entire sample. Panel B shows the changes when the firms are stratified by their ratings prior to the hedge fund's filing of the Schedule 13D.

Panel A: Change in Credit Rating within One Year of Initial 13D Filing

Change	Sample Firms Number (Percentage)	Control Sample Number (Percentage)
Up	13 (5.1%)	43 (16.9%)
Same	41 (16.2%)	73 (28.8%)
Down	74 (29.3%)	23 (9.2%)
Not Rated	125 (49.4%)	114 (45.1%)
Total	253 (100%)	253 (100%)

χ^2 Statistic for Association between Rating Increasing and [Rating Decrease/Same/Not Rated]	33.17***

Panel B: Change in Credit Ratings by Filing Prior to the Initial Schedule 13D

Initial Rating (S&P/Moody/Fitch)	Downgrade	Same	Upgrade
AAA/Aaa/AAA	0	0	0
AA+/Aa1/AA+	0	0	0
AA/Aa2/AA	0	0	0
AA-/Aa3/AA-	0	0	0
A+/A1/A+	0	0	0
A/A2/A	1	1	0
A-/A3/A-	5	1	3
BBB+/Baa1/BBB+	2	1	3
BBB/Baa2/BBB2	2	2	3
BBB-/Baa3/BBB-	4	5	0
BB+/Ba1/BB+	2	4	1
BB/Ba2/BB	4	5	0
BB-/Ba3/BB-	1	4	1
B+/B1/B+	7	5	0
B/B2/B	9	4	2
B-/B3/B-	11	6	0
CCC+/Caa1/CCC	14	3	0
CCC/Caa2/DDD	9	0	0
CCC-/Caa3/DD	3	0	0
D/Ca/D	0	0	0
Total	74	41	13

Table 3

Factors Considered by S&P Credit Analysts in RatingsDirect Reports
(Two or more factors cited)

This table summarizes some of the criteria stated in the RatingsDirect Reports from S&P. Panel A presents the listed strengths and weaknesses delineated in summary form at the beginning of the report. Panel B has the accounting ratios and numbers cited within the reports. Panel C presents specific reasons for reports in which the credit rating was downgraded.

Panel A: Company Strengths and Weaknesses

Listed Strengths	No. of times listed		Listed Weaknesses	No. of times listed
Market share/position	28		Competitive industry conditions	17
Diversification	14		Significant debt	17
Liquidity	8		Poor operating performance/losses/revenues/cfo	13
Well-known brands	6		Liquidity/funding issues	12
Stable revenues and/or cash flows	6		Active acquisition/growth policy	9
Multiple/strong distribution channels	5		Mature industry	7
Low business/company risk	4		Narrow product line/lone customer	7
Profitable segment	2		Input costs or risks	6
Improving performance	2		Change in asset base through acquisition or divestiture/spin-off	5
Good product development	2		Customer and/or geographic concentration	4
Minimal customer concentration	2		Seasonality	4
Stable economic environment	2		Competitive pricing pressures	3
Good cash flow	2		Aggressive financial policy	3
			Changing demand for product	3
			Restructuring activities	2
			Previous legal issues	2
			Low growth	2

Panel B: Accounting Ratios and Accounting Numbers Cited in Reports

Accounting Ratio or Factor	No. of Times Listed
Total debt/EBDITDA	30
Cash and cash equivalents	29
Availability of credit lines	29
Interest or fixed charge coverage ratio	19
Operating margins	17
Free cash flow or CFO	14
FFO/Total debt	11
Growth in sales/EBITDA	11
Debt/assets or Debt/equity	8
EBITDA or net income	5
ROI	2
Accounting policies and assumptions	2

Panel C: Reasons for Downgrades of Company Credit Rating

Reason for Downgrade	No. of Times Listed
Current or possible debt covenant violation	6
Poor operating performance	4
MBO or divestiture or spin-off	4
Internal control weaknesses or legal issue	3

Table 4

Characteristics of Target and Control Firms Prior to the 13D Filing Date

This table summarizes characteristics of firms targeted by hedge funds and control sample (based on industry, initial credit rating and Market-to-Book Ratio). Ln(Total Assets) are the log of total assets of the company. Long-term Debt-to Assets is the ratio of sum of the long and short-term debt to total assets. (Cash + Short-term Investments)/Assets is the ratio of the sum of cash plus short-term investments to total assets. EBITDA/Assets is earnings before interest, taxes, depreciation, and amortization divided by mean total assets, the latter defined as the average of beginning and ending total assets. Interest Coverage Ration is earnings before interest and taxes divided by interest expenses. Operating Margin is earnings before interest, taxes, depreciation, and amortization divided by sales. Market-to-Book ratio is the ratio of the stock's market value to the difference in the value of total assets and total liabilities. The last column shows the t-statistic (Z-statistic) testing for differences between sample and control's means (medians). ***significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level

	Target Firms	Control Firms	t-statistic [Z-statistic] for diff. between Target and control
Ln(Total Assets)	6.475*** [6.561]***	6.954*** [6.877]***	-0.71 [-0.59]
Total Assets ($ million)	648.719 [706.978]	1,047.331 [969.713]	
Long-term Debt-to Assets	0.320*** [0.264]***	0.335*** [0.305]***	-1.03 [-1.31]
(Cash + Investments)-to-Assets	0.120*** [0.964]***	0.105*** [0.854]***	0.86 [0.95]
EBITDA/Assets	0.095*** [0.105]***	0.126*** [0.127]***	-1.20 [-1.49]
Interest Coverage Ratio	4.436*** [3.759]***	5.115*** [4.232]***	-0.55 [-0.38]
Operating Margin	0.190*** [0.136]***	0.177*** [0.129]***	1.72* [1.42]
Market-to-Book Ratio	1.619*** [1.275]***	1.580*** [1.153]***	1.20 [1.02]
Total	253	253	

Table 5

Ordinal Logistic Regression Models of Bond Ratings on Firm Characteristics and Hedge Fund Activism

This table uses an ordinal logistic regression model to estimate the bond ratings for a combined sample of hedge fund activism firms and control sample firms for one year prior to and one year after the initial filing of the initial Schedule 13D by the hedge fund. We ordinally rank the rating agencies' bond ratings from more risky (D/Ca/D) to least risky (AAA/Aaa/AAA). The bonds are ranked from 1 to 20, where 1 is AAA/Aaa/AAA and 20 is D/Ca/D. Panel A only includes bonds in which at least one of the ratings agencies (S&P, Moody's or Fitch) continued ratings for at least one year after the initial 13D filing. Panel B includes all bonds, that is, for those bonds in which at least one of the rating agencies continued the bond rating and those bonds in which all of the bond ratings were discontinued within one year of the initial 13D filing. For the discontinued bonds, we assume that the post 13D rating is the latest rating available. Long-term debt includes long-term debt only. Assets are the assets of the firm. Subordinated Debt is a dummy variable equal to 1 if the bond is subordinated and 0 otherwise. $\sigma(\varepsilon)$ is the standard deviation of the error term from the Sharpe market model equation. Total debt is short-term plus long-term debt. EBITDA is earnings before interest, taxes, depreciation and amortization expenses. Cash is cash on the balance sheet. Investments are short-term investments on the balance sheet. Interest Coverage Ration is earnings before interest and taxes divided by interest expenses. Operating Margin is earnings before interest, taxes, depreciation, and amortization divided by sales. Hedge Activist is an indicator equal to one if the firm is in the hedge fund activism sample and zero if the firm is in the control sample. Each cell shows the coefficient estimate and the Wald Chi-square Value. ***significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level.

Panel A: Only Includes Bonds that Continue Ratings One Year After Initial 13D Filing (N=128)

Variable	One Year Prior to Initial 13D Filing Date						One Year After 13D Filing Date					
	Kaplan/Urwitz Model		S&P Derived Model		Combined Model		Kaplan/Urwitz Model		S&P Derived Model		Combined Model	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Long-term Debt-to Assets	-1.82 (15.86)***	-1.94 (17.83)***			-1.84 (15.17)***	-2.04 (18.11)***	-1.71 (14.50)***	-1.72 (14.67)***			-1.80 (15.31)***	-1.82 (15.64)***
Ln(Total Assets)	0.69 (53.22)***	0.71 (54.64)***			0.66 (44.37)***	0.67 (45.26)***	0.73 (52.36)***	0.74 (52.45)***			0.75 (51.89)***	0.75 (51.84)***
Subordinated Debt	-0.82 (0.63)	-0.97 (0.88)			-0.75 (0.53)	-0.93 (0.82)	-0.84 (0.66)	-0.95 (0.84)			-0.88 (0.72)	-1.01 (0.94)
$\sigma(\varepsilon)$	-12.50 (6.07)**	-13.18 (4.70)**			-12.84 (4.46)**	-13.38 (4.83)**	-13.21 (3.43)*	-4.51 (0.42)			-3.57 (4.82)**	-5.04 (2.82)*

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	1	2	3	4	5	6	7	8	9	10	11	12
Total Debt-to-EBITDA			-0.01 (2.49)	-0.02 (2.52)					-0.002 (0.32)	-0.001 (0.15)		
(Cash + Investments)-to-Assets			2.36 (5.33)**	2.61 (6.34)**	1.17 (1.22)	1.67 (2.35)			2.63 (5.91)**	2.72 (6.30)**	1.64 (2.29)	1.79 (2.72)*
Interest Coverage Ratio			0.01 (6.11)**	0.01 (4.90)**	0.01 (1.25)	0.003 (0.46)			0.01 (8.53)***	0.000 (0.24)	0.001 (1.17)	0.001 (1.03)
Operating Margin			-0.05 (4.77)**	-0.05 (5.31)**	-0.06 (6.59)**	-0.06 (7.78)***			-0.03 (5.11)**	-0.03 (5.65)**	-0.04 (8.58)***	-0.04 (9.43)***
Hedge Fund Activist		-0.39 (2.10)		-0.34 (1.70)		-0.61 (0.53)		-0.54 (4.41)**		-0.48 (3.74)**		-0.46 (5.35)**
Percent Concordant	72.7%	73.5%	60.7%	60.7%	73.6%	74.8%	72.5%	73.5%	54.3%	56.5%	73.7%	74.4%

Panel B: Includes all Bonds (Continue Ratings One Year After Initial 13D Filing and Stopped Being Rated) (N=253)

Variable	One Year Prior to Initial 13D Filing Date						One Year After 13D Filing Date					
	Kaplan/Urwitz Model		S&P Derived Model		Combined Model		Kaplan/Urwitz Model		S&P Derived Model		Combined Model	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Long-term Debt-to-Assets	-0.41 (3.43)*	-0.53 (2.75)*			-0.52 (4.72)**	-0.67 (4.05)**	-0.41 (9.83)***	-0.48 (4.82)**			-0.49 (5.90)**	-0.56 (2.32)*
Ln(Total Assets)	0.51 (53.60)***	0.50 (51.55)***			0.48 (45.47)***	0.47 (43.13)***	0.52 (53.21)***	0.51 (49.72)***			0.51 (47.60)***	0.50 (44.75)***
Subordinated Debt	-0.94 (1.73)	-1.01 (1.92)			-0.95 (1.78)	-1.03 (2.01)	-0.98 (1.91)	-1.02 (2.04)			-0.93 (1.71)	-0.98 (1.84)
$\sigma(\varepsilon)$	-5.84 (3.86)**	-6.01 (4.17)**			-5.94 (1.37)	-6.17 (1.46)	-2.16 (2.88)*	-3.14 (2.09)			-2.58 (0.23)	-3.61 (0.45)
Total Debt-to-EBITDA			-0.003 (0.17)	-0.003 (0.20)					-0.002 (0.57)	-0.001 (0.33)		
(Cash + Investments)-to-Assets			2.38 (10.86)***	2.41 (11.01)***	1.57 (4.12)**	1.68 (4.71)**			2.54 (11.41)***	2.48 (10.63)***	1.76 (4.91)**	1.77 (4.95)**
Interest Coverage Ratio			0.001 (3.42)*	0.0005 (6.28)**	0.0001 (0.01)	0.0002 (0.02)			0.01 (8.53)***	0.000 (0.07)	0.0001 (0.06)	0.0001 (0.04)
Operating Margin			-0.05 (5.92)**	-0.05 (6.54)**	-0.06 (7.62)***	-0.06 (8.26)***			-0.0004 (2.88)*	-0.03 (7.24)***	-0.04 (9.59)***	-0.04 (9.94)***
Hedge Fund Activist		-0.48 (2.52)		-0.52 (0.12)		-0.54 (2.09)		-0.35 (3.80)**		-0.43 (2.83)*		-0.37 (2.81)*
Percent Concordant	66.8%	67.6%	55.9%	57.6%	73.6%	68.8%	66.8%	67.0%	56.0%	57.4%	68.2%	68.4%

Table 6

One-Year Changes in Profitability, Debt Ratios, Cash on Hand, and the Ability to Pay Off Debt and Interest and Discretionary Spending in the Fiscal Year Following the Hedge Fund Investment for the Target and Matching Control Firms

This table examines the changes (Δ) in accounting and financial ratios for the sample of 253 firms (column 1) that were targeted by hedge funds and their matching control firms (column 2). Each firm has existing debt rated by S&P, Moody's or Fitch prior to the initial Schedule 13D filing date. The firms are matched by industry and credit rating prior to the 13D filing. For each variable the mean [median] is reported. All data are winsorized at the 1% and 99% levels. Column (1) also contains significance levels for differences between the means (medians) between sample and control firms ***significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level. The variables are accounting data during (for flows) or on (for balances) the end of the year previous to the filing of the initial Schedule 13D. An asterisk before the variable name indicates that it is explicitly used by S&P in their DirectRatings report. EPS is earnings per share. ROA is EBITDA/Assets, which is earnings before interest, taxes, depreciation, and amortization divided by mean total assets, the latter defined as the average of beginning and ending total assets. Operating Margin is earnings before interest, taxes, depreciation, and amortization divided by sales. Sales is net sales. CFO/Assets is net cash flow from operating activities divided by mean total assets. Short-term Debt/Assets variable is the ratio of debt in current liabilities to total assets. Long-term Debt/Assets is total long-term debt divided by total assets. Total Debt/Assets is the ratio of sum of the long and short-term debt to total assets. Cash/Assets is cash on hand divided by total assets. (Cash plus Short-term Investments)/Assets is the ratio of the sum of cash plus short-term investments to total assets. FFO is funds from operations. Interest Coverage Ration is earnings before interest and taxes divided by interest expenses. Z-Score uses the Altman (1968) model to determine the likelihood of bankruptcy amongst companies. CAPEX/Assets is capital expenditures less the sale of PP&E divided by mean total assets. R&D/Assets is research and development expense divided by mean total assets. Market-to-Book is the ratio of the stock's market value to the difference in the value of total assets and total liabilities.

	Sample	Control
	(1)	(2)
Profitability Ratios		
ΔEPS	-0.099** [-0.011]*	0.006 [0.000]
ΔROA	-0.017 [-0.000]	-0.027 [-0.002]
ΔEBITDA ($ million)	-109.260** [-3.661]**	32.869 [5.345]
ΔOperating Margin	-0.436 [-0.016]	-0.094 [-0.009]
ΔSales ($ million)	-92.554 [-8.034]	53.253 [8.544]
Δ(CFO/Assets)	-0.007 [-0.002]	-0.026 [-0.004]

Debt Ratios

Δ(Short-term Debt/Assets)	-0.002* [0.000]	-0.019 [-0.001]
Δ(Long Debt/Assets)	0.065** [0.006]*	-0.033 [-0.004]
Δ(Total Debt/Assets)	0.060** [0.004]*	-0.054 [-0.011]

Cash on Hand Ratios

Δ(Cash/Assets)	-0.015*** [-0.004]**	0.005 [0.000]
Δ((Cash plus Investments)/Assets)	-0.016** [-0.002]*	0.004 [0.000]

Ability to Pay Off Debt and Interest

Δ(Total Debt/EBITDA)	2.206** [1.052]**	-4.502 [-0.138]
Δ(FFO/Total Debt)	0.067 [0.006]	0.056 [0.001]
ΔInterest Coverage Ratio	1.150** [0.021]*	-4.137 [-0.066]
ΔZ-Score	-1.568** [-0.010]**	0.831 [0.027]

Discretionary Spending

ΔCAPEX/Assets	-0.007* [-0.001]	0.008 [0.002]
ΔR&D/Assets	0.000 [0.000]	0.005 [0.000]

Other Ratios

ΔTotal Assets ($ million)	-96.160*** [-62.100]**	469.804 [134.899]
ΔMarket-to-Book	-0.056 [0.000]	-0.105 [0.000]

Table 7

One-Year Changes in Profitability, Debt Ratios, Cash on Hand, and the Ability to Pay Off Debt and Interest and Discretionary Spending in the Fiscal Year Following the Hedge Fund Investment for the Targets by Subsequent Changes in Bond Ratings

This table examines the changes (Δ) in accounting and financial ratios for the sample of 253 firms that were targeted by hedge funds, where the sample is stratified by whether the bond rating was downgraded (column 1) unchanged (column 2) or upgraded (column 3) within one year of the initial 13D filing date., Each firm has existing debt rated by S&P, Moody's or Fitch prior to the initial Schedule 13D filing date. The firms are matched by industry and credit rating prior to the 13D filing. For each variable the mean [median] is reported. All data are winsorized at the 1% and 99% levels. Column 4 contains the F-value and its significance levels for an ANOVA testing for differences in the between the means among the three samples ***significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level. See Table 6 for variable definitions

	Downgrade	Same	Upgrade	F-Value
Profitability Ratios	(1)	(2)	(3)	(4)
ΔEPS	-0.347 [-0.013]	0.867 [0.040]	-1.404 [-0.020]	0.39
ΔROA	-0.023 [-0.008]	-0.006 [0.000]	0.001 [0.001]	0.31
ΔEBITDA ($ million)	-201.439 [-4.129]	-0.053 [-0.019]	-27.479 [-0.089]	0.36
ΔOperating Margin	-0.745 [-0.040]	-0.014 [0.000]	-0.009 [0.000]	0.34
ΔSales ($ million)	-76.213 [7.916]	-98.252 [-11.102]	-94.311 [-8.594]	0.04
Δ(CFO/Assets)	-0.019 [-0.006]	0.012 [0.000]	-0.001 [0.000]	1.70
Debt Ratios				
Δ(Short-term Debt/Assets)	0.001 [0.000]	-0.005 [-0.000]	-0.003 [0.000]	0.27
Δ(Long Debt/Assets)	0.124 [0.017]	-0.039 [-0.010]	0.035 [0.013]	3.74**
Δ(Total Debt/Assets)	0.119 [0.014]	-0.038 [-0.016]	-0.009 [0.000]	3.80**
Cash on Hand Ratios				
Δ(Cash/Assets)	-0.029 [-0.007]	0.011 [0.001]	0.002 [0.000]	0.28

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Δ((Cash plus Investments)/Assets)	-0.026 [-0.005]	0.007 [0.002]	-0.001 [-0.002]	1.86
Ability to Pay Off Debt and Interest				
Δ(Total Debt/EBITDA)	2.925 [1.432]	1.051 [0.082]	2.179 [1.061]	1.09
Δ(FFO/Total Debt)	0.074 [0.011]	-0.053 [-0.009]	-0.041 [-0.005]	1.54
ΔInterest Coverage Ratio	1.479 [0.037]	0.931 [0.018]	0.848 [0.014]	0.47
ΔZ-Score	-2.628 [-0.147]	-0.138 [-0.001]	0.043 [0.016]	2.59[*]
Discretionary Spending				
ΔCAPEX/Assets	-0.003 [0.000]	-0.015 [-0.001]	-0.008 [-0.002]	1.52
ΔR&D/Assets	0.002 [0.000]	-0.003 [0.000]	-0.001 [0.000]	0.24
Other Ratios				
ΔTotal Assets	216.396 [-91.824]	87.659 [12.574]	8.476 [-0.232]	0.55
ΔMarket to Book	-0.074 [-0.001]	-0.028 [0.000]	-0.042 [0.000]	0.09

Table 8

Changes in Bond and Stock Prices Surrounding the Initial Schedule 13D Filing

This table shows changes in bond and stock prices for the period immediately surrounding the initial Schedule 13D filing by the hedge fund activist. The changes in the bond price are calculated as percentage changes in the bond process based on the date from TRACE. The time period is between the last price published on TRACE before the filing of the Schedule 13D and the first price published after the filing date. The abnormal stock return is the size-adjusted return which is the difference between its buy-and-hold return for the time period, as explained above, and the return on the matched Fama-French 5 size portfolio as calculated on Eventus. In Panel B the time period is -10 days to +10 days around the Schedule 13D filing.

Panel A: Includes Only Bonds in the TRACE Database (N=64)

	Base on TRACE Database		
	Sample Means [Medians]	*Control Means [Medians]*	*Different in Means [Medians]*
Change in Bond Price (%)	-8.19%*** [-5.26%]***	1.54%* [2.14%]**	-3.88*** [-4.20]***
Abnormal Stock Return	1.01%* [0.84%]*	-0.38% [-0.01%]	1.85* [1.53]
Total	61	61	

	Downgrade	*No Change*	*Upgrade*	*F-Value*
Change in Bond Price (%)	-13.92%*** [-13.07%]***	7.12%*** [6.42%]***	1.06% [2.52%]	2.75*
Abnormal Stock Return	-1.98%** [-1.45%]**	4.01%*** [3.57%]***	5.16%*** [3.87%]***	1.84
Total	32	19	10	

Panel B: Includes all Firms in Sample (N=128)

	Sample Means [Medians]	*Control Means [Medians]*	*Different in Means [Medians]*
Abnormal Stock Return (-10, +10)	5.27%*** [4.91%]**	0.79% [0.44%]	3.18*** [2.75]***
Total	128	128	

	Downgrade	*No Change*	*Upgrade*	*F-Value*
Abnormal Stock Return (-10, +10)	4.92%** [4.39%]**	5.53%*** [4.74%]***	6.59%*** [6.25%]***	1.45
Total	74	41	13	