Some Initial Evidence on the Role of Accounting Earnings in the Bond Market[♦]

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Some Initial Evidence on the Role of Accounting Earnings in the Bond Market

Abstract

We demonstrate that the incidence of bond trade increases during the days surrounding quarterly earnings announcements and that there is a positive association between annual bond returns and annual earnings. These results are primarily attributable to losses. In particular, the increase in the incidence of trade during the days surrounding the announcement of a loss is significantly larger than the increase in the incidence of trade during the days surrounding the announcement of a profit. Moreover, while there is a strong positive association between bond returns and losses, bond returns and profits are unrelated. We conduct a number of sensitivity checks, none of which affect our main inference: accounting earnings are related to both bond trade and bond returns, and these relations are driven by accounting losses. Our results shed light on the burgeoning literature regarding the role of accounting losses; they suggest that bond markets provide managers with incentives to avoid reporting accounting losses and to make efficient operating and investing decisions.

Keywords: Bond Returns, Bond Trade, Earnings, Losses and Call Option

1. Introduction

The extant literature beginning with Ball and Brown [1968] and Beaver [1968] concerning the role of accounting earnings in equity markets is vast (e.g., Bernard [1989], Lev [1989] and Kothari [2001] provide reviews). However, little is known about the role of earnings in bond markets. We begin to fill this knowledge-gap by evaluating two phenomena: (1) the incidence of bond trade during the time periods surrounding earnings announcements and (2) the relation between bond returns and earnings.

While we are interested in the generic role of earnings, we emphasize the role of losses. Our motivation is straightforward: the owners of a bond hold a combination of the firm's assets and a short position on a call option written on those assets. If the firm is performing well, the stockholders, who are also the owners of the call option, will exercise the option by making coupon payments to the bondholders. However, if the value of the firm falls below the face value of the debt, which equals the strike price of the option, the stockholders will allow the option to expire and bondholders will experience an economic loss equal to the difference between the face value of the debt and the value of the assets. This implies that the payoffs to bondholders are asymmetric (i.e., the upside potential is limited whereas the downside risk is nontrivial). Hence, we predict that, relative to profits, losses have a larger influence on the investment decisions of bondholders.

To evaluate our hypothesis we conduct two sets of analyses. In our first set of analyses we evaluate the incidence of bond trades occurring during the days around quarterly earnings announcements (i.e., the earnings-announcement period). We begin by examining all earnings announcements and we show that there is an increase in the frequency of bond trade during the earnings announcement period. Next, we separate earnings announcements into two categories: (1) announcements of profits and (2) announcements of losses. Analyses of these two categories

lead to the conclusion that the increase in the frequency of trade during the days surrounding the announcement of a loss is significantly larger than the increase in the frequency of trade during the days surrounding the announcement of a profit.

The results discussed above support our hypothesis that earnings influence the decisions of bond investors and that losses generate more bond trades than profits. Nonetheless, rather than being attributable to the asymmetric payoff structure of bonds, these results may be rooted in other phenomena. Hence, we conduct two additional sets of tests. First, we separate bond issues on the basis of whether they are rated investment grade or speculative grade. Our motivation for this partitioning is that the call option underlying investment-grade bonds is deep in the money, which implies that holders of investment-grade debt are fairly certain about future payoffs, thus, the information in earnings about future cash flows is less germane. Holders of speculative-grade debt, however, face greater uncertainty; hence, the information embedded in earnings is more relevant. Our evidence strongly supports this logic. We show that during the earnings-announcement period there is a sizeable increase in the frequency of trade of speculative-grade bonds. The increase in the frequency of trade of investment-grade bonds is relatively small during the earnings announcement period, however.

Second, we partition observations on both the nature of the bond (i.e., investment grade or speculative grade) and the sign of earnings (i.e., profit or loss). We show that speculative-grade bonds issued by firms announcing a loss experience the largest increase in trade during the earnings-announcement period. Combined with the evidence discussed above, this result leads us to conclude that losses are especially relevant to bondholders and that this relevance is attributable to the asymmetric payoff structure of bonds.

In our second set of analyses we examine the relation between annual bond returns and annual earnings (deflated by the sum of beginning equity market value and beginning debt book

value). We first demonstrate that the coefficient on earnings taken from a regression of bond returns on earnings is positive and statistically significant. Next, we evaluate the pricing of losses and the implications of bond type (i.e., investment grade or speculative grade) for the relation between bond returns and earnings. As discussed above, we expect losses to be especially relevant in the context of bond valuation. Moreover, we expect that earnings will be more relevant for the valuation of speculative-grade bonds than for the valuation of investment-grade bonds.

Our empirical results are in line with the predictions discussed above. In particular, we demonstrate that there is *no* association between profits and bond returns but a significant, positive association between losses and bond returns (i.e., larger losses correspond to lower returns). We also show that the association between returns on speculative-grade bonds and earnings is significantly more positive than the association between returns on investment-grade bonds and earnings. Finally, we provide weak evidence suggesting that the association between bond returns and earnings is largest for speculative-grade bonds issued by firms reporting losses.

The above results suggest that the asymmetric payoff structure of bonds has important implications for the role of earnings in bond valuation. However, alternative explanations are possible. First, the relative value relevance of accruals and cash flows may be a function of the sign of earnings. For example, the fact that profits are not associated with bond returns may be an artifact of constraining the regression coefficients on accruals and cash flows to be equal. Moreover, the pricing of losses may be a pure cash flow phenomenon; in particular, upon observing a loss, bondholders may become concerned about the firm's ability to service the debt in the short run and, thus, cash flows (accruals) may become more (less) relevant. These arguments are not supported by the data. In particular, we estimate multivariate regressions of returns on accruals and cash flows and show that neither the coefficient on accruals nor the

coefficient on cash flows is significantly greater than zero for bonds issued by profitable firms. However, both accruals and cash flows have a positive association with the returns of bonds issued by loss firms.

Second, the regressions mentioned above relate to the levels of earnings, accruals and cash flows. A potential concern with the use of levels specifications is that returns relate to revisions in expectations and, thus, our results may be attributable to measurement error. In particular, earnings levels may be a noisy measure of unexpected earnings. Moreover, the degree of noise may be larger for profits than losses. For example, firms that enter the public-debt market typically have good financial health and, thus, profits may be anticipated by bondholders but losses may be unexpected per se. This, in turn, suggests that the regression coefficient on profits is biased towards zero. By including beginning equity market value, which is a function of expected future earnings, in our deflator we mitigate this bias; nonetheless, further analyses are warranted. With this in mind, we re-estimate our regressions using annual changes in earnings (or its components). The results of our changes specifications are basically the same as the results of our levels specifications with one notable exception: changes in earnings occurring in profit years have a significant positive association with returns. However, the regression coefficient on changes in earnings for loss observations is still significantly larger than the regression coefficient on changes in earnings for profit observations. Hence, the basic inference remains unchanged: relative to profits, losses are more relevant in the context of bond valuation.

Third, to the extent the relation between losses and bond returns is driven by the asymmetric payoff structure of bonds, persistent losses will have a stronger association with bond returns than transitory losses. We provide evidence that supports this prediction. In particular, based on results presented in Joos and Plesko [2006] we develop a simple heuristic

(whether a profit was realized in the previous year) for identifying transitory losses. Next, we show that the association between transitory losses and bond returns is significantly weaker than the association between non-transitory (i.e., persistent) losses and bond returns. Moreover, and consistent with our main hypothesis, we show that losses have the greatest explanatory power for bond returns when they are persistent and reported to holders of speculative-grade debt.

Finally, it is possible that the differential treatment of losses and profits we observe in the bond market is attributable to sample selection. Specifically, it may be that the earnings reported by the firms in our sample have unique properties that cause profits to be value irrelevant but losses highly value relevant. Given our sample consists of large firms that have the financial wherewithal to access the debt market, we believe this is unlikely (i.e., it is unclear why the profits of the firms in our sample are transitory). Nonetheless, we acknowledge that sample-selection bias may be an issue.

In light of the above, we re-analyze our tests using stock market data for the samples of firms that underlie our analyses of bond-trading volume and bond returns. If the relations we document for bonds are attributable to their payoff structure, we should observe mirror-image relations in the equity market. In particular, since stockholders own the call option embedded in a firm's bonds, they should consider profits more relevant than losses and they should place even less weight on losses for firms with speculative-grade debt because the call option is closer to being out of the money and, thus, downside risk is less salient. Moreover, to the extent losses are more relevant to bondholders than stockholders, earnings will continue to have explanatory power for bond returns even after controlling for contemporaneous stock returns.

Our analyses of equity-trading volume and equity returns yield mixed results. Regarding equity-trading volume during the days surrounding earnings announcements, we observe the largest increases in volume for loss firms, which is opposite our predictions. However, we show

that the increase in equity volume during the days surrounding earnings announcements is unrelated to the rating of firms' debt (i.e., investment or speculative). Moreover, our regressions of stock returns on the level of earnings (or the change in earnings) yield results that are strongly consistent with the notion that losses are less relevant to stockholders than profits and that losses incurred by firms with speculative-grade debt are less relevant than losses of firms with investment-grade debt. We also demonstrate that the relation between bond returns and earnings remains after controlling for contemporaneous stock returns and that this conditional association is primarily attributable to losses.

Our study contributes to the accounting and finance literature in three ways. First, we are the first to provide large-sample evidence of the relation between earnings and bond prices. Given that during our sample period the ratio of aggregate debt book value to aggregate firm market value is roughly 26 percent, debt financing is clearly nontrivial.[1] Hence, evidence about the role that earnings (a key summary accounting number) play in the valuation of debt instruments should be of interest to both academics and practitioners.[2]

Second, our evidence regarding the pricing of losses in the bond market nicely complements a burgeoning literature in accounting that focuses on the pricing of losses by stockholders (e.g., Hayn [1995], Givoly and Hayn [2000], Joos and Plesko [2006] and Klein and Marquardt [2006]). In particular, Hayn [1995] shows that losses are not priced in the equity market. She argues that this result is attributable to the fact that stockholders own a call option

[1] This statistic is derived from the COMPUSTAT annual primary, secondary, tertiary and full-coverage research files. We define debt book value as the sum of long-term debt (i.e., COMPUSTAT data-item 9) and debt in current liabilities (i.e., COMPUSTAT data-item 34). Firm market value equals the sum of equity market value (i.e., COMPUSTAT data-item 25 multiplied by COMPUSTAT data-item 199) and debt book value.

[2] The motivation for our analysis of the role of earnings in bond valuation is similar to that in Plummer and Tse [1999] who compare the coefficient relating abnormal equity returns to earnings changes and bond returns to earnings changes for loss vs. profit firms and for various grades of bonds (measured via S&P ratings). We examine several other dimensions of the returns/earnings relations for a much larger sample of firms. Our results for the subset of analyses based on earnings changes are similar to those of Plummer and Tse [1999].

on the firm. Our hypothesis is a natural extension of this logic and, thus, our results provide further support for her arguments.

Finally, our results are pertinent to the portion of the accounting literature that relates to the interaction between reported accounting numbers, management's reporting choices and management's investment choices. One important branch of this literature relates to the phenomenon of "loss avoidance," which essentially takes two forms: (1) accounting choices that lead to the reporting of a profit rather than a loss and (2) investment choices that reduce the likelihood of losses being incurred in the future. Our results suggest that to the extent loss avoidance is driven by capital-market incentives, these incentives are especially strong for firms with outstanding debt as losses are associated with nontrivial decreases in bond prices. For example, based on our regression results, the predicted adjusted bond return for the average (median) loss in our sample is -2.22 percent (-0.65 percent).

The remainder of the manuscript unfolds as follows. In section two we develop our hypotheses and describe our research methods. Next, we discuss our sample and describe the variables of interest. Our main empirical results are documented in section four followed by section five, which contains a discussion of the sensitivity analyses we perform. Finally, in section six we provide concluding comments.

2. Hypothesis Development and Research Design

2.1 Hypothesis Development

The upside to investing in bonds is limited.[3] If stockholders expect the firm's assets to generate future cash flows that have a present value greater than the face value of the debt, they

[3] For clarity we discuss a simple bond (i.e., an instrument in which the debtor promises to pay a pre-determined number of coupons of a fixed amount and for which there are no additional features such as a call provision, etc.). We also ignore certain frictions such as contracting costs and bankruptcy costs. While these issues are clearly relevant, they do not change the basic tenor of our predictions.

will make *fixed* coupon payments to bondholders. On the other hand, if stockholders believe the firm's assets are worth less than the face value of the debt, they will default and bondholders will suffer an economic loss equal to the difference between the face value of the debt and the value of assets. Taken together these facts imply that the payoffs to holding a bond are equivalent to the payoffs from holding a package of securities consisting of the firm's assets and a short position on a call option written on those assets (Black and Scholes [1973] and Merton [1973]).

In light of the above, we make three predictions about the role of earnings in the bond market. First, losses will be more relevant to bondholders than profits. This follows from the fact that the maximum payoff bondholders can receive is capped and, thus, there is a ceiling on bond values. Hence, if there is a large upwards revision in expected future cash flows, upwards revisions in expectations about future coupon payments will be relatively small and, thus, the association between bond returns and earnings will be weak or non-existent regardless of the extent to which the good news about future cash flows is reflected in earnings. On the other hand, there is nontrivial downside potential associated with investing in bonds. Therefore, if earnings contain bad news about the firm's future cash flows, nontrivial, downward revisions in bondholders' expectations about future coupon payments will occur simultaneously and, thus, the will be a positive association between bond returns and earnings.[4]

Second, regardless of their sign, earnings will be more relevant to holders of speculative-grade debt than to holders of investment-grade debt. This is attributable to the fact that stockholders are, by definition, more likely to default on speculative-grade debt than on investment-grade debt. Hence, the call option embedded in a speculative-grade bond is relatively close to being out of the money vis-à-vis the call option embedded in an investment-

[4] While bondholders face an asymmetric payoff structure, they do have downside protection as the most they can lose is their initial investment. Hence, we do not argue that the downside to holding a bond is unlimited. Rather, we argue that the downside potential is relatively large vis-à-vis the upside potential.

grade bond. This implies that holders of speculative-grade debt face greater uncertainty and, thus, news (both good and bad) in earnings will have greater relevance. Finally, we combine the previous two predictions to arrive at the logical conclusion that earnings will be most relevant when they take the form of losses reported to holders of speculative-grade bonds.

2.2 Research Design

We begin by evaluating the incidence of bond trades during the days occurring before and after quarterly earnings announcements. These tests are designed to provide evidence on the information content of earnings and are similar in spirit to tests conducted by Beaver [1968], Landsman and Maydew [2001] and others. Next, we evaluate the relation between earnings and annual bond returns. These tests allow us to evaluate the value relevance of earnings and, thus, are similar in spirit to tests conducted by Easton and Harris [1991] and Hayn [1995]. We do not conduct short-window return tests because bonds trade infrequently; hence, we cannot obtain a large enough sample to draw meaningful inferences.

2.2.1 Evaluating the Incidence of Trade

We use the following method for testing the impact of earnings announcements on trade. First, for each quarterly earnings announcement made by a firm that has an outstanding bond issue in our sample during the related quarter we identify the 61 trading-day period spanning the announcement date. We refer to this time period as a bond-quarter event window. We define a trading day as a day on which the bond market was open and, thus, there was the potential for the bond to trade. Second, we align the days in each bond-quarter event window into event time (i.e., number of days relative to the earnings announcement date). Third, for each day in each bond-quarter event window we create an indicator variable T_{qit} that is equal to one if during the qth bond-quarter event window the related bond (i.e., bond i) traded that day (i.e., day t) and zero

otherwise. Finally, we combine all the bond-quarter event windows and create the following ratio for each day $t \in [-30,30]$.

$$T_t = \frac{\sum_{q=1}^{Q}\sum_{i=1}^{I} T_{qit}}{\sum_{t=-30}^{30}\left[\sum_{q=1}^{Q}\sum_{i=1}^{I} T_{qit}\right]} \times 100 \quad (1)$$

In equation (1) Q denotes the number of calendar quarters and I denotes the number of bond issues. Hence, T_t measures the relative *incidence* of trade occurring on day t. We focus on the incidence of trade. We do not focus on trade volume because, as discussed in section 5.4.1, the volume data that is available in the database contains considerable measurement error.

First, we evaluate the temporal behavior of T_t (i.e., how T_t varies with t) for all bond-quarter events. This allows us to determine whether the relative incidence of trade during the days surrounding earnings announcements (i.e., the earnings announcement period). Second, we separate the sample into bond-quarter events in which a loss is announced (i.e., the loss sub-sample) and bond-quarter events in which a profit is announced (i.e., the profit sub-sample) and evaluate whether the temporal behavior of T_t varies across these two sub-samples. We predict that, to the extent T_t increases during earnings announcement periods, the increase will be largest for the loss sub-sample. Third, we separate the sample into bond-quarter events pertaining to bond issues that are rated as speculative grade (i.e., the speculative-grade sub-sample) and bond-quarter events pertaining to bond issues that are rated as investment grade (i.e., the investment-grade sub-sample) and evaluate whether the temporal behavior of T_t varies across these two sub-samples. We predict that, to the extent T_t increases during earnings announcement periods, the increase will be largest for the speculative-grade sub-sample. Finally, we combine the two partitioning schemes discussed above and create four sub-samples of bond-quarter events: (1) investment-grade bonds and profits, (2) investment-grade bonds and losses, (3) speculative-grade

bonds and profits, and (4) speculative-grade bonds and losses. We predict that, to the extent T_t increases during earnings announcement periods, the increase will be largest for the fourth sub-sample.

To test the significance of the change in the incidence of trade during the days immediately following the earnings announcement we compute the following statistic at the quarter level.

$$T_{qt} = \frac{\sum_{i=1}^{I} T_{qit}}{\sum_{t=-30}^{30} \sum_{i=1}^{I} T_{qit}} \times 100$$

Next, for each day in the event period (i.e., days +1 and +2) we compute the following statistic

$$AbnT_{qt=event} = \frac{T_{qt=event} - m(T_{qt=non-event})}{\sigma(T_{qt=non-event})} \times 100$$ ($m(\cdot)$ and $\sigma(\cdot)$ represent the mean and standard deviation) and then we cumulate the statistic over the event period. Non-event days are the remaining days in the [-30, 30] interval. We compute this statistic separately for each quarter in the full sample and for separate partitions of the sample. Finally, we test whether the statistic is significantly different from zero and whether statistics computed for different partitions are significantly different (i.e., profit quarters versus loss quarters, speculative bond quarters versus investment grade quarters, etc).

2.2.2 Evaluating the Relation between Earnings and Bond Returns

Our tests of the association between bond returns and earnings are centered on the regression shown below:

$$R_{ijt} = \alpha_0 + \alpha_1 \times \frac{EARN_{it}}{MVF_{it-1}} + \varepsilon_{ijt} \quad (2)$$

In equation (2) R_{ijt} denotes the adjusted bond return at time t for the jth bond issued by firm i, $EARN_{it}$ is annual earnings for time t reported by firm i and MVF_{it-1} denotes our proxy for firm i's market value at the end of time $t-1$. The calculation of bond returns is more complicated than the calculation of stock returns. In particular, bond prices are stated as a percentage of par value, some bonds trade infrequently and it is common to adjust bond returns for the contemporaneous return on a treasury bill that has similar characteristics. While the implications of these issues for our research design are important, they are not our primary interest; hence, we relegate their discussion to the Appendix. Our proxy for the market value of the firm is the sum of equity market value and debt book value.

To carry out our tests we estimate versions of equation (2). First, to evaluate whether bond returns and earnings are related, we estimate equation (2) in the form shown above. Second, to evaluate the role of losses, we allow both the intercept (i.e., α_0) and slope coefficient (i.e., α_1) to vary with the sign of earnings. Third, to determine whether the relation between bond returns and earnings depends on the likelihood that stockholders will default, we allow the intercept and slope coefficients to vary across bonds that have an investment-grade rating and bonds that have a speculative-grade rating. Finally, we estimate a comprehensive regression in which the intercept and slope coefficients are allowed to vary with the sign of earnings, the likelihood stockholders will default and the combination of these two phenomena.

3. Sample Selection and Empirical Proxies

3.1 Sample Selection

There are three samples of interest: (1) the Bond Trade Sample, which underlies our analyses of the incidence of trade, (2) the Bond Return Sample, which relates to our analyses of

the relation between bond returns and earnings and (3) the COMPUSTAT Comparison Group, which we serves as a benchmark that we can compare the other samples against.

3.1.1 Bond Trade Sample and Bond Return Sample

We analyze secondary-market corporate bond exchange transactions retrieved from the Mergent Fixed Income Securities Database (FISD) for the time period spanning January 1, 1994 through December 31, 2004. The Mergent FISD contains bond-specific information such as bond-issue size, issue date, bond features, bond ratings, coupon rate and frequency, and borrower information. The data also include information on exchange transactions reported by property and life insurers, and state insurance departments.[5] The transactions data contain details such as trade date, bond price (stated as a percentage of the bond face value) and accrued interest.

We obtain additional firm-specific data from the 2005 COMPUSTAT annual primary, secondary, tertiary and full-coverage research files. To combine the Mergent FISD with the COMPUSTAT data we follow a three-step algorithm. First, we match the CUSIPs of borrowers with bonds in the Mergent FISD to the CUSIPs of firms in COMPUSTAT. Second, for each CUSIP match we verify that company name, industry membership and country of domicile per Mergent FISD equals the company name, industry membership and country of domicile per COMPUSTAT. Finally, we identify borrowers in the Mergent FISD that do not have a CUSIP match in COMPUSTAT and we manually match these borrowers to COMPUSTAT firms. These manual matches are made on the basis company name, industry membership and country of

[5] A limitation of the Mergent FISD is that it only contains data on exchange transactions conducted by U.S. insurance companies. While this may reduce the generality of our results, three comments are warranted. First, Schultz [2001], Hong and Warga [2000] and Campbell and Taksler [2003] estimate that insurance companies hold between 30 percent and 40 percent of corporate bonds; hence, the Mergent FISD captures a large fraction of the market. Second, there is no reason to believe that the bond prices shown in the data are biased. In particular, even though we only observe transactions in which at least one of the participants is an insurer, it does not follow that the transaction price reflects bias attributable to institutional peculiarities of the insurance industry (e.g., regulatory constraints, etc.). Rather, as long as the corporate bond market is competitive, arbitrage will occur and observed transaction prices will reflect all publicly-available information in an unbiased manner. Finally, the Mergent FISD data are essentially the only source of bond-exchange transaction data and the data have been analyzed in a number of finance studies (e.g., Campbell and Taksler [2003], Cai et al. [2005] and Davydenko and Strebulaev [2007]).

domicile. After combining the CUSIP matches with the manual matches we obtain an initial sample of 2,763 (25,270) borrowers (bond issues).

Next, we eliminate non-US borrowers, financial institutions, bonds with variable coupon rates, bonds denominated in foreign currencies, convertible bonds and bonds that are privately placed. We refer to the resulting sample as the Initial Bond Sample (i.e., IBS). The IBS consists of 2,217 (14,698) borrowers (bond issues).

To conduct our analyses of bond trade we eliminate observations from the IBS if any of the following three criteria are met: (1) the quarterly earnings announcement date is not available on 2005 COMPUSTAT quarterly primary, secondary, tertiary and full-coverage research files, (2) the bond did not trade during the 91-day period surrounding the earnings announcement date and (3) the earnings announcement date occurred within 30 days after (before) the issue (maturity) date of the bond. After applying these screens we are left with 1,335 (8,007) borrowers (bond issues) and 22,349 (67,002) firm-quarters (bond-issue-quarters). We refer to this subset of the IBS as the Bond Trade Sample (i.e., BTS).

To analyze the relation between bond returns and earnings we use price data from the IBS to compute annual buy and hold bond returns. Given the infrequent trading of corporate bonds, we use all bond-issue-years for which the issue traded during the 60 calendar-day period following of the previous-year's annual earnings announcement and the 60 calendar-day period following the current-year's annual earnings announcement. This requirement severely reduces the sample size to 916 (3,285) borrowers (bond issues) and 3,280 (7,751) firm-years (bond-issue-years). Next, we eliminate bond-issue-years either with missing bond ratings per the Mergent FISD or for which the requisite COMPUSTAT data are unavailable. Finally, bond-issue-years with values of bond returns, earnings (deflated by MVF_{t-1}), or cash flows (deflated by MVF_{t-1}) in the top or bottom ½ percentile of the distribution are considered outliers and deleted. The

resulting sample, which we refer to as the Bond Return Sample (i.e., BRS), consists of 852 (3,066) firms (bond issues) and 2,984 (7,166) firm-years (bond-issue-years). Of the 2,984 (7,166) firm-years (bond-issue-years) in the BRS 575 (1,244) relate to a year in which a loss is reported and 350 of the 852 firms in the BRS report at least one loss during the sample period.

3.1.2 COMPUSTAT Comparison Group

The COMPUSTAT Comparison Group is drawn from observations in the 2005 COMPUSTAT annual primary, secondary, tertiary and full-coverage research files that in both years *t* and *t-1* have positive: assets (i.e., data item 6), sales (i.e., data item 12), prices (i.e., data item 199) and common shares outstanding (i.e., data item 25). We eliminate observations that in either year *t* or *t-1* have missing earnings (i.e., data item 18), missing cash flows (i.e., data item 308) or are a member of the financial services industry (i.e., an SIC code between 6000 and 6999). We also eliminate observations with fiscal years that do not end during the time period spanning 1994 and 2004. Finally, firm-years with values of earnings (deflated by MVF_{t-1}) or cash flows (deflated by MVF_{t-1}) in the top or bottom percentile of the distribution are considered outliers and deleted. The final number of firm-years in the COMPUSTAT Comparison Group is 59,895.

3.2 Empirical Proxies

Our measure of bond returns is described in the appendix. For firm *i* we use fiscal-year *t* income before extraordinary items (i.e., COMPUSTAT data item 18) as our earnings proxy (i.e., $EARN_{it}$). If $EARN_{it}$ is less than zero, we set the loss indicator variable (i.e., $LOSS_{it}$) equal to one otherwise $LOSS_{it}$ is set to zero. We use contemporaneous GAAP net cash flow from operations (i.e., COMPUSTAT data item 308) as our cash flow proxy (i.e., $CFLOW_{it}$). The difference between $EARN_{it}$ and $CFLOW_{it}$ is our accruals proxy (i.e., ACC_{it}). Our empirical measure of the market value of the firm (i.e., MVF_{it-1}) equals the sum of equity market value (i.e., MVE_{it-1}) and

debt book value (i.e., BVD_{it-1}). Equity market value equals the product of the stock price at the end of fiscal year *t-1* (i.e., COMPUSTAT data item 199) and fiscal year *t-1* common shares outstanding (i.e., COMPUSTAT data item 25). Debt book value equals the sum of fiscal year *t-1* debt in current liabilities (i.e., COMPUSTAT data item 34) and *t-1* long-term debt (i.e., COMPUSTAT data item 9). We set the speculative grade indicator (i.e., $SPEC_{ijt}$) equal to one if bond issue *j* of firm *i* is rated BBB- or below at the end of fiscal year *t*, otherwise we set $SPEC_{ijt}$ equal to zero.

4. Main Empirical Results

4.1 Sample Descriptive Statistics

In this section we describe the Bond Return Sample and, for the purpose of comparison, the COMPUSTAT Comparison Group.

4.1.1 Sample Composition

Panels A and B of Table 1 provide information on sample composition by year and industry, respectively. We classify our observations into industries using the scheme developed by Fama and French [1997]. As shown in Panel A, relative to the COMPUSTAT Comparison Group, a disproportionate fraction of the observations in our sample have fiscal years ending in the time period spanning 2000 and 2003. On the other hand, the years 1994 through 1997 and 2004 are underrepresented in our sample. The results in Panel B demonstrate that firms in the telecommunications, utility, energy, retail, paper and chemical industries are overrepresented in our sample. However, relative to the COMPUSTAT Comparison Group, our sample contains a small fraction of firms in the business service, silicon chip production, pharmaceutical, computer and medical equipment industries.

4.1.2 Sample Descriptive Statistics

Panels A and B of Table 2 contain descriptive statistics on key variables of interest for our sample and the COMPUSTAT Comparison Group, respectively. Two comments bear mentioning. First, our sample consists of relatively large firms. For example, for our sample the fifth percentile of firm market value is $867.41 million, which is only slightly less than the seventy-fifth percentile of firm market value per the COMPUSTAT Comparison Group. Second, our sample is made up of relatively profitable firms. For instance, the typical observation in our sample has earnings (cash flows) equal to 3.2 percent (7.7 percent) of firm market value whereas the typical observation in the COMPUSTAT Comparison Group has earnings (cash flows) equal to 2.0 percent (4.9 percent) of firm market value. Moreover, 40.2 percent of the observations in the COMPUSTAT Comparison Group report a loss; however, only 17.4 percent of the observations in our sample have negative earnings.

Taken together the above results lead us to conclude that our sample contains a disproportionate number of large, profitable firms that participate in fairly asset-intensive industries. Given we are studying firms that have access to the public-debt market, this is not surprising. Nonetheless, it does imply that our results may lack generality and that sample selection bias is a potential issue. We further discuss these issues in section 5.3.

4.2 Results of Bond-trade Analyses

In Figure 1 we present a graph in which days relative to the earnings announcement (i.e., day zero) are shown on the x-axis and values of the variable T_t, which is described in section 2.2.1, are shown on the y-axis. The graph underlying Figure 1 pertains to all bond-quarter event windows (i.e., we do not separate observations on the basis of the sign of earnings or bond ratings). As shown in figure 1, T_t peaks on days surrounding the earnings announcement (i.e.,

the announcement period). This is consistent with the notion that earnings announcements convey information to the bond market.

As discussed above, we predict that losses are more informative than profits. The graphs shown in Figures 2A and 2B provide support for this hypothesis. In Figure 2A, which pertains to bond-quarter event windows in which profits are announced, the peak in trade during the days surrounding the earnings announcement is fairly small. However, as shown in the graph in Figure 2B, for bond-quarter event windows in which a loss is reported there is a sizeable spike in trade during the earnings announcement period.

We also predict that earnings are more informative to holders of speculative-grade bonds than to holders of investment-grade bonds. Evidence in support of this hypothesis is provided in the graphs shown in Figures 3A and 3B, which pertain to investment-grade and speculative-grade bonds, respectively. A comparison of the two graphs leads to the conclusion that, relative to investment-grade bonds, there is noticeably larger increase in trade of speculative-grade bonds during the days surrounding earnings announcements.

Finally, we partition on both the sign of earnings (i.e., profit or loss) and bond type (i.e., investment grade or speculative grade). The results of this partitioning are shown in the graphs underlying Figures 4A through 4D. The primary conclusion we draw from these four figures is that earnings have the greatest information content when they take the form of a loss and are reported to holders of speculative-grade bonds.

In Table 3 we present the results of our tests of the significance of the change in the incidence of trade during the days immediately following earnings announcements (days +1 and +2). We show that for each sub-sample there is a significantly positive change in the incidence of bond trade during the two days following the earnings announcement. Furthermore, there are significant differences across the partitions of the sample. In particular, we document that the

increase in trade following the announcement of a loss is significantly greater than the increase in trade following the announcement of a profit.

The above results are very much in line with our hypothesis that the asymmetric payoff structure of bonds is a key determinant of how bondholders react to earnings announcements. First, losses have greater information content than profits, which is consistent with the argument that the downside potential to holding a bond is greater than the potential upside. Second, regardless of the sign of earnings, holders of speculative-grade bonds react more strongly to earnings announcements than holders of investment-grade bonds. This buttresses our argument that bondholders are more uncertain and, thus, more sensitive to information about future cash flows when the call option embedded in bonds is relatively close to being out of the money. Finally, the fact that losses reported to holders of speculative-grade debt are most informative implies that earnings are most relevant when they convey bad news to bondholders that face considerable downside risk.

4.3 Results of Analyses of the Relation between Bond Returns and Earnings

4.3.1 Univariate Analyses

Correlations between key variables are presented in Table 2, Panel C. Pearson product moment (Spearman rank order) correlations are shown above (below) the diagonal. We focus our discussion on the Pearson product moment correlations except when the Spearman rank order correlations lead to different inferences. Several points warrant mentioning. First, there is a significant, positive correlation between adjusted bond returns and earnings, cash flows, change in earnings, change in accruals and the change in cash flows. However, the Pearson product moment (Spearman rank order) correlation between bond returns and the level of accruals is insignificant (significantly less than zero). Second, earnings (the change in earnings) have a significant, positive correlation with cash flows and accruals (the change in cash flows

and the change in accruals). On the other hand, there is a significant, negative correlation between cash flows (the change in cash flows) and accruals (the change in accruals), which is consistent with existing evidence (e.g., Dechow [1994] and Dechow, Kothari and Watts [1998]). Third, as expected, there is a significant, negative correlation between the loss indicator and bond returns, earnings, cash flows, accruals, change in earnings, change in cash flows and change in accruals. Finally, speculative-grade bonds tend to earn higher returns but lower earnings, cash flows and accruals. This result suggests that holders of speculative-grade debt demand a premium for taking on greater risk.

4.3.2 Multivariate Analyses

The main results of the different versions of our regressions of bond returns on earnings are shown in Table 4. All regressions include annual fixed effects, which are un-tabulated, and all t-statistics are based on Huber-White clustered standard errors (firm clusters).

First, we estimate a regression of returns on earnings and demonstrate in column (1) that there is a significant, positive association between the two variables. Hence, earnings are value relevant in the bond market. Second, we allow the intercept and slope coefficient to vary between profit and loss observations. This specification, the results of which are shown in column (2), leads to the conclusion that the relation between bond returns and the level of earnings is completely attributable to losses (i.e., there is no association between bond returns and profits). This suggests that bondholders are primarily concerned about downside potential, which is consistent with our main hypothesis. Third, we allow the intercept and slope coefficient to vary across investment-grade and speculative-grade bonds. The results of this specification, which are shown in column (3), imply that earning are more relevant to holders of speculative-grade bond than they are to holders of investment-grade bonds. This is consistent with the notion that as the likelihood of default increases, bondholders become more uncertain and, thus,

place greater weight on news about the payoffs that will be generated by the underlying assets. Finally, we allow the intercept and slope coefficients to vary with the sign of earnings (i.e., loss or profit), the likelihood of default (i.e., investment grade or speculative grade) and the combination of these two phenomena. In column (4) we show the results of this specification. The evidence is not clear cut. It remains the case that losses are priced whereas profits are not; however, the coefficient on profits no longer varies with the likelihood of default. Moreover, the evidence that the pricing of losses differs across investment-grade bonds and speculative-grade bonds is marginal.

A potential drawback with the specifications discussed above is that the results generated from them do not shed light on the separate roles of accruals and cash flows. This issue is worth addressing for three reasons. First, it is possible that the lack of an association between bond returns and profits is an artifact of constraining the regression coefficient on accruals to equal the regression coefficient on cash flows. Second, the value relevance of losses may be solely attributable to the pricing of cash flows. Specifically, if losses cause bondholders to become concerned about the firm's ability to service the debt in the short run, bond investors may place significant weight on cash flows while ignoring accruals. Finally, accruals are at the heart of financial reporting; hence, understanding their role in bond valuation is clearly pertinent.

With the above comments in mind we estimate regressions in which the coefficients on accruals and cash flows are not constrained to be equal. The results generated by these regressions are shown in columns (5) through (8) of Table 4. The primary inferences from these results are as follows. First, both accruals and cash flows have incremental explanatory power for bond returns. Second, neither accruals nor cash flows are value relevant for profit observations; however, both components of earnings are value relevant for loss observations. Third, returns on speculative-grade bonds have a stronger association with both accruals and

cash flows than returns on investment-grade bonds. Finally, there is marginal evidence that the relation between bond returns and the components of earnings is strongest when a loss is reported to holders of speculative-grade debt.

5. Sensitivity Analyses

The results in the previous section support our hypothesis that the asymmetric structure of bond payoffs has important implications for the role of earnings in the bond market. Nonetheless, alternative explanations are possible. Hence, in this section we conduct a series of sensitivity checks. We begin by re-evaluating the relation between earnings and bond returns; however, instead of evaluating the level of earnings (or its components), we evaluate changes in earnings (or its components). Next, we develop a heuristic for categorizing losses as either transitory or persistent and evaluate whether bondholders place a higher valuation weight on persistent losses, which is consistent with the notion that news about downside potential has greater relevance in the bond market. Third, we evaluate the behavior of equity-trading volume during the days surrounding earnings announcements for firm-quarters underlying the Bond Trade Sample and the relation between earnings and stock returns for firm-years underlying the Bond Return Sample. Finally, we discuss the results of a number of un-tabulated robustness checks.

5.1 Analyses of Changes

The results discussed in section 4.3.2 and shown on Table 4 pertain to regressions of bond returns on the level of earnings (or its components). To the extent that returns reflect changes in expectations a potential drawback of this specification is that the level of earnings may be a poor measure of unexpected earnings. Moreover, the error may be inversely related to the sign of earnings; as our sample consists of fairly large firms with access to the public debt

market, profits may be expected whereas losses may be surprising per se. Hence, the differential pricing of profits and losses that we observe may be attributable to differential measurement error. While our research design partially circumvents this issue by using a deflator that is a function of expected future earnings, additional analyses is warranted. With this in mind we re-estimate our regressions; however, instead of evaluating the level of earnings (or its components) we evaluate changes in annual earnings (or its components).

The results of regressions of bond returns on annual changes are shown in Table 5. Several points bear mentioning. First, there is a positive association between bond returns and changes in earnings. Second, changes in earnings are value relevant regardless of the sign of the level of earnings; however, the association is stronger for loss observations. Thus, while the results in table 5 suggest that profits are relevant, they do not change the primary inference from our analyses of earnings levels: losses are more relevant than profits. Third, changes in earnings have greater relevance in the context of valuing speculative-grade bonds. Fourth, similar to the results taken from the levels regressions, there is (at best) weak support for the notion that the changes in earnings are most value relevant when a loss is reported to holders of speculative-grade debt. Finally, allowing the coefficient on the change in accruals to differ from the coefficient on the change in cash flows does not change our inferences (i.e., each component of earnings has a positive association with returns, the association is stronger for loss observations and the association is stronger for observations that pertain to investment-grade bonds).

5.2 The Pricing of Transitory and Persistent Losses

Given the results presented in Tables 4 and 5 it is clear that losses play a prominent role in bond valuation. Moreover, the evidence presented so far supports our main prediction that the role of losses is attributable to the asymmetric payoff structure of bonds. In light of these facts we further explore the pricing of losses in this subsection by evaluating whether transitory losses

are priced differently than persistent losses. The motivation for these analyses is as follows. If the role of losses in bond pricing is attributable to bonds' asymmetric payoff structure, transitory losses will be associated with smaller changes in bond prices than persistent losses.

To test the above hypothesis we develop a simple heuristic for identifying transitory losses. Our heuristic is based on evidence reported in Joos and Plesko [2006] who evaluate the relation between the length of uninterrupted sequences of losses (i.e., length of loss sequence) and the likelihood that a firm will show a profit in the subsequent year. They show in their table 1 that this relation is negative and monotonic. For instance, for their sample they show that firms with a loss sequence of length one have a 45.47 percent likelihood of returning to profitability; however, this likelihood falls to 34.76 percent if the loss sequence is of length two. Hence, we create an indicator variable $TRANSIT_{it}$ that equals one if the firm was profitable in year t-1 and zero otherwise.[6]

In Table 6 we focus on the sub-sample of firm-years with losses and allow the coefficient on losses (and the coefficient on the change in earnings reported during loss years) to vary across losses that are classified as transitory and losses that are classified as persistent. We focus on two implications of these results. First, the coefficient on losses (and the coefficient on the change in earnings reported during a loss year) is significantly lower when the loss is classified as transitory. Second, the association between losses and bond returns is primarily driven by the pricing of persistent losses that are reported to holders of speculative-grade bonds.

[6] This indicator of persistence of losses has a much simpler interpretation in the context of our paper even though it remains in the spirit of Joos and Plesko [2006]; a loss that follows a loss from the prior year is likely to be more troublesome to bond-holders than a loss that follows a profit. Joos and Plesko [2006] develop a more sophisticated algorithm for separating transitory losses from persistent losses. We replicate their algorithm and find that nearly all of the losses in our sample are classified as transitory. This is not surprising given that the algorithm places considerable weight on average performance over the past five years and that the loss firms in our sample are above-average performers in comparison to the typical loss firm in the COMPUSTAT population.

The above results buttress our argument that the payoff structure of bonds has first-order implications for the pricing of earnings in the bond market. In particular, the asymmetric payoff structure of bonds implies that: (1) bond investors place greater weight on earnings when there is more uncertainty (i.e., the risk of default is high), (2) news about downside potential (i.e., losses) has greater relevance than news about upside potential (i.e., profits) and (3) news that is particularly bad (i.e., persistent losses) is associated with a larger price reaction than news that is moderately bad (i.e., transitory losses).

5.3 Analyses of Equity-Market Data

As discussed in section 3.1 the Mergent FISD only contains information on bond-exchange transactions carried out by U.S. insurance companies. Moreover, as shown in Tables 1 and 2, we do not have a random sample. Rather, our sample consists of relatively profitable firms that participate in asset-intensive industries. Hence, the results documented in the previous tables may be affected by sample-selection bias. To alleviate concerns about this issue we conduct two sets of tests: (1) we substitute equity-market data (i.e., volume of trade and stock returns) for bond-market data (i.e., incidence of trade and bond returns) and (2) we include contemporaneous stock returns in our regressions of bond returns on earnings. We discuss these tests in the paragraphs below.

5.3.1 Substitution of Equity-market Data for Bond-market Data

These tests are analogous to those discussed in the previous sections. We continue to use firm-quarters (firm-years) drawn from the Bond Trade Sample (Bond Return Sample); however, we substitute equity-market data (i.e., volume of trade and stock returns) for bond-market data (i.e., incidence of trade and bond returns). Our motivation for these tests is that if the relations we document using bond-market data are attributable to the non-linear payoff structure of bonds, we will observe mirror-image relations when we use equity market data. In particular, as

discussed in Hayn [1995], stockholders own the call option embedded in bonds; hence, profits will be more relevant to stockholders than losses. On the other hand, if the relations we document using bond-market data are attributable to sample selection, we will not expect to observe mirror-image relations in the equity market. For example, if the earnings reported by the firms in the Bond Return Sample have unique properties such that profits (losses) are unrelated (strongly related) to revisions in expectations about future cash flows, associations based on stock returns will be similar to associations based on bond returns.

To evaluate the reaction of stock trade to earnings announcements we analyze the ratio V_t for each event-day $t \in [-30,30]$:

$$V_t = \frac{\sum_{q=1}^{Q}\sum_{f=1}^{F} V_{qft}}{\sum_{t=-30}^{30}\left[\sum_{q=1}^{Q}\sum_{f=1}^{f} V_{qft}\right]} \times 100 \qquad (3)$$

In equation (3) Q denotes the number of firm-quarter events and F denotes the number of firms. Hence, V_t measures the relative *volume* of trade occurring on day t. We focus on the volume of trade because most of the stocks in the Bond Return Sample trade daily; hence, there is no temporal variation in the incidence of trade. We obtain volume data from the CRSP daily stock files.

As shown in Figure 5, there is a clear increase in V_t during earnings announcement periods for all stocks in the Bond Returns Sample. This is consistent with prior literature (e.g., Beaver [1968] and Landsman and Maydew [2001]). However, opposite to our predictions, the increase in V_t during the earnings announcement period is larger in loss quarters (Figure 6B) than in profit quarters (Figure 6A). Hence, it is possible that results shown in Figures 2A and 2B may not be attributable to the non-linear payoff structure of bonds. On the other hand, the remaining results are inconsistent with sample-selection bias. First, as shown in Figures 7A and 7B, the

stock-market-volume reaction to earnings announcements made by firms with speculative-grade debt does *not* exceed the stock-market-volume reaction to earnings announcements made by firms with investment-grade debt. Second, a comparison of Figures 8B and 8D leads to the conclusion that stockholders of firms with speculative-grade debt do *not* react more strongly to the announcement of a loss than stockholders of firms with investment-grade debt.

In Table 7 we present results taken from regressions of stock returns on earnings. Stock return for firm *i* in year *t* is the annual buy and hold return for an accumulation period that commences on the beginning of the fourth month of firm *i*'s fiscal-year *t*. We obtain stock returns from the CRSP monthly files, which contain the requisite data for 2,959 of the 2,985 firm-years in the original Bond Return Sample. We deflate earnings by beginning equity market value (i.e., MVE_{t-1}).

As shown in column (1) of panel C of Table 2, there is a strong positive relation between profits and stock returns; however, losses and stock returns are unrelated. This result is similar to results shown in Hayn [1995] and, more pertinent to the instant study, is a mirror-image of the result we observe when we analyze bond returns; hence, it provides strong support for our main hypothesis. Further support for our main hypothesis is presented in columns (2) and (3) of panel A of Table 7. In column (2) we show that relation between stock returns and earnings is *weaker* for firms with speculative-grade debt; and, in column (3) we show that the *weakest* relation between stock returns and earnings exists for losses reported to holders of speculative-grade debt. Moreover, as shown in panel B of Table 7, consideration of earnings changes rather than earnings levels does not alter our inferences.

5.3.2 The Association Between Bond Returns and Earnings Conditional on Contemporaneous Stock Return

A corollary to the above results is that earnings will continue to have explanatory power for bond returns even after controlling for contemporaneous stock returns. In particular, bondholders essentially sell a call option on the firm's assets to stockholders. The non-linear payoff structure of this option implies that bondholders (stockholders) will consider losses more (less) relevant. Hence, stock returns will not completely subsume the component of earnings that reflects news about future coupon payments. As shown in Table 8 this prediction is strongly supported by the data. Specifically, even after controlling for contemporaneous stock returns the association between earnings (the change in earnings) and bond returns remains. Moreover, the association is still primarily attributable to losses.

Based on the above sets of tests, we believe that it is unlikely that the results of our analyses of bond returns and earnings are heavily influenced by sample-selection bias. Rather, it appears that these results are attributable to the non-linear payoff structure of bonds, which, in turn, is rooted in the call option held by stockholders.

5.4 Un-tabulated Robustness Checks

In this section we motivate and discuss the results of several un-tabulated robustness checks. Results of these tests are available from the authors upon request.

5.4.1 Analyses of Bond-trade Volume

The Mergent FISD contains data on trade size and, thus, using price we are able to estimate the volume of a particular trade. Volume estimates contain two sources of measurement error. First, transactions costs are included in trade size and, thus, our estimate of volume contains a positive bias. Second, to the extent an exchange is carried out between insurance companies, the separate transactions are reported in the Mergent FISD; however, they are not

explicitly identified as being related to the same trade. Despite these problems, we use an approach similar to that described in section 2.2.1 to evaluate the temporal behavior of bond-trade-volume during the days surrounding earnings announcements. We develop an algorithm for identifying offsetting buys and sells. When a potential set of offsetting trades are recognized, we use the average estimated volume of the relevant trades. The results of these analyses lead to inferences that are similar to the results based on analyses of the incidence of trade.

5.4.2 Illiquidity and Bond Returns

The bond market is less liquid than the equity market; hence, a potential concern is that the prices underlying our returns may not reflect "intrinsic" values. To evaluate this issue we conduct two robustness checks. First, we estimate our regressions of bond returns on earnings using only the most liquid bond issue for each firm-year. Second, we estimate regressions of firm-level bond returns on earnings in which firm-level returns equal the value-weighted average of the bond returns for the relevant firm-year. The results of both of these tests are similar to those shown in the main text.

5.4.3 Using Analysts' Forecasts to Measure Unexpected Earnings

As discussed above, our results may be attributable to measurement error. In particular, if losses are always surprising whereas profits are expected, the use of earnings levels may cause losses to have a larger coefficient than profits simply because losses measure unexpected earnings with less error. As a further check to ensure that this is not the case, we estimate regressions of bond (stock) returns on the difference between realized earnings and the first I/B/E/S consensus forecast of annual earnings that became available after the announcement of earnings in the previous year. The results generated by these regressions are similar to those shown in the main text. Moreover, the inferences drawn from these results are unaffected by our

choice of actual earnings (i.e., I/B/E/S actual or COMPUSTAT data-item 18) and our definition of a loss (i.e., negative I/B/E/S actual or negative COMPUSTAT data-item 18).

6. Conclusion

Accounting losses are an important phenomenon. Their frequency is increasing with time (e.g., Hayn [1995], Givoly and Hayn [2000], Joos and Plesko [2006] and Klein and Marquardt [2006]). Conventional wisdom as well as academic studies (e.g., Burgstahler and Dichev [1997] and Degeorge et al. [1999]) suggests that managers try to manipulate earnings in order to avoid reporting them. And, losses are clearly related to the notion of conservatism, which some argue has a disciplining effect on managers operating and investing decisions (e.g., Ball [2001] and Watts [2003a, b]). Nonetheless, the extant literature suggests that losses are unrelated to equity returns. Hence, it appears that stockholders are indifferent to the occurrence of a loss, which, in turn, leads to two questions: (1) why do managers care if they report a loss and (2) how, exactly, do losses "punish" poor operating and investing decisions?

In this study we shed *some* light on the answers to the above questions. In particular, we demonstrate that losses play a key role in the bond market. For example, the announcement of a loss has a disproportionate effect on bond trade. Moreover, the pricing of earnings in the bond market is primarily attributable to the positive association between bond returns and losses. Hence, the bond market appears to be the primary source of capital-market pressure pushing management to either make opportunistic reporting choices or more disciplined operating and investing decisions.

We believe that our results suggest two non-mutually exclusive avenues for future researchers. First, further analyses of the relation between the components of earnings and bond returns may allow us to better understand how bond investors value losses. Second, studies of

the role that the bond markets play in providing incentives to manage earnings (especially loss avoidance) or disciplining sub-optimal operating and investing decisions seems warranted.

APPENDIX

The Calculation of Bond Returns

We use treasury-adjusted bond returns in our analyses of the relation between bond returns and earnings. To calculate the adjusted return in year *t* for bond *j* issued by firm *i* (i.e., R_{ijt}) we first compute the buy and hold raw bond return (BR_{ijt}).

$$BR_{ijt} = \frac{BP_{ijt} + C_{ijt} - BP_{ijt-1}}{BP_{ijt-1}} \quad \text{(A1)}$$

In equation (A1) BP_{ijt} is the invoice price of bond *j* issued by firm *i* for a transaction that occurs on day *t*, which is a day that occurs within the 60 calendar-day period following the annual earnings announcement for fiscal year *t*. BP_{ijt-1} is the invoice price of the same bond for a transaction that takes place within the 60 calendar-day period following annual earnings announcement for fiscal year *t-1*. Bond issues that do not have trades with observable prices during both of these 60 calendar-day intervals are discarded.[7] Invoice bond prices are reported as percentages of the bond face value. If more than one trade takes place after an earnings announcement, we select the last trade in the 60 calendar-day period. C_{ijt} is the sum of all coupon payments between day *t-1* and day *t* (as a percentage of bond face value) made by firm *i* to the holders of bond *j*.

Invoice bond prices are computed as the quoted price reported by the database (also called the flat price – i.e., FP_{ijt}) plus the accrued interest (AI_{ijt}) from the last coupon payment. If the database reports more than one trade on a given day we take the average flat price for the

[7] We also compute bond returns in which we require a trade with an observable price to take place within the 30-day period following the current year's earnings announcement and within the 30-day period following the previous year's earnings announcement. Un-tabulated results of the analyses of the relation between bond returns and earnings using these returns (and related sample) are similar to the results based on the "60-day period" requirement.

day. The database only reports the accrued interest for "buy" transactions. If the accrued interest is missing we impute it in the following manner.[8]

$$AI_{ijt} = c_{ijt} \times \frac{D_{ijt}}{360} \tag{A2}$$

In the above equation, c_{ijt} is the coupon rate for bond-issue j of firm i and D_{ijt} is the number of days between the date on which BP_{ijt} is observed and the date on which the last coupon payment occurred. The dates of coupon payments are determined based on the coupon frequency and the date of the first coupon payment (both reported by the database).

After computing the annual raw bond return, we adjust it by subtracting the contemporaneous U.S. treasury return. This removes variation in bond returns attributable to changes in the interest rate environment.[9]

$$R_{ijt} = BR_{ijt} - \prod_{\tau=t-1}^{t} TR_{\tau} \tag{A3}$$

In equation (A3) TR_{τ} is the daily treasury buy and hold return cumulated from the day of the trade that occurs within the 60-day interval after the previous earnings announcement (i.e., *t-1*) to the day of the trade that occurs within the 60 day interval after the current year earnings announcement (i.e., *t*). We obtain this data from the CRSP Daily Treasuries database.

We match each bond issue in the Mergent FISD database with a treasury bond in the CRSP database that has the same remaining time to maturity (in years) at time *t-1* and that has a similar annual coupon rate. This matching procedure ensures that the two bond returns are comparable.

[8] We validate the algorithm by imputing accrued interest for transactions that have realized accrued interest reported in the database. The distribution of differences between the imputed accrued interest and realized accrued interest implies that our proxy contains very little measurement error. In particular, the first, second and third quartiles are of the distribution are each equal to zero.

[9] We also analyze the relation between bond returns and earnings using unadjusted bond returns. The untabulated results of these analyses lead to similar inferences as the results shown in the main text.

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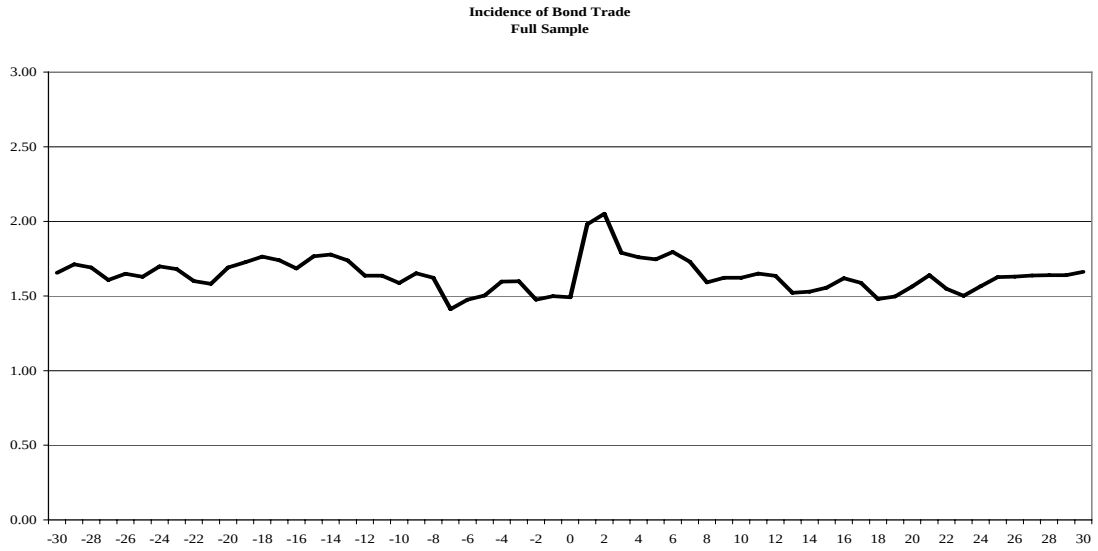
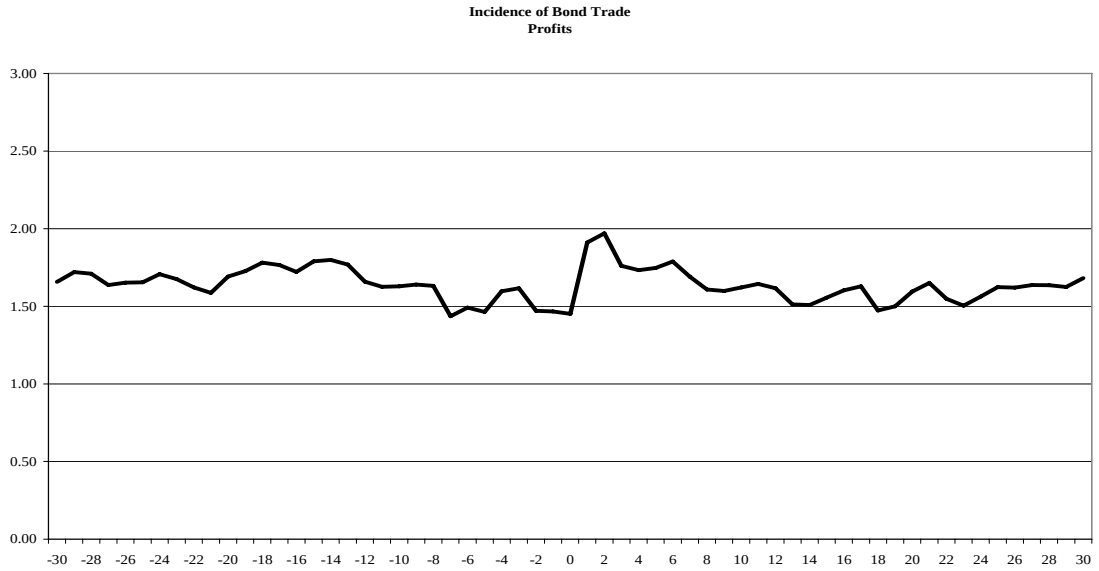
Figure 1: Incidence of bond trades around earnings announcements

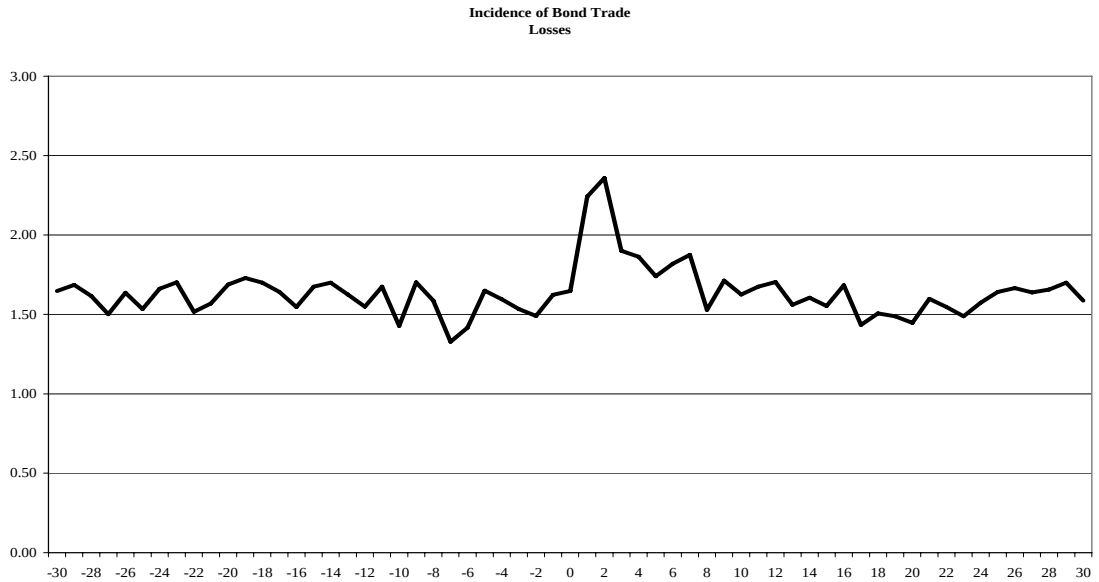
The graph presents the incidence of bond trade for the full sample of bonds. Details on the computation of the incidence of bond trade ratio are presented in Section 2.2.1. The vertical axis presents the percentage of bond issues traded on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).



Figures 2A and 2B: Incidence of bond trades around earnings announcements – Partition on Profits and Losses

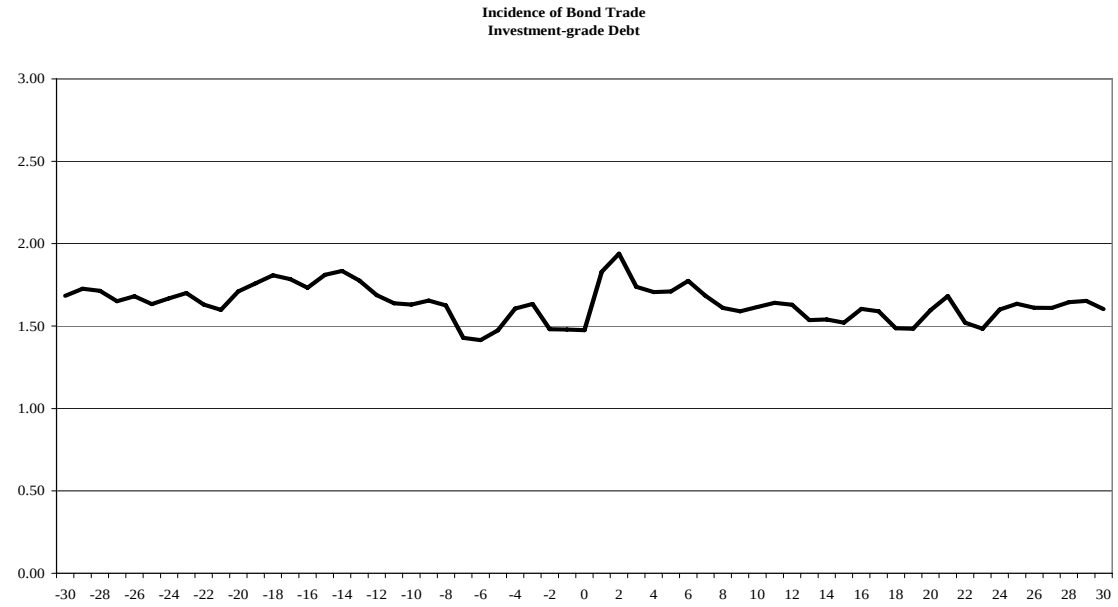
The graphs present the incidence of bond trade for sample partitions based on profits and losses. Details on the computation of the incidence of bond trade ratio are presented in Section 2.2.1. The vertical axis presents the percentage of bond issues traded on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).

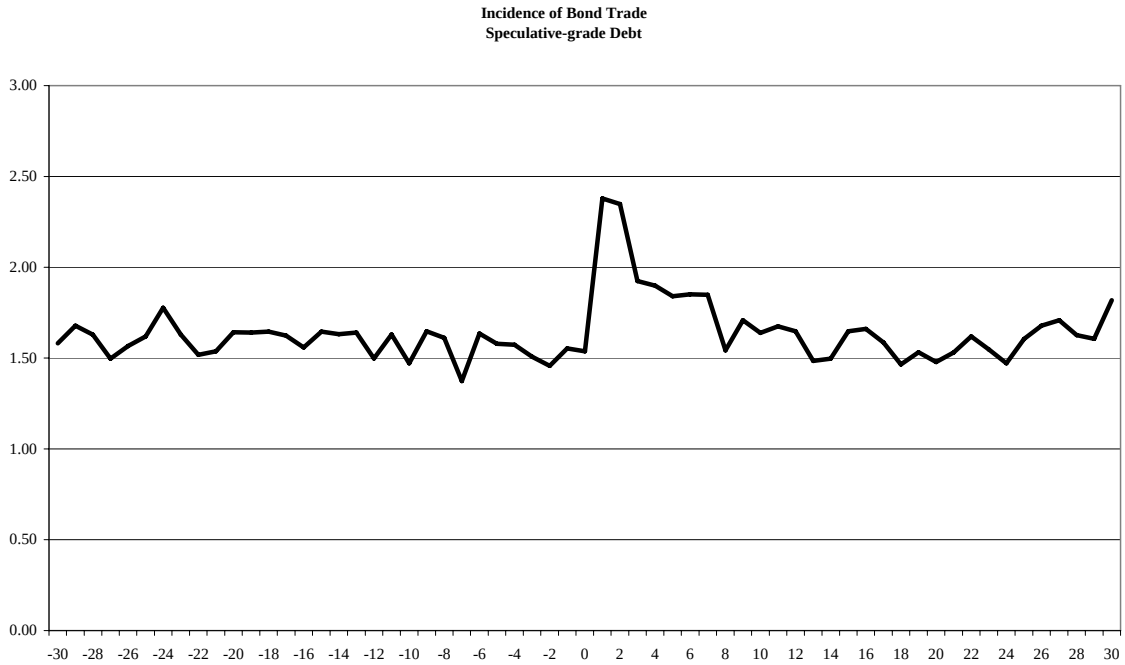




Figures 3A and 3B: Incidence of bond trades around earnings announcements – Partition on the riskiness of bonds

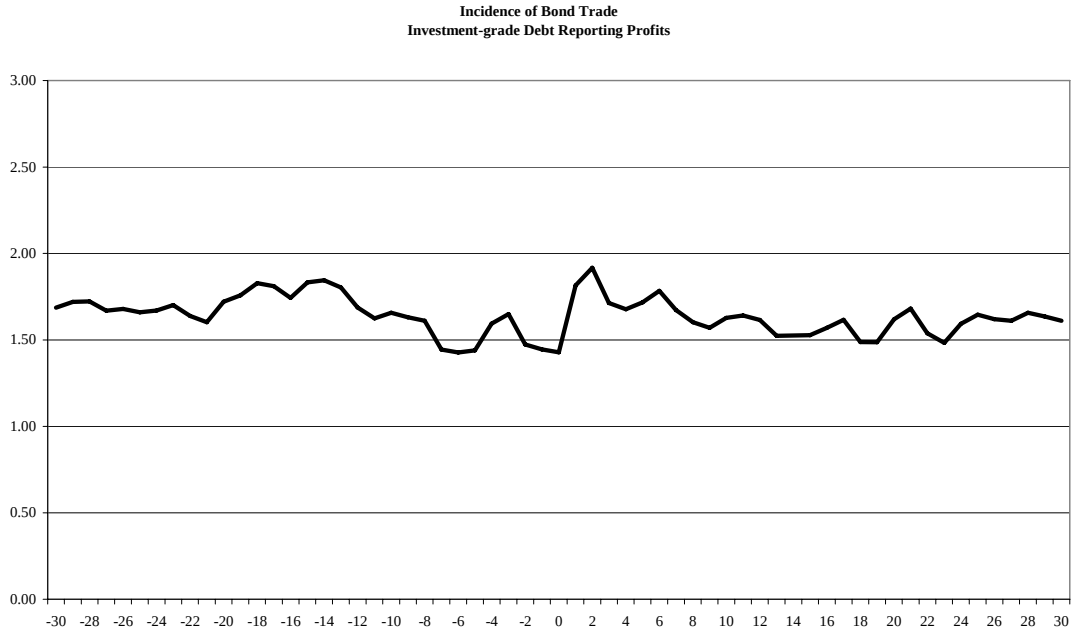
The graphs present the incidence of bond trade for sample partitions based on the riskiness of bond issues (investment grade versus speculative grade). Details on the computation of the incidence of bond trade ratio are presented in Section 2.2.1. The vertical axis presents the percentage of bond issues traded on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).

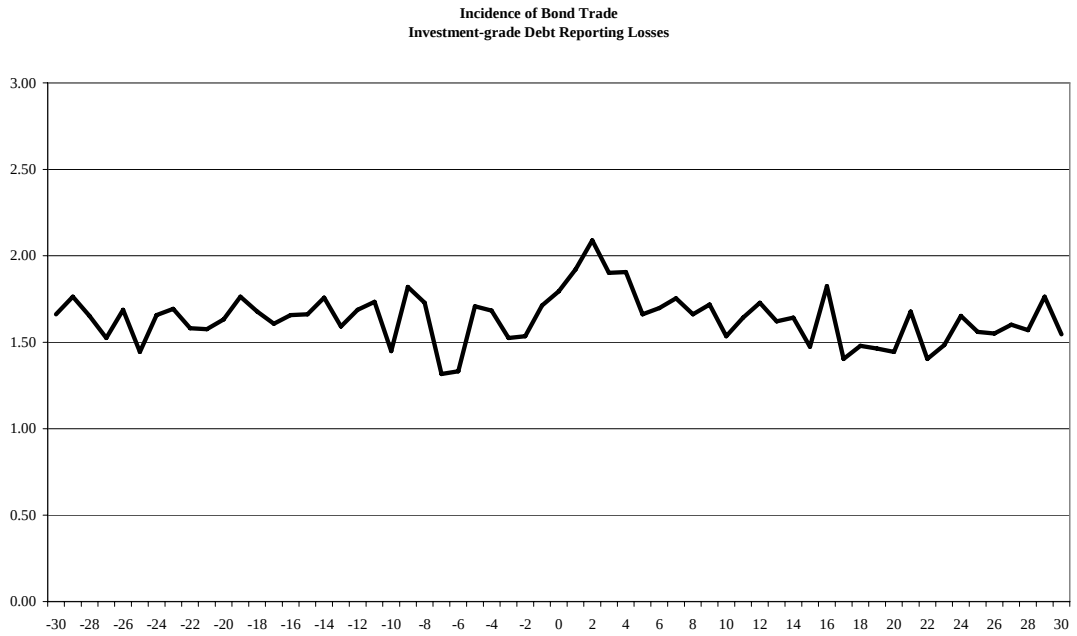




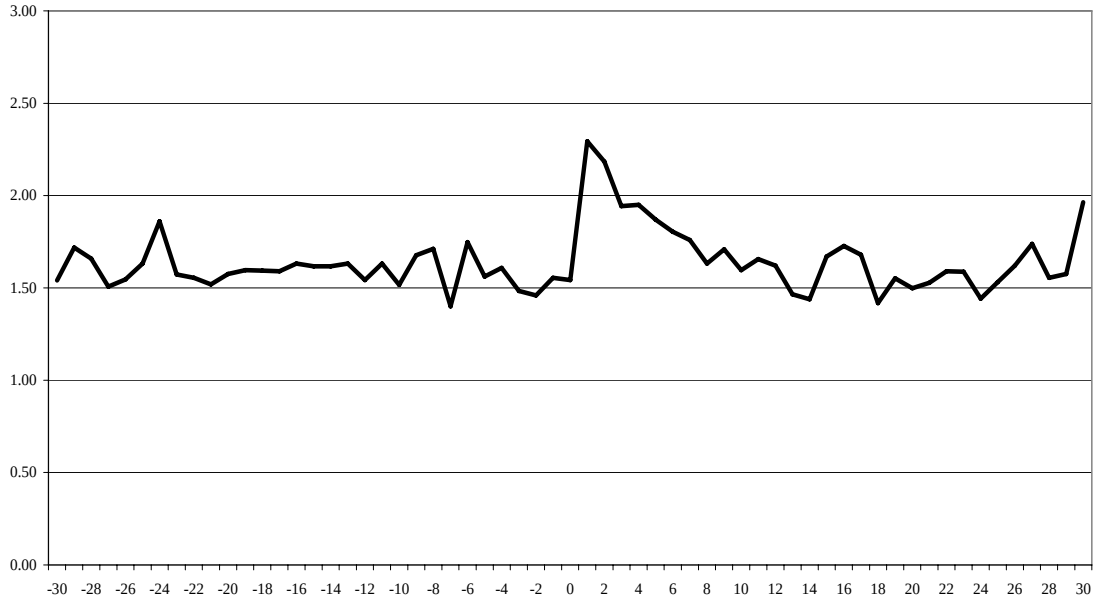
Figures 4A, 4B, 4C and 4D: Incidence of bond trades around earnings announcements – Partition on the riskiness of bonds and on profits/losses.

The graphs present the incidence of bond trade for sample partitions based on the riskiness of bond issues (investment grade versus speculative grade) and on profits or losses. Details on the computation of the incidence of bond trade ratio are presented in Section 2.2.1. The vertical axis presents the percentage of bond issues traded on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).





Incidence of Bond Trade
Speculative-grade Reporting Profits



Incidence of Bond Trade
Speculative-grade Reporting Losses

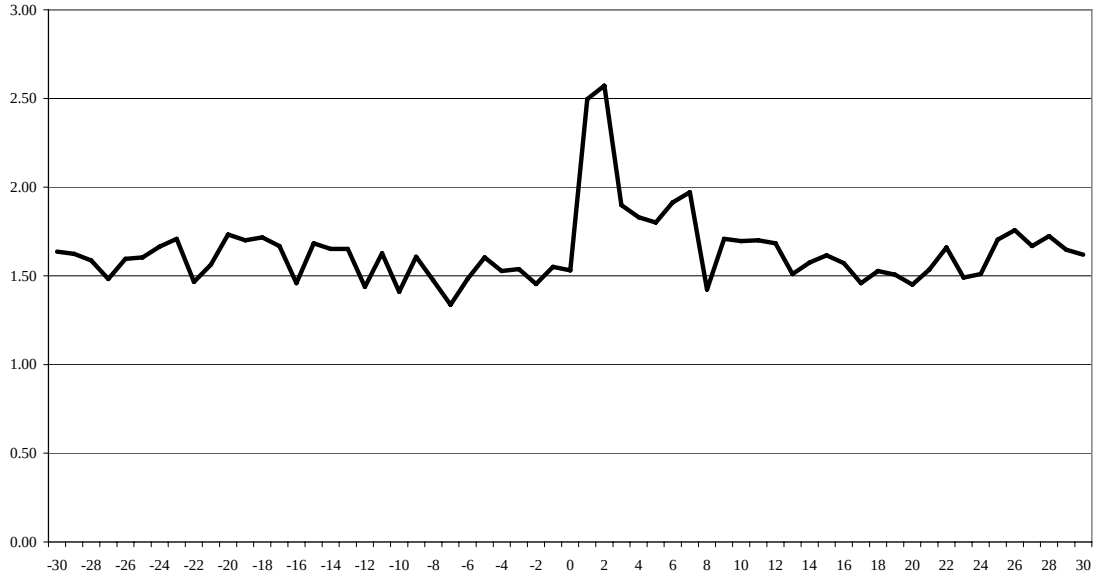
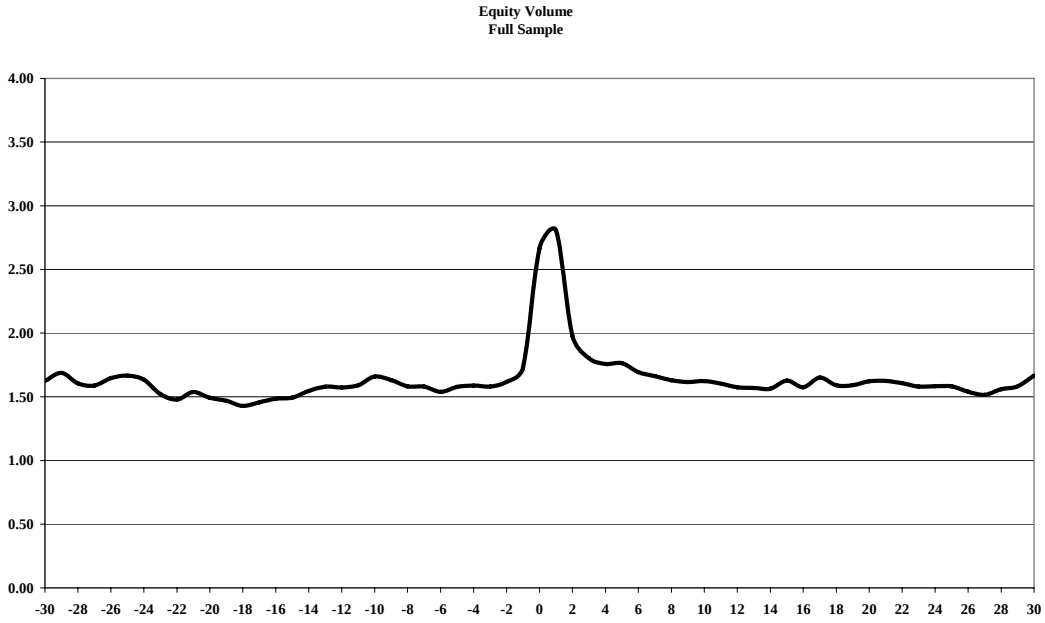


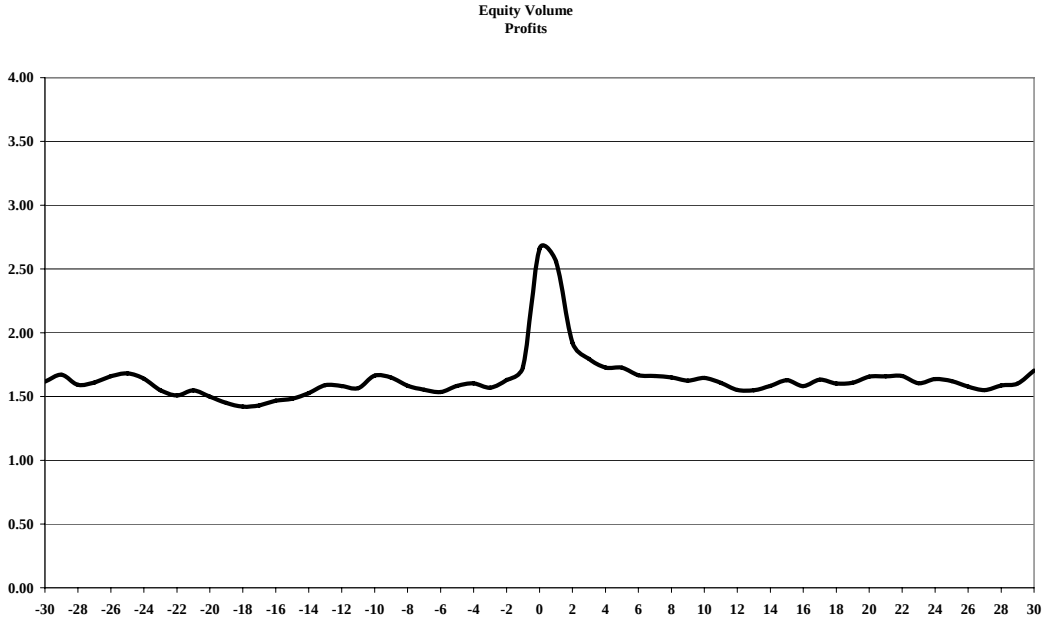
Figure 5: Equity volume trades around earnings announcements

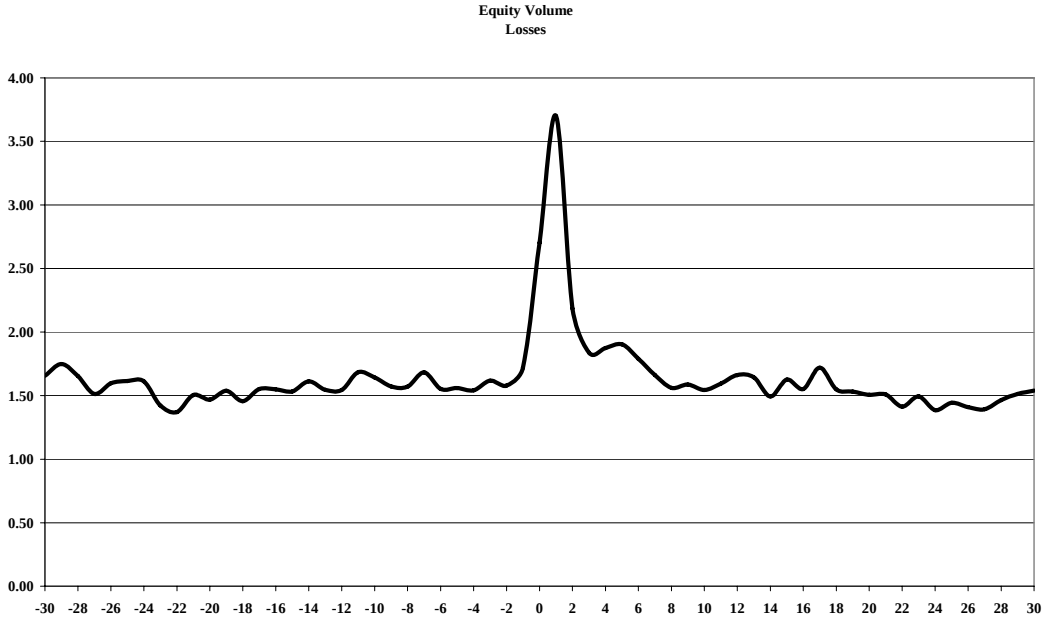
The graph presents the relative volume of stocks traded around earnings annoucements. Details on the computation of equity volume ratio are presented in Section 5.3.1. The vertical axis presents the equity volume ratio on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).



Figures 6A and 6B: Equity volume trades around earnings announcements – Partition on profits and losses

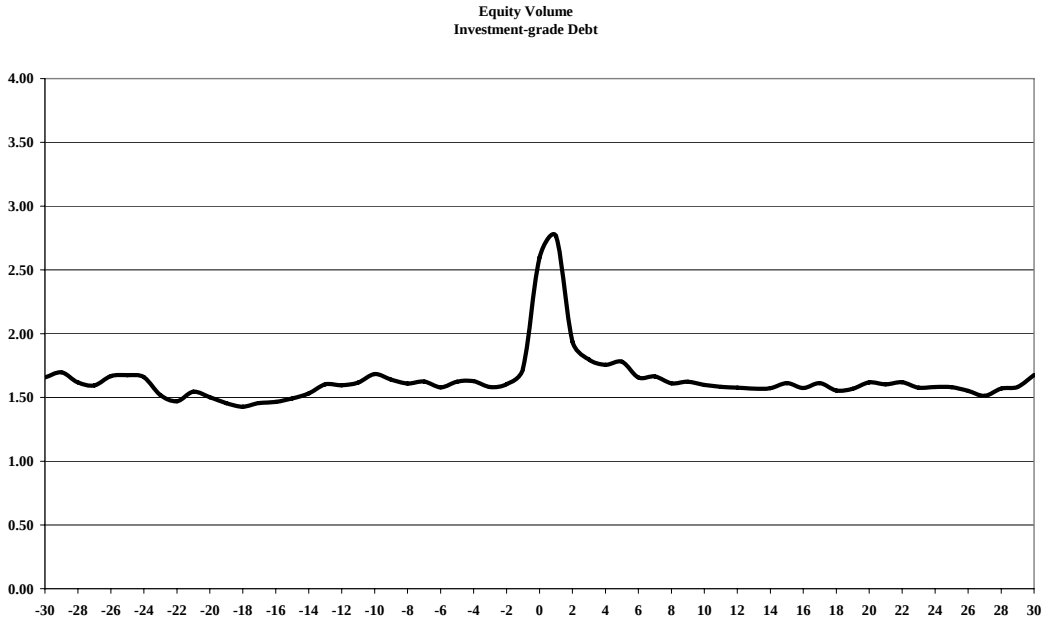
The graphs present the relative volume of stocks traded around earnings annoucements separately for profits and losses. Details on the computation of equity volume ratio are presented in Section 5.3.1. The vertical axis presents the equity volume ratio on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).

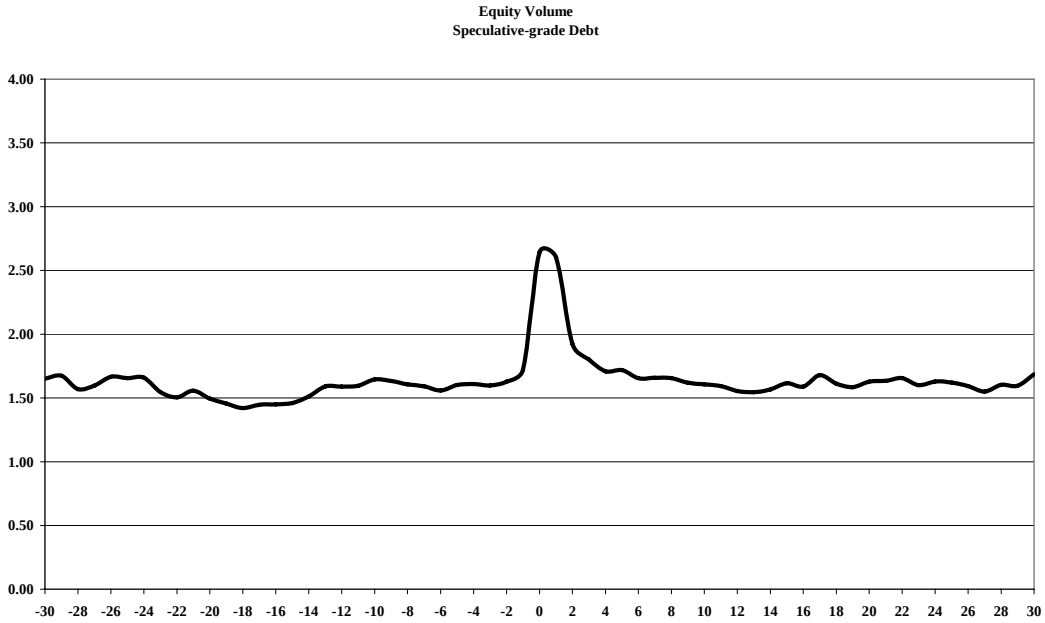




Figures 7A and 7B: Equity volume trades around earnings announcements – Partition on the riskiness of bonds

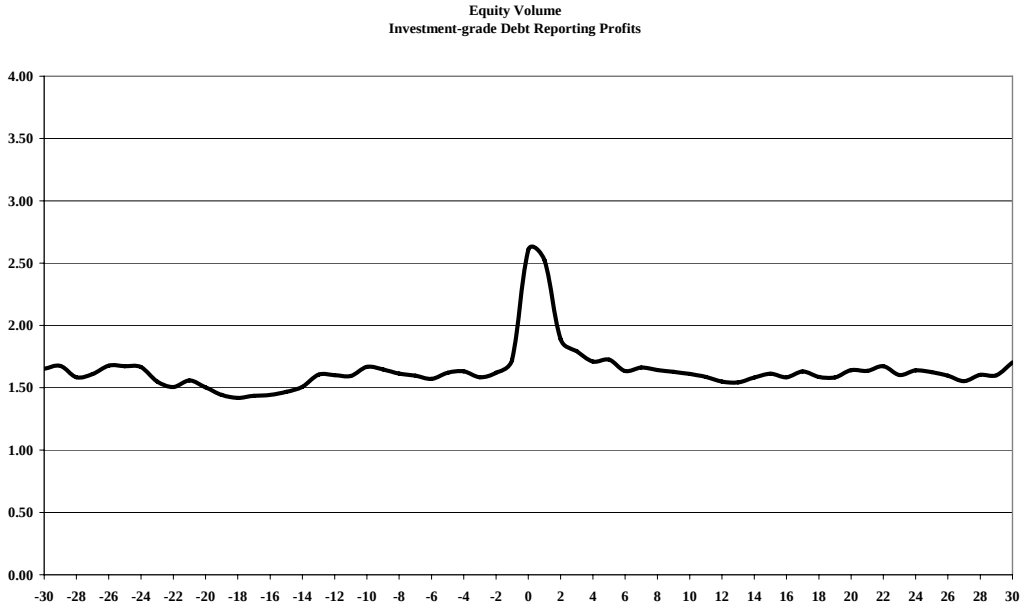
The graphs present the relative volume of stocks traded around earnings annoucements separately for firms with investment grade and speculative grade bonds. Details on the computation of equity volume ratio are presented in Section 5.3.1. The vertical axis presents the equity volume ratio on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).

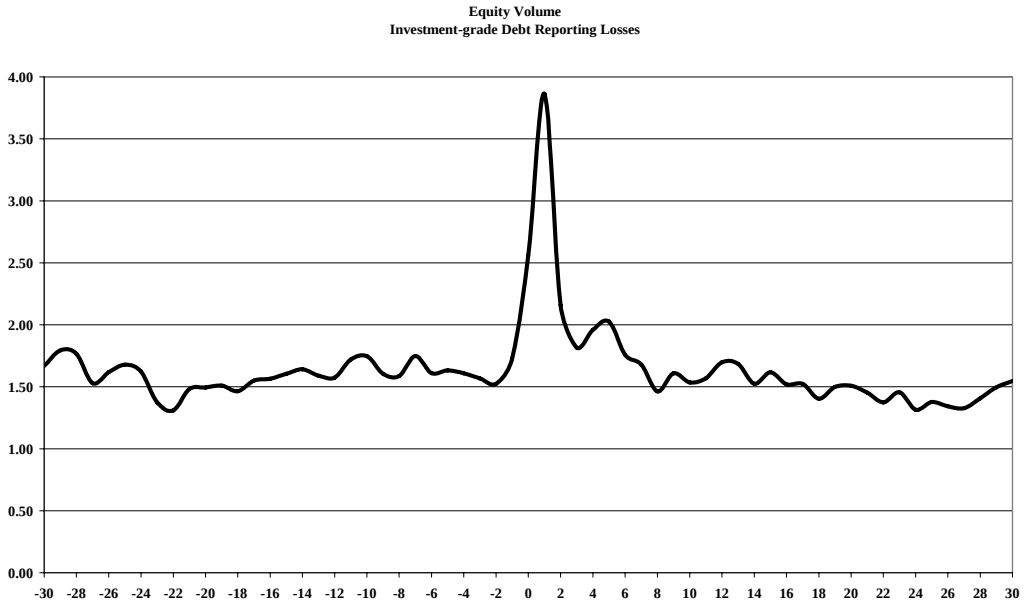




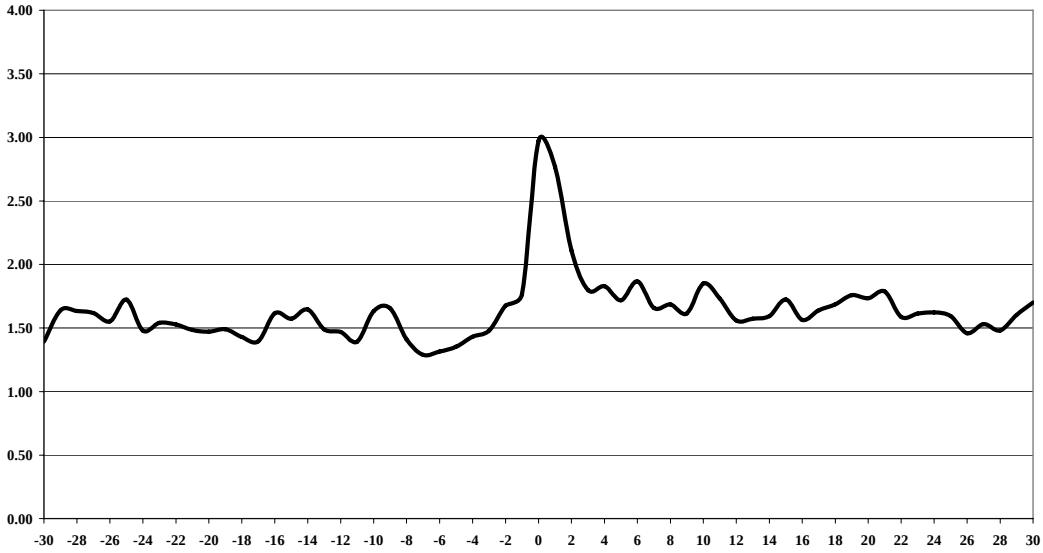
Figures 8A, 8B, 8C and 8D: Equity volume trades around earnings announcements – Partition on the riskiness of bonds and profits/losses

The graphs present the relative volume of stocks traded around earnings annoucements separately for firms with investment grade or speculative grade bonds and profits or losses. Details on the computation of equity volume ratio are presented in Section 5.3.1. The vertical axis presents the equity volume ratio on each day in the [-30, 30] trading days interval around quarterly earnings annoucements. The horizontal axis presents trading days relative to the earnings announcement day (day 0).





Equity Volume
Speculative-grade Debt Reporting Profits



Equity Volume
Speculative-grade Debt Reporting Losses

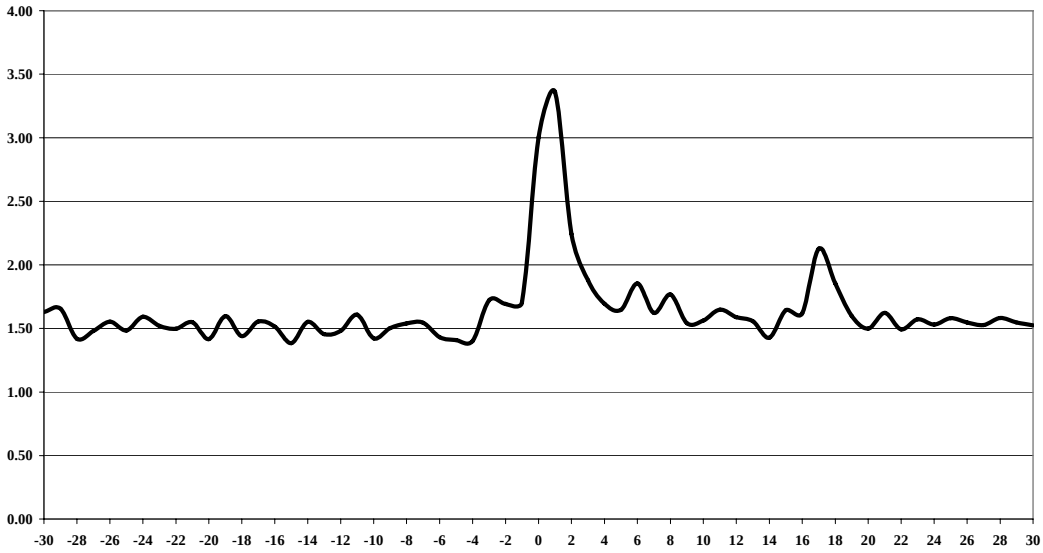


Table 1: Sample Composition

This table presents sample composition statistics. *Panel A* presents sample composition by year. The first column presents the frequency of bond issues, the second column presents the frequency of firms in the sample and the last column presents the frequency of firms in the Compustat database. *Panel B* presents sample composition by Fama and French (1997) industry classifications. The first column presents the frequency of bond issues, the second column presents the frequency of firms in the sample and the last column presents the frequency of firms in the Compustat database.

Panel A: Sample Composition by Year

	Bond-Year Observations		**Firm-Year Observations**		**COMPUSTAT Firm-Year Observations**	
Year	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
1994	177	2.47	109	3.65	4863	8.12
1995	330	4.61	175	5.86	5125	8.56
1996	416	5.81	209	7.00	5646	9.43
1997	475	6.63	233	7.81	6068	10.13
1998	601	8.39	276	9.25	6009	10.03
1999	666	9.29	303	10.15	5751	9.60
2000	746	10.41	326	10.92	5848	9.76
2001	933	13.02	363	12.16	5558	9.28
2002	1224	17.08	430	14.41	5214	8.71
2003	1288	17.97	449	15.05	4873	8.14
2004	310	4.33	111	3.72	4940	8.25
Total	7166		2984		59895	

Panel B: Sample Composition by Industry

Fama and French Industry Code	Bond-Year Obs		Firm-Year Obs		COMPUSTAT Firm-Year Observations	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
AERO	123	1.72	41	1.37	251	0.42
AGRIC	25	0.35	18	0.6	219	0.37
AUTOS	288	4.02	103	3.45	942	1.57
BEER	132	1.84	33	1.11	230	0.38
BLDMT	149	2.08	61	2.04	1207	2.02
BOOKS	108	1.51	73	2.45	578	0.97
BOXES	49	0.68	28	0.94	215	0.36
BUSSV	288	4.02	96	3.22	8429	14.07
CHEMS	312	4.35	137	4.59	1226	2.05
CHIPS	216	3.01	69	2.31	3966	6.62
CLTHS	49	0.68	40	1.34	927	1.55
CNSTR	109	1.52	61	2.04	871	1.45
COAL	1	0.01	1	0.03	57	0.10
COMPS	137	1.91	68	2.28	3046	5.09
DRUGS	146	2.04	74	2.48	3411	5.69
ELCEQ	62	0.87	29	0.97	1051	1.75
ENRGY	466	6.5	226	7.57	2584	4.31
FABPR	1	0.01	1	0.03	285	0.48
FOOD	261	3.64	107	3.59	1052	1.76
FUN	195	2.72	88	2.95	1178	1.97
GOLD	4	0.06	4	0.13	427	0.71
GUNS	63	0.88	12	0.4	94	0.16
HLTH	84	1.17	52	1.74	1218	2.03
HSHLD	95	1.33	53	1.78	1163	1.94
LABEQ	23	0.32	19	0.64	1527	2.55
MACH	200	2.79	107	3.59	2270	3.79
MEALS	122	1.7	61	2.04	1425	2.38
MEDEQ	49	0.68	40	1.34	2257	3.77
MINES	22	0.31	17	0.57	283	0.47
MISC	25	0.35	16	0.54	721	1.20
PAPER	285	3.98	121	4.05	866	1.45
PERSV	45	0.63	14	0.47	688	1.15
RTAIL	781	10.9	256	8.58	3276	5.47
RUBBR	21	0.29	17	0.57	668	1.12
SHIPS	12	0.17	7	0.23	118	0.20
SMOKE	3	0.04	3	0.1	72	0.12
SODA	102	1.42	22	0.74	173	0.29
STEEL	95	1.33	72	2.41	1026	1.71
TELCM	671	9.36	248	8.31	2390	3.99
TOYS	26	0.36	15	0.5	642	1.07
TRANS	589	8.22	132	4.42	1637	2.73
TXTLS	24	0.33	14	0.47	360	0.60
UTIL	541	7.55	226	7.57	2395	4.00
WHLSL	167	2.33	102	3.42	2474	4.13
Total	7166		2984		59895	

Table 2: Descriptive Statistics

This table presents descriptive statistics on dependent and independent variables used in multivariate tests. *Panel A* presents descriptive statistics for the bond sample, *Panel B* presents descriptive statistics for the Compustat population. *Panel C* presents correlation statistics (Pearson and Spearman) for the bond sample. *Mkt Value of Equity* is the market value of common equity. *Firm Value* is the sum of the market value of equity and the book value of debt. *Bond Returns* is the annual buy and hold raw bond return (see Appendix for computational details). *Adjusted Bond Returns* is the raw bond return adjusted for treasury returns (treasuries are matched by maturity and coupon size). *Earnings* is earnings before extraordinary items scaled by the beginning of the year firm value. *Cash Flows* is the operational cash flows scaled by the beginning of the year firm value. *Accruals* is the difference between earnings and cash flows. *ΔEarnings* is the change in earnings scaled by beginning of the year firm value. *ΔCash Flows* is the change in cash flows scaled by beginning of the year firm value. *ΔAccruals* is the change in accruals scaled by the beginning of the year firm value. *Loss Indicator* is an indicator variable that equals 1 if the firm reports negative earnings before extraordinary items and 0 otherwise.

Panel A: Descriptive Statistics - Bond Sample

Variable	N	Mean	Std Dev	5th Ptcl	25th Pctl	Median	75th Pctl	95th Pctl
Mkt Value Equity ($ Mil.)	7166	18804.08	34758.06	347.71	2156.66	7140.51	17937.03	79074.30
Firm Value ($ Mil.)	7166	25718.27	42974.63	867.41	4146.74	11498.87	24928.71	122464.24
Bond Returns	7166	0.086	0.108	-0.061	0.044	0.086	0.133	0.227
Adjusted Bond Returns	7166	0.013	0.105	-0.119	-0.014	0.010	0.044	0.152
Earnings	7166	0.023	0.049	-0.063	0.012	0.032	0.048	0.078
Cash Flows	7166	0.082	0.055	0.002	0.050	0.077	0.108	0.178
Accruals	7166	-0.058	0.059	-0.158	-0.082	-0.051	-0.024	0.012
ΔEarnings	7166	0.002	0.059	-0.072	-0.012	0.003	0.016	0.066
ΔCash Flows	7166	0.006	0.049	-0.068	-0.013	0.006	0.024	0.076
ΔAccruals	7166	-0.004	0.069	-0.101	-0.027	-0.004	0.017	0.087
Loss Indicator	7166	0.174	0.379	0.000	0.000	0.000	0.000	1.000
Speculative Indicator	7166	0.255	0.436	0.000	0.000	0.000	1.000	1.000

Panel B: Descriptive Statistics - COMPUSTAT Population

Variable	N	Mean	Std Dev	5th Ptcl	25th Pctl	Median	75th Pctl	95th Pctl
Mkt Value Equity ($ Mil.)	59895	1267.31	3771.15	3.36	24.49	120.76	664.09	6597.20
Firm Value ($ Mil.)	59895	1720.74	4943.87	5.85	36.81	172.74	929.68	9133.38
Earnings	59895	-0.032	0.159	-0.352	-0.068	0.020	0.054	0.113
Cash Flows	59895	0.035	0.125	-0.187	-0.021	0.049	0.102	0.217
Accruals	59895	-0.066	0.126	-0.294	-0.101	-0.042	-0.006	0.081
ΔEarnings	59895	0.007	0.152	-0.197	-0.031	0.004	0.032	0.217
ΔCash Flows	59895	0.008	0.111	-0.157	-0.032	0.005	0.045	0.186
ΔAccruals	59895	-0.002	0.157	-0.229	-0.049	-0.004	0.038	0.232
Loss Indicator	59895	0.402	0.490	0.000	0.000	0.000	1.000	1.000

Panel C: Pearson (Spearman) Correlation Coefficients are above (below) diagonal

N = 7166

	Adj Bond Ret	*Earnings*	*Cash Flows*	*Accruals*	*ΔEarnings*	*ΔCash Flows*	*ΔAccruals*	*Loss Indic*	*Speculative Indic*
Adj Bond Ret	-	0.170	0.149	0.003	0.266	0.098	0.157	-0.109	0.100
	-	*<.0001*	*<.0001*	*0.789*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
Earnings	0.061	-	0.356	0.503	0.472	0.201	0.260	-0.727	-0.258
	<.0001	-	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
Cash Flows	0.135	0.408	-	-0.629	0.121	0.492	-0.247	-0.225	-0.099
	<.0001	*<.0001*	-	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
Accruals	-0.056	0.286	-0.653	-	0.281	-0.288	0.445	-0.397	-0.123
	<.0001	*<.0001*	*<.0001*	-	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*
ΔEarnings	0.186	0.501	0.158	0.209	-	0.194	0.717	-0.359	-0.007
	<.0001	*<.0001*	*<.0001*	*<.0001*	-	*<.0001*	*<.0001*	*<.0001*	*0.537*
ΔCash Flows	0.080	0.179	0.428	-0.283	0.235	-	-0.545	-0.139	-0.008
	<.0001	*<.0001*	*<.0001*	*<.0001*	*<.0001*	-	*<.0001*	*<.0001*	*0.523*
ΔAccruals	0.069	0.181	-0.268	0.437	0.451	-0.645	-	-0.208	-0.001
	<.0001	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	-	*<.0001*	*0.942*
Loss Indic	-0.072	-0.656	-0.252	-0.365	-0.415	-0.148	-0.206	-	0.279
	<.0001	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	-	*<.0001*
Speculative Indic	0.156	-0.236	-0.095	-0.147	0.000	-0.003	-0.037	0.279	-
	<.0001	*<.0001*	*<.0001*	*<.0001*	*0.996*	*0.801*	*0.002*	*<.0001*	-

Table 3: Test Statistics for Figures 1 to 4

This table presents statistics that test the significance of the change in the incidence of bond trade during the days immediately following earnings announcements. Tests are computed for each of the graphs presented in Figures 1 to 4. Details on the computation of test statistics are presented in Section 2.2.1. Significance levels are based on two-tailed t-statistics. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

Statistical Tests for Figures					
Samples	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Full Sample	1.513***				
Investment Grade		0.962***			
Speculative Grade		1.617***			
Profits			0.722***		
Losses			1.234***		
Investment Grade & Profits				-0.196*	
Investment Grade & Losses				0.225	
Speculative Grade & Profits					0.188*
Speculative Grade & Losses					0.771***
Differences	-	-0.656**	-0.511**	-0.421*	-0.584***

Table 4: Regressions of Bond Returns on Earnings Levels (Full Sample)

This table presents regressions of Adjusted Bond Returns on the level of earnings (or its components) (see the Appendix for the computation of bond returns). *Earnings* is earnings before extraordinary items scaled by the beginning of the year firm value. *Cash Flows* is the operational cash flows scaled by the beginning of the year firm value. *Accruals* is the difference between earnings and cash flows. *Loss* is an indicator variable that equals 1 if the firm reports negative earnings before extraordinary items and 0 otherwise. *Speculative* is an indicator variable that equals 1 if the bond issue is rated speculative grade or 0 if the bond issue is rated investment grade. Regressions are run using year fixed effects. T-statistics (presented in parantheses) are computed based on standard errors adjusted for clustering at firm level. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

	Pred.	**Dependent Variable: Bond Returns**							
Variable Names	Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Earnings	(+)	0.338***	-0.022	0.261***	-0.041				
		(4.23)	(-0.37)	(3.75)	(-0.68)				
Cash Flows	(+)					0.436***	0.007	0.337***	0.038
						(5.39)	(0.12)	(4.69)	(-0.65)
Accruals	(+)					0.275***	-0.129*	0.192***	-0.166**
						(3.35)	(-1.70)	(2.83)	(-2.02)
Loss	(-)		0.007		-0.022*		-0.014		-0.055***
			(0.66)		(-1.89)		(-0.92)		(-2.69)
*Earnings * Loss*	(+)		0.663***		0.358**				
			(3.60)		(2.06)				
*Cash Flows * Loss*	(+)						0.965***		0.756***
							(4.46)		(3.54)
*Accruals * Loss*	(+)						0.664***		0.362**
							(3.57)		(2.16)
Speculative	**?**			0.028***	0.029***			0.023***	0.023*
				(4.25)	(2.70)			(2.56)	(1.90)
*Earnings * Speculative*	(+)			0.277*	0.090				
				(1.81)	(0.55)				
*Cash Flows * Speculative*	(+)							0.349**	0.194
								(2.16)	(1.13)
*Accruals * Speculative*	(+)							0.272*	0.160
								(1.78)	(0.97)
*Speculative * Loss*	**?**				0.041**				0.058**
					(2.14)				(2.21)
*Earnings * Loss * Speculative*	(+)				0.481				
					(1.55)				
*Cash Flows * Loss * Speculative*	(+)								0.366
									(0.89)
*Accruals * Loss * Speculative*	(+)								0.429
									(1.48)
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N		7166	7166	7166	7166	7166	7166	7166	7166
Adj R^2		12.58%	13.66%	14.78%	16.00%	13.17%	14.90%	15.46%	17.52%

Table 5: Regressions of Bond Returns on Earnings Changes (Full Sample)

This table presents regressions of Adjusted Bond Returns on changes in earnings (or its components) (see the Appendix for the computation of bond returns). *ΔEarnings* is the change in earnings scaled by beginning of the year firm value. *ΔCash Flows* is the change in cash flows scaled by beginning of the year firm value. *ΔAccruals* is the change in accruals scaled by the beginning of the year firm value. *Loss* is an indicator variable that equals 1 if the firm reports negative earnings before extraordinary items and 0 otherwise. *Speculative* is an indicator variable that equals 1 if the bond issue is rated speculative grade or 0 if the bond issue is rated investment grade. Regressions are run using year fixed effects. T-statistics (presented in parantheses) are computed based on standard errors adjusted for clustering at firm level. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

	Pred.	Dependent Variable: Bond Returns							
Variable Names	Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔEarnings	(+)	0.427***	0.244***	0.223***	0.115**				
		(5.24)	(4.17)	(3.22)	(2.51)				
ΔCash Flows	(+)					0.530***	0.316***	0.346***	0.175***
						(6.41)	(5.46)	(4.51)	(4.17)
ΔAccruals	(+)					0.407***	0.231***	0.192***	0.100**
						(5.08)	(4.00)	(3.09)	(2.17)
Loss	(-)		0.005		-0.018*		0.006		-0.015***
			(0.78)		(-1.74)		(1.03)		(-1.72)
*ΔEarnings * Loss*	(+)		0.442***		0.179				
			(3.92)		(1.37)				
*ΔCash Flows * Loss*	(+)						0.562***		0.433**
							(3.51)		(2.34)
*ΔAccruals * Loss*	(+)						0.429***		0.152
							(3.74)		(1.22)
Speculative	**?**			0.022***	0.026***			0.022***	0.026***
				(4.17)	(4.62)			(4.24)	(4.72)
*ΔEarnings * Speculative*	(+)			0.378***	0.228**				
				(2.94)	(2.25)				
*ΔCash Flows * Speculative*	(+)							0.336**	0.269**
								(2.24)	(2.13)
*ΔAccruals * Speculative*	(+)							0.396***	0.231**
								(3.12)	(2.29)
*Speculative * Loss*	**?**				0.014**				0.012
					(0.85)				(0.81)
*ΔEarnings * Loss * Speculative*	(+)				0.296				
					(1.38)				
*ΔCash Flows * Loss * Speculative*	(+)								-0.023
									(-0.08)
*ΔAccruals * Loss * Speculative*	(+)								0.329
									(1.56)
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N		7166	7166	7166	7166	7166	7166	7166	7166
Adj R^2		15.69%	16.96%	17.65%	18.88%	15.99%	17.33%	18.01%	19.38%

Table 6: Regressions of Bond Returns on Earnings Levels and Changes (Loss Sample)

This table presents regressions of Adjusted Bond Returns on earnings levels and changes for the sample of firm-years with losses (see the Appendix for the computation of bond returns). *Earnings* is earnings before extraordinary items scaled by the beginning of the year firm value. *Cash Flows* is the operational cash flows scaled by the beginning of the year firm value. *Accruals* is the difference between earnings and cash flows. *ΔEarnings* is the change in earnings scaled by beginning of the year firm value. *ΔCash Flows* is the change in cash flows scaled by beginning of the year firm value. *ΔAccruals* is the change in accruals scaled by the beginning of the year firm value. *Transit* is an indicator variable that equals 1 if the firm reports positive earnings before extraordinary items in the prior year and 0 otherwise. *Speculative* is an indicator variable that equals 1 if the bond issue is rated speculative grade or 0 if the bond issue is rated investment grade. Regressions are run using year fixed effects. T-statistics (presented in parantheses) are computed based on standard errors adjusted for clustering at firm level. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

Panel A: Earnings Levels

Variable Names	(1)	(2)	(3)
Earnings	0.878***	0.219	0.172
	(4.15)	(1.41)	(1.47)
Transit	-0.084***		-0.029
	(-3.59)		(-0.96)
*Earnings * Transit*	-0.538**		0.348
	(-2.11)		(1.06)
Speculative		0.075***	0.087***
		(3.87)	(3.40)
*Earnings * Speculative*		0.668***	0.993***
		(2.77)	(3.86)
*Speculative * Transit*			-0.069**
			(-2.06)
*Earnings * Transit * Speculative*			-1.236***
			(-2.74)
Year Fixed Effects	Yes	Yes	Yes
N	1244	1244	1244
Adj R^2	22.64%	22.27%	24.22%

Panel B: Earnings Changes

Variable Names	(1)	(2)	(3)
ΔEarnings	0.803***	0.232*	0.102
	(4.52)	(1.77)	(0.59)
Transit	-0.025		-0.023
	(-1.09)		(-0.79)
*ΔEarnings * Transit*	-0.514**		0.140
	(-2.54)***		(0.44)
Speculative		0.042***	0.014
		(2.53)	(0.69)
*ΔEarnings * Speculative*		0.534***	0.868***
		(2.94)	(3.94)
*Speculative * Transit*			0.014
			(0.47)
*ΔEarnings * Transit * Speculative*			-1.409***
			(-3.32)
	Yes	Yes	Yes
	1244	1244	1244
	23.99%	24.32%	27.36%

Table 7: Regressions of Stock Returns on Earnings Levels and Changes (Full Sample)

This table presents regressions of Stock Returns on earnings levels and changes. *Earnings* is earnings before extraordinary items scaled by the beginning of the year market value of equity. *Cash Flows* is the operational cash flows scaled by the beginning of the year market value of equity. *Accruals* is the difference between earnings and cash flows scaled by the beginning of the year market value of equity. *ΔEarnings* is the change in earnings scaled by beginning of the year market value of equity. *ΔCash Flows* is the change in cash flows scaled by beginning of the year market value of equity. *ΔAccruals* is the change in accruals scaled by the beginning of the year market value of equity. *Loss* is an indicator variable that equals 1 if the firm reports negative earnings before extraordinary items and 0 otherwise. *Speculative* is an indicator variable that equals 1 if the bond issue is rated speculative grade or 0 if the bond issue is rated investment grade. Regressions are run using year fixed effects. T-statistics (presented in parantheses) are computed based on standard errors adjusted for clustering at firm level. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

Panel A: Earnings Levels			
Variable Names	(1)	(2)	(3)
Earnings	2.256***	0.841***	1.724***
	(12.58)	(6.43)	(6.01)
Loss	-0.005		-0.027
	(-0.20)		(-0.65)
*Earnings * Loss*	-2.336***		-1.394***
	(-11.90)		(-4.10)
Speculative		0.090***	-0.009
		(4.93)	(-0.26)
*Earnings * Speculative*		-0.453***	0.748**
		(-3.09)	(2.00)
*Speculative * Loss*			0.017
			(0.31)
*Earnings * Loss * Speculative*			-1.229***
			(-2.88)
Year Fixed Effects	Yes	Yes	Yes
N	2959	2959	2959
Adj R^2	20.82%	17.55%	21.16%

Panel B: Earnings Changes			
Variable Names	(1)	(2)	(3)
ΔEarnings	0.932***	0.719***	0.676***
	(9.49)	(5.95)	(4.04)
Loss	-0.106***		-0.105**
	(-4.74)		(-2.52)
*ΔEarnings * Loss*	-0.711***		-0.229
	(-5.90)		(-0.84)
Speculative		0.051***	0.066***
		(2.95)	(3.15)
*ΔEarnings * Speculative*		-0.231*	0.313
		(-1.71)	(1.51)
*Speculative * Loss*			-0.030
			(-0.59)
*ΔEarnings * Loss * Speculative*			-0.571*
			(-1.86)
Year Fixed Effects	Yes	Yes	Yes
N	2959	2959	2959
Adj R^2	19.27%	18.16%	21.16%

Table 8: Regressions of Bond Returns on Earnings Levels / Changes and Stock Returns

This table presents regressions of Bond Returns on earnings levels and stock returns (Panel A) and earnings changes and stock returns (Panel B). *Earnings* is earnings before extraordinary items scaled by the beginning of the year market value of equity. *Cash Flows* is the operational cash flows scaled by the beginning of the year market value of equity. *Accruals* is the difference between earnings and cash flows scaled by the beginning of the year market value of equity. *ΔEarnings* is the change in earnings scaled by beginning of the year market value of equity. *ΔCash Flows* is the change in cash flows scaled by beginning of the year market value of equity. *ΔAccruals* is the change in accruals scaled by the beginning of the year market value of equity. *Loss* is an indicator variable that equals 1 if the firm reports negative earnings before extraordinary items and 0 otherwise. *Stock Returns* are Regressions are run using year fixed effects. T-statistics (presented in parantheses) are computed based on standard errors adjusted for clustering at firm level. ***,**,* represent significance levels at 1%, 5% and 10%, respectively.

Panel A: Earnings Levels

Variable Names	(1)	(2)	(3)	(4)
Earnings	0.138**	-0.200***		
	(2.12)	(-3.18)		
Cash Flows			0.191***	-0.186***
			(2.91)	(3.08)
Accruals			0.105	-0.238***
			(1.55)	(-3.45)
Loss		0.001		-0.021
		(0.15)		(-1.57)
*Earnings * Loss*		0.601***		
		(3.81)		
*Cash Flows * Loss*				0.875***
				(4.88)
*Accruals * Loss*				0.554***
				(3.46)
Stock Returns	0.076***	0.077***	0.075***	0.076***
	(10.99)	(11.13)	(10.95)	(11.12)
Year Fixed Effects	Yes	Yes	Yes	Yes
N	7071	7071	7071	7071
Adj R^2	25.35%	26.16%	25.52%	26.89%

Panel B: Earnings Changes

Variable Names	(1)	(2)	(3)	(4)
ΔEarnings	0.250***	0.102***		
	(4.72)	(2.98)		
ΔCash Flows			0.279***	0.094**
			(4.69)	(2.35)
ΔAccruals			0.245***	0.103***
			(4.58)	(2.85)
Loss		0.009		0.009*
		(1.53)		(1.63)
*ΔEarnings * Loss*		0.401***		
		(4.82)		
*ΔCash Flows * Loss*				0.535***
				(4.20)
*ΔAccruals * Loss*				0.381***
				(4.51)
Stock Returns	0.072***	0.072***	0.072***	0.072***
	(11.20)	(11.32)	(11.15)	(11.39)
Year Fixed Effects	Yes	Yes	Yes	Yes
N	7071	7071	7071	7071
Adj R^2	26.78%	27.80%	26.80%	27.91%