Bondholder Activism and Delay in Financial Reporting[*]

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Abstract

We document and examine a new trend in bondholder activism, using a sample of
companies that failed to file their financial statements on time. In contrast with historical
inaction, bondholders start to actively enforce their rights when firms violate the
covenant of timely financial reporting. Stock price drops and bond price increases when
activist bondholders attack the violators. We find that activist bondholders are more
likely to target firms of higher default risk (in payment), with less bank monitoring, under
greater influence of dedicated institutional shareholders, and offering less coupon
payments. The study provides insight into the nature and contributing factors of
bondholder activism.

I. Introduction

In this paper we document and examine a new trend in bondholder activism, using a sample of companies that failed to file their financial statements on time. When companies fail to file their financial statements in a timely manner, they could violate the standard covenant of timely reporting included in their bond contracts. This constitutes a technical default—the violation of any debt covenants other than the one requiring the payment of interest or principal.

Historically, it appears that bondholders and borrowing companies enjoy a cozy relationship. Many technical defaults are undetected or unsanctioned.[1] Incident of bondholder activism is very rare. The lack of large sample of activist bondholders taking action against borrowing companies has limited research in bondholder activism. In this paper, we take advantage of a recent increase in bondholder activism incidents in response to the violation of the timely filing covenant, to study the nature of bondholder activism and the factors that contribute to it.

Our focus on violation of the timely financial reporting covenant is motivated by the following reasons. First, there is variation in bondholder behavior when bond issuers violate the timely filing covenant. The violation of such a covenant is an evident technical default where the difficulty of detection by lenders is minimal (Kahan and Rock, 2008). So, among those firms that failed to file their financial statements in a timely manner, we can find quite a few targeted by activist bondholders. This "selective" behavior provides a unique opportunity to investigate the factors that contribute to bondholder activism. Second, bondholder activism in response to the technical default caused by failure to report on a time has constituted a significant economic event. The

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[1] We provide more detail on bondholders' enforcement of creditor's rights in Section 2.2.

aggregate amount of the outstanding bonds in our sample companies being targeted by activist bondholders because of late filing in the period of 2005-2007 is over $59 billion. Last but not the least, the failure to timely file financial reports constitutes a significant event, but the study of this event so far is limited and has focused only in the stock market (Alford, Jones, and Zmijewski, 1994). It is worthwhile to investigate how bondholders react when firms are behind the filing deadline.

Our results show that out of the 516 firms that violated timely reporting covenant (1213 late filing events), 68 firms (81 late filing events) become the targets of activist bondholders, i.e., receive the default notice from bondholders. Study on the market reaction reveals that stock price and bond price drop when a firm delays its financial reporting. Stock price further goes down but bond price increases if the late filing firm is targeted by activist bondholders.

We investigate this selective property of bondholder activism by evaluating the costs and benefits associated with bondholder activism. We find that activist bondholders are more likely to take actions when late filings are caused by SEC investigations, executive compensation issues, accounting problems, and restatements; while late filings caused by time constraint, change of reporting requirements (e.g. implementation of Sarbanes-Oxley Act), and shortage of personnel do not catch much of bondholders' attention.

We find that firms owned by more institutional shareholders are more likely to receive the default notice from bondholders. This suggests that, in the eyes of the activist bondholders, the costs of expropriation by institutional shareholders outweigh the benefits induced by institutional shareholders' management discipline function. A further study on the types of institutional shareholders reveals that firms predominated by short-

term oriented transient or quasi-indexer institutions (as defined by Bushee, 1998) are less susceptible to bondholder activism than firms dominated by dedicated institutions. The empirical analysis suggests that bondholders are less likely to target a late filer if a majority of the borrower's loans come from relationship banks, which reflects that bondholders value the cross-monitoring provided by banks. In addition, we find that bondholder activism is more likely to happen when the borrower bears higher default risk and offers less coupon payment. Taken together, these results imply that bondholders will be more active to enforce their creditor's rights where conflicts of interests between shareholders and bondholders are more severe and where bondholders can potentially gain more from the action.

The costs of bondholder activism mainly arise from legal and administrative costs, which have little cross sectional variation. One exception is the cost of acquisition of 25% bonds outstanding to be eligible to attack the borrower. Thus, for actively traded bonds, the costs associated with bondholder activism will be lower. We find that firms with more actively traded bonds are more likely to be targeted by bondholders. Taken together, these results show that activist bondholders are more likely to target those borrowers where bondholders can potentially receive more welfare improvement by taking actions against borrowing firms.

This paper relates to research in both finance and accounting. First, this paper makes the first step to provide empirical evidence on activist bondholder behavior and identifies factors that contribute to bondholder activism. Shareholders, banks, and bondholders are the major stakeholders in a company, and they share common interests in corporate performance. However, their interests diverge in systematic ways. Shareholders as the

ultimate owner of the company are active in pursuing their rights through various

shareholder activism mechanisms when facing agency problems (e.g., Gillan and Starks,

2000, 2007; Karpoff, Malatesta, and Walkling, 1996).[2] Banks are known to be heavily

involved in corporate activities, such as board representation and participation in

corporate decisions. In contrast to the extensive literature on shareholder activism and on

banks interaction with borrowing companies, there is limited research on bondholder

activism.

It is fundamentally important to investigate bondholder activism because how

bondholders implement debt contract to enforce creditor rights is essential to the design

of bond contracts and the financing in the bond market. The presence of covenants in

bond contracts is motivated and rationalized by their ability to mitigate agency problems,

and aid in securing financing through the pledging of state-contingent control rights

(Jensen and Meckling, 1976, Smith and Warner 1979, Tirole, 2006). Upon a covenant is

violated, control rights may shift to bondholders, bondholders can use the threat of

acceleration of maturity to choose their preferred course of action, or to extract

concessions by waiving the violation. A shift in bondholder behavior upon a triggering

covenant could lead to changes in the design of bond contracts and in how bond price is

determined at issuance.

Second, this work is the first to study the bond covenant of timely financial reporting

and the first to examine the bond market reaction in the event of late filing. Prior research

in accounting studies the properties of earnings in debt contract efficiency, examines the

accounting choices when financial covenants are binding, and highlights the importance

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[2] For additional research on shareholder activism, see Black, 1998; Brav, Jiang, Partnoy, and Thomas, 2008; Del Guercio and Hawkins, 1999; Ikenberry and Lakonishok, 1993; Klein and Zur, 2009; Rock, 1992; Romana, 1993, 2001; Smith 1996; and Wahal, 1996.

of financial reports in the debt market[3]. This paper provides direct evidence of the importance of financial reports in the public bond market: when bond issuers cannot provide timely information to bondholders, bondholders will act to enforce their creditor's rights. However, bondholder activism is less necessary when firms are closely monitored by banks, which suggests that in addition to public information bondholders also rely on banks and banks' access to private information to monitor borrowers.

Third, this paper is also of value to industry practitioners. It is noteworthy that the incidents of bondholder activism studied in this paper came as a surprise to the borrowing companies and the markets in general. The attacked bonds were issued with the expectation of no action taken by bondholders when technical defaults trigger as is the prior common practice. Thus, the bond indentures at issuance do not reflect the emerging bondholder activism. As bondholders increasingly pursue their rights in the event of late filing, future bond issuance is likely to incorporate the potential bondholder activism into the prospectus. As James Tanenbaum, head of global capital markets at a major New York-based law firm Morrison & Foerster, puts it, "As we think about covenants to be included in term sheets and indentures described in prospectuses, we keep these issues [bondholder activism to technical defaults on financial reporting] top of mind."

The rest of the paper is organized as follows. Section II introduces the institutional background and presents prior literature. Section III develops hypotheses and presents research design. Section IV describes our sample, and section V reports results and discussion. Section VI concludes.

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[3] Related research includes Ball and Shivakumar, 2005; Ball, Robin, and Sadka, 2008; Wittenberg, 2008; Zhang, 2008; and Gigler, Kanodia, Sapra, and Venugopalan, 2009; Leftwich, 1981 and 1984; Beneish and Press, 1993; Chen and Wei, 1993; DeFond and Jiambalvo, 1994; Jensen and Meckling, 1976; Watts, 1977; Smith and Warner, 1979; Holthausen and Watts, 2001.

II. Prior Literature and Institutional Background

2.1. Shareholder Activism and Creditor Protection

Agency problems arise as the interests of management, shareholders and creditors diverge. Shareholder activism has been a common mechanism for shareholder protection in corporate governance and control (see, for example, Black, 1990 and 1991; Admati et al., 1994; and Karpoff et al., 1996). Activist shareholders, such as mutual funds and pension funds, have employed various strategies, including "behind the scenes" discussion with company management and board members, shareholder proposal, proxy contest, and litigation to influence portfolio companies (e.g., Gillan and Starks, 2000 and 2007; Guercio and Hawkins, 1999; Smith, 1996). Recently emerged as a central player in shareholder activism, activist hedge funds differ from the traditional activist shareholders in their aggressive tactics and their forceful actions against under-performing companies can induce significant changes (Brav et al., 2008).

Relative to dispersed public bondholders, bank lending improves corporate governance by close monitoring borrower performance and intervening in an effective and timely manner in case of non-performance (Diamond, 1984, 1991; Smith and Warner, 1979). Additionally, concentrated debt holding by banks reduces the re-negotiation costs in the event of default. And loan syndicates deter strategic default by borrowers. Empirical studies show that the markets value bank monitoring function.

In addition to bank monitoring, bank loan covenants are designed to protect creditors' right and to increase firm value. Debt covenants may constrain activities such as asset sales or dividend payments to protect creditors from shareholder's wealth transfer activities. For example, when a company engages in a transaction involving transfer of

substantially all assets, a technical default may arise.[4] The constraints imposed through

debt covenants are frequently specified in terms of accounting numbers. When such

covenants are violated, it constitutes a technical default. Studies show that virtually all

technical default on accounting-based debt covenant violations occur in private rather

than public debt issues (Beneish and Press, 1993; Chen and Wei, 1993). This may be

explained by the fact that, compared with private loan, corporate bond includes less

stringent covenants, due to higher renegotiation costs associated with dispersion of

bondholders and difficulty in collective action (Kahan and Tuchman, 1995; Leftwich,

1981 and 1984).

Lender's reactions to technical default vary. At one extreme, the creditor grants an

explicit or implicit waiver without renegotiation. Some other lenders grant a waiver after

alteration in contract terms. Finally, in other cases, renegotiation fails, no waiver is

granted, and the borrower has to seek financing elsewhere. On average, technical default

on accounting-based covenant violations leads to significant economic loss to the

borrowing companies (Beneish and Press, 1993).

2.2. Bondholder Activism

2.2.1. Historical inaction in response to bond covenant violations

In contrast to extensive literature on shareholder activism and bank's monitoring role

in corporate activities, research on bondholder activism is limited, despite its fundamental

importance. The main reason for the lack of empirical study on bondholders' activism is

that bondholders rarely take actions against companies in the case of technical defaults.

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[4] See, for example, Wendy's International Inc. announced in June 2006 its plan to spin off Tim Horton's to its shareholders. A group of bondholders sued arguing that the spin-off constituted a transfer of "substantially all" of Wendy's assets.

Bondholders used to hold their bonds passively and only step in when the borrower fails to pay principal or interests or files bankruptcy. This is known as the "under-enforcement" of creditor rights by bondholders (Kahan and Rock, 2008). Practically, many violations of bond covenants, mostly technical defaults, have remained undetected and unsanctioned.

The low-enforcement may be caused by the following reasons. First, as bondholders tend to include a dispersed group of investors, the difficulty in the collective action by bondholders and potential free-ride problem discourage potential activist bondholders from taking actions. Second, the indenture trustee (the supposed bondholder representative required by Trust Indenture Act (TIA) of 1939) lacks the incentive to represent and pursue bondholder interests vigorously. The trustee's compensation does not depend on how much effort she puts in to protect bondholder's interests. Sometimes, the trustee has to bear the cost involved in the investigation of the covenant violation.

Third, the current design of bond indenture is inefficient in the sense to help bondholders to detect violation and enforce their rights, as manifested in various cases when bondholders find it difficult even to detect the violation.[5] Finally, traditional corporate bondholders, such as the insurance companies and mutual funds, have an accommodating attitude. If the corporate bondholders do not pursue their rights rigorously in the case of technical defaults, the trustee would conceivably have little incentive.

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[5] For example, a technical default on asset sales can inevitably entails much information collection and analysis to prove whether the assets involved are "substantially all" or not.

2.2.2. The covenant of timely financial reporting

In this study, we examine how bondholders respond to covenant violation of timely financial reporting, which is also a technical default. Most firms with securities trading need to file Form 10-K and Form 10-Q with the SEC within a statutory period after the fiscal period end.[6] When a firm is unable to file on time its 10-K or 10-Q without "unreasonable effort or expense", Rule 12b-25 of the 1934 Securities and Exchanges Act requires the firm to notify SEC by filing a Form 12b-25 within one business day of its due date. The forms are labeled as NT-10K or NT-10Q when the firm delays in filing 10-K or 10-Q, respectively.

TIA of 1939 requires the appointment of a suitably independent and qualified trustee to act for the benefit of the bondholders, and specifies various substantive provisions for the trust indenture that must be entered into by the bond issuing firm and the trustee. Bond indenture inevitably requires that annual (quarterly) reports be sent to the trustee within 15 (5) days after 10-K (10-Q) forms have been filed with SEC. Usually, if a firm delays filing with SEC, it will not be able to deliver financial reports to the trustee within the perquisite time of period and a technical default can trigger.

The unique features associated with the violation on the covenant of timely financial reporting set it apart from the previous technical defaults, and provide a good opportunity to study bondholder activism. First, there is variation in bondholder behavior when bond issuers violate the timely filing covenant. Among those firms that failed to file their

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[6] Firms that have registered securities under Section 12 of the 1934 Securities and Exchange Act are required by Section 13 and firms that have registered securities under the 1933 Securities Act are required by Section 15(d) to file periodic reports. Before the implementation of the Sarbanes-Oxley Act, 10-K has to be filed within 90 days after the fiscal year end and 10-Q has to be filed within 45 days after the fiscal quarter end. The Sarbanes-Oxley Act accelerates the deadline and firms have to file 10-K within 60 days after the fiscal year end and 10-Q within 35 days after the fiscal quarter end. For details, please see http://www.sec.gov/rules/final/33-8128.htm.

financial statements in a timely manner, we can find quite a few targeted by activist bondholders. This "selective" behavior provides a unique opportunity to investigate the factors that contribute to bondholder activism.

Corporate bonds usually include fewer and less stringent covenants when compared with private debt due to higher renegotiation costs associated with dispersion of bondholders and difficulty in collective action (Diamond, 1984, 1991; Kahan and Tuchman, 1995; Smith and Warner, 1979; and Leftwich 1981, 1983), thus few technical defaults are observed in public debt issues (Sweeney, 1994). However, corporate bonds inevitably contain a covenant requiring issuers to file with the trustee copies of periodic reports required to be filed with the SEC. When the issuer cannot make the SEC filings, and thus does not provide copies to the trustee with the requisite time period, a technical default can trigger.

The failure to file on time with the trustee involves obvious and undisputable covenant violations, compared with other opaque and ambiguous defaults.[7] For example, in some M&A and spin-off transactions, opaque and/or ambiguous defaults occur and bondholders have sued the company based on whether the deal involves transfer of substantially all assets. It is difficult, sometimes impractical to obtain all information needed to make a judgment. Other times, even with all information it is still ambiguous to come to a conclusion. By contrast, evident technical default, such as violation on the

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[7] Technical defaults can be classified into a) opaque defaults where it is costly to obtain the information required to determine where a default has occurred, b) ambiguous defaults where it is not clear whether a default has occurred even all the necessary information has been acquired and c) evident defaults which are not opaque or ambiguous. See Kahan and Rock (2008) for more details.

covenant of timely reporting, can avoid the problem of detecting a technique default, or at least make the detection scheme much easier.[8]

Second, the bondholder activism based on delay in financial reporting constitutes a significant economic event. We are able to collect bond information for 60 out of 68 companies attacked by activist bondholders. The aggregate amount of bonds of the 60 companies that have received a default notice for failure to file to the trustee on time from 2005 to 2007 is over $59 billion.

Third, the failure to timely file financial reports constitutes a significant event, but the study of this event so far is limited and has focused only in the stock market (Alford, Jones, and Zmijewski, 1994). It is worthwhile to investigate how bondholders react when firms are behind the filing deadline.

2.2.3. The rise in bondholder activism

Recently, the rise of hedge funds and other activist investors, e.g. private investment managers, has greatly ameliorated the historic low response to violations of bond covenants, because these investors have the sophistication to detect potential violations, the financial resources to acquire substantial amounts of a single bond issue, the willingness to take on issuers, and the experience in pursuing the activism strategy. We observe that not all the bond issuers with technical defaults become activist bondholders' targets. That is, the bondholders are selective to enforce creditors' rights. Why bondholders target some firms and pursue activist strategy vigorously, while neglect the

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[8] There are basically two ways for bondholders to learn about debt covenant violations. First, a periodic (generally once a year) certificate stating whether the company has complied with all its covenants, which lacks enough background knowledge and does not deliver the information timely. Second, bondholders' own investigations, which require collective action, access to non-public information, and ability to do analysis. Both ways are not efficient for bondholders to detect a technique default.

others when technical defaults trigger? The recent increase in bondholder activism incidences provides large-sample evidence for us to address this question.

2.3. Scheme to Enforce Bondholder Rights

Next, we provide more detail on the scheme that is commonly followed by the activist bondholders and the attacked borrowing companies, and possible solutions used to resolve the bond covenant violations. A timeline is depicted in Figure 1. To give the reader a flavor of how bondholders take on the borrowing firm when the firm delays financial reporting, we provide a case description of the interaction between Nolelis Inc. and its bondholders in the Appendix.

Bondholders' enforcement involves a complicated scheme, which relies on the trustee and collective action by a large group of bondholders. Before any enforcement action can be taken, the "default" must be converted into an "event of default". To do this, the trustee or holders of 25% of the bonds must deliver "a letter of default notice" to the issuer and give the issuer a specified period of time to cure the default, usually 60 or 90 days.

Once an event of default occurs, an indenture usually provides for two categories of remedies. One is the acceleration of bonds, which means the principal and any accrued interest become immediately payable. Generally, either the trustee or holders of 25% of the outstanding bonds can ask for this remedy. Suits can also be brought in order to collect principal that has become due as a result of acceleration. However, only the trustee can bring such suits. Holders of 25% of the bonds have to comply with the "no-action clause", which requires, among others, that bondholders wait 60 days to let the

trustee bring the suit itself. The second category can be any other remedy including

concession fees, waivers conditional on an improvement in the financial health of the

firm, the inclusion of additional covenant restrictions, increased interest rates, and

reduced allowable borrowings.

III. Hypotheses Development and Research Design

Why would activist bondholders pursue vigorous actions against a few targets, while

ignoring the rest? In this section, we try to address this selective enforcement property in

bondholder's activism. We also examine the tactics taken by activist bondholders, and

study how the stock and bond markets respond to bondholder activism.

3.1. Bondholders' decision model

Without loss of generality, we base our discussion in the context of a bond with

annual coupon payments. We assume when the technical default triggers, all the accrued

payments have been paid. When technical default on timely filing covenant triggers,

bondholders have two choices. One is to grant a waiver and continue to hold the bond.

The expected payoff to bondholders in this case is[9]

$$D* = \{\alpha V * + (1-\alpha)[F + iF \bullet \frac{e^{r\tau}-1}{e^{r}-1}]\} \bullet \exp(-r\tau) \quad (1),$$

where α is the expected default probability, and $V*$ is the firm value at default at time T.

The face value of the bond is F, i is the coupon rate, r is the discount rate for the bond,

and τ is the time to maturity remaining on the bond when the default triggers, i.e.,

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[9] In this model, we assume that the bond will not default in coupon payments before maturity. This
simplification does not affect the generality of the model.

$\tau = T - t$. At maturity time T, the value of accrued coupon payments since technical

default t is $iF \bullet \dfrac{e^{r\tau} - 1}{e^r - 1}$, and $V^* < F + iF \bullet \dfrac{e^{r\tau} - 1}{e^r - 1}$.

The other choice for bondholders is to issue a letter of default notice and accelerate

the payments of the affected bonds. The payoff to bondholders is $D = \min(F,V) - C$ (2),

where V is the firm value upon receipt of the default notice, and C is the associated costs

including opportunity cost and the implementation cost involved in such bondholder

activity. A time line to demonstrate the payoff to bondholders at different time is

provided in Figure 2.

Considering these two alternatives, bondholders are likely to target the violators when

the payoff of attacking the violating borrower (D) exceeds the payoff of inaction (D*),

i.e., $\min(F,V) - C > \{\alpha V^* + (1-\alpha)[F + iF \bullet \dfrac{e^{r\tau} - 1}{e^r - 1}]\} \bullet \exp(-r\tau)$ (3). We can rearrange

equation (3) to obtain $\min(F,V) - \{\alpha V^* + (1-\alpha)[F + iF \bullet \dfrac{e^{r\tau} - 1}{e^r - 1}]\} \bullet \exp(-r\tau) > C$ (4).

The left-hand side is the benefit, i.e., the welfare improvement for the bondholders if they

attack the borrower versus inaction. The right-hand side is the costs associated with the

attack. Activist bondholders would attack the violating borrowers, if and only if the

welfare improvement from the attack exceeds the associated costs.

In response to default notice from bondholders, the borrowers often offer to pay a

concession fee to obtain a new filing deadline. In practice, some activist bondholders

have agreed to collect the concession fee and to extend a new filing deadline through

renegotiation with the borrowers. Activist bondholders will accept the concession fee to

extend the filing deadline if and only if by extending the deadline they are at least as

well-off as with immediate payment of the bond. Thus, acceleration of affected bonds can be considered the baseline for the attack scenario.

In the next section, we analyze factors that could affect the benefits and costs associated with the activist bondholder's attack and see whether these factors influence bondholder's decision to attack the violating borrower.

3.2. Factors in bondholders' decision

From equation (4), $\min(F,V) - \{\alpha V * + (1-\alpha)[F + iF \bullet \frac{e^{r\tau}-1}{e^r-1}]\} \bullet \exp(-r\tau) > C$, we can see that the above in-equation is more likely to hold (i.e. bondholders are more likely to take actions) when C is smaller (i.e. the costs associated with taking action are smaller), and when i is smaller, α is larger, and $V *$ is smaller (i.e. the benefits of taking action are higher).

The cost, C, may include time, expertise, and personnel utilized to file the default notice and negotiate with the borrowers, and the resource used to acquire a 25% of bonds outstanding to be eligible to attack the late filing borrowers. Additionally, the costs of bondholder activism could be lower, if the activist bondholders are hedge funds who have expertise in negotiation with the management and who are more motivated to engage bondholder activism.[10]

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[10] We contact EMAXX for bond ownership data, but the data only include bond ownership by mutual funds, insurance funds, and large government/state pension funds. The bond ownership by hedge funds is not available.

The implementation costs are generally fixed but may vary with the activeness of bond trading.[11] Infrequent trading in the bond market may impose significant costs on activist bondholders, who are required to hold at least 25% of outstanding bonds to be eligible to attack firms with a binding bond covenant. It is easier and less costly for bondholders to attack firms with bonds actively traded in the market. The trading activeness is measure by the percentage of trading volume in total outstanding value during the 10 day period after the late filing date, and the variable is labeled as (TRD)[12].

The default probability at maturity, α, is proxied by the HY dummy variable. If a firm is rated B or below by S&P, HY is set to 1; otherwise, HY is 0. Firms rated below investment grade have a higher default probability. For each borrower, we use the value weighted average of coupon rate to measure the firm-level coupon rate, labeled as CPN. We focus on the measure of firm value in default at maturity, $V*$, in the next section.

3.2.1. Late filing reasons

When firms file the NT forms, they need to provide detailed reasons for the late filing. We hypothesize that late filing reasons may incorporate valuable information about $V*$. Some reasons may be neutral, such as time constraint, shortage in expense and personnel, and implementation of Sarbanes-Oxley Act, but some reasons may reflect serious governance problems or accounting frauds, such as investigation by SEC, executive compensation issues, accounting issues and restatement.

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[11] If an activist bondholder already holds 25% bonds outstanding before she takes action, then the trading activeness will not play a role in the decision model. The data limitation makes it impossible to control for the bond ownership, which works against finding significant result in TRD.
[12] Trading activity measured after the late filing date may be endogenous to the extent that activist bondholders will actively trade after the late filing date to acquire the necessary shares of bond in order to be eligible to issue the default notice. However, if a bond is not liquid, it is still hard to make the trading happen even the activist bondholders have the intention to trade.

Firms under the SEC investigation or incurring executive compensation problems usually have weak corporate governance to protect investors, the firm future value, $V*$, hence may decrease to a lower level.

In addition, accounting restatement can portend future problems for the firm and its management. One is the higher litigation risk. Palmrose and Scholz (2004) find that 37.6% of restating companies are involved in litigation. Another potential cost of misstating financial statements is the overpayment of income taxes. Erickson, Hanlon, and Maydew (2002) find the typical firm admitting to large earnings overstatements sacrificed eleven cents in additional income taxes per dollar of inflated pre-tax earnings. In aggregate, these firms paid $320 million in taxes on overstated earnings of about $3.36 billion. The litigation risk and cash outflow tied to tax expense may decrease $V*$.

Audit Analytics classifies the late filing reasons into 78 categories. The 78 categories are not exclusive and in our sample the number of reasons for late filing in one case can be as many as 14. We read the description of the 78 categories, and use two indictor variables to single out reasons that may affect firm future value. If the late filing reasons are related to the investigation by SEC or executive compensation issues, GVT is 1; otherwise GVT is 0. If the late filing reasons relate to accounting issues or restatement, RPT is 1; otherwise RPT is 0.

3.2.2. Shareholder profile

In selecting which violators to target, activist bondholders inevitably will take shareholder profile of the borrower into consideration due to conflicts of interests between shareholders and debt-holders. Specifically, for the borrowing firms where

bondholders are likely to be expropriated by shareholders, activist bondholders can receive higher benefits if they issue default notice. This is because that shareholder stealing could further reduce $V*$ relative to V if bondholders do nothing. In other words, the expected value of $V*$ is lower in those firms where shareholders self dealing is serious.

a. Institutional investor ownership

We consider the impact of institutional investor ownership on bondholder activism. Two countervailing forms of interaction are in play. First, due to inherent conflicts of interests between shareholders and debt holders, shareholders may find it relatively easy to engage in selfish strategies if their opinions are well-respected in corporate activities. Those shareholders could take more risky projects, issue dividends, or under-invest to benefit themselves at other stakeholders' expense. Compared with individual investors, institutional shareholders are more sophisticated and have more voting power to influence the financing, investing and operating activities of the firms they invest in. The sophistication and block stockholdings of institutional shareholders thus give them the ability and the motivation to expropriate bondholders and consequently can reduce firm value. Against the backdrop of potential wealth transfer strategies by shareholders, bondholders may tend to attack those where shareholder's selfish dealing is more serious. That is because, by attacking the violators with serious shareholder expropriation, activist bondholders can achieve high welfare improvement.

The presence of institutional shareholders may reduce $V*$, firm value at bond maturity, in equation (4). Thus, activist bondholders are likely to issue default notice in firms where the presence of institutional investors is strong, due to reduced $V*$.

On the other hand, better corporate governance provided by institutional shareholders can benefit bondholders. Sophisticated institutional shareholders are capable to monitor and discipline managers, ensuring that managers choose investment levels to maximize firm value (Shleifer and Vishny, 1986; Monks and Minow, 1995). Bhojraj and Sengupta (2002) argue that governance mechanisms can reduce default risk by monitoring managerial performance and reducing information asymmetry between the firm and the lenders. They find that firms with greater institutional ownership and stronger outside control of the board enjoy lower bond yields and higher ratings on new bond issues.

Additionally, the costs to the activist bondholders may be higher if they target firms with a strong shareholder presence. Bondholder activism can be viewed partly as a power struggle between bondholders and shareholders. When bondholders demand compensation from the target firms on the basis of technical defaults, it reduces the amount of capital at shareholder's disposal. Shareholders could make alliances with the management to fight back, which makes the bondholder action more difficult and more costly. Thus, a strong shareholder presence could potentially deter activist bondholders.

How the presence of institutional shareholders influence bondholder activism becomes an empirical question. We use the percentage of institutional stockholdings in total shares, PIH, to proxy for the influence of institutional shareholders. Higher percentage corresponds to greater institutional influence. We obtain the institutional stockholding information from Thomson Reuters13f Institutional Holdings dataset.

b. Institutional shareholder type

We further investigate whether bondholders treat certain groups of institutions in a manner different from the finding for aggregate institutional ownership, because institutional investors differ in their behavior and incentives. Bushee (1998) classified institutions into three groups—transient, quasi-indexer, and dedicated— based on their past investment patterns in the aspects of portfolio turnover, diversification, and momentum trading. According to Bushee, transient institutions "hold small stakes in numerous firms, trade frequently in and out of stocks, and generally base their trades on a value proxy such as current earnings"; quasi-indexer institutions "use indexing or buy-and-hold strategies that are characterized by high diversification and low portfolio turnover"; and dedicated institutions have large and long-term holdings, "which are concentrated in only a few firms, provide incentives to monitor managers ..."

We can see that the investment horizon and ownership concentration increase from the transient group to the dedicated group. Institutions that invest in firms with the intention of holding substantial ownership blocks over a long horizon have strong incentives to monitor managers and ensure the firm to undertake profitable investment and achieve higher future profit. Eberhart, Maxwell, and Siddique (2008) find that investment to increase firm value can decrease default risk. The short-term focus of transient institutions makes them the less likely group to make long-term investments to improve firm value, and hence default risk is less likely to decrease in firms dominated by transient institutions.

Furthermore, by investing in a large number of stocks with small holdings in each, transient institutional shareholders lack motivation to commit huge effort for the benefit of shareholders on the whole. It is conceivable, facing activist bondholders, transient institutional investors are less likely to work with the management to fight for shareholders in general. Thus, activist bondholders can proceed with their activist tactics, not worrying about transient institutional investors.

In addition, the agency costs related to debt financing eventually are paid by shareholders (Jensen and Meckling, 1976). Transient institutions may not stay with the firm long enough to bear the agency cost in debt financing, and they have more incentives to expropriate bondholders. All these arguments suggest that when a firm is dominated by transient institutional shareholders, firm value is less likely to rise but wealth is more likely to be transferred from bondholders to shareholders, so the benefits to bondholders are higher when such a firm is targeted.

The investment properties of transient and dedicated investors generate a competing hypothesis. The short-term focus of transient institutions makes them the less likely group to make long-term investments, such as R&D projects. Normally such long-term projects are risky and potentially transfer wealth from bondholders to shareholders. By reducing long-term risky projects, transient institutional investors could inadvertently lower the agency costs of debt. Thus, with more transient institutional investors, activist bondholders may not receive much welfare improvement from attacking late filing firms. All these arguments suggest that in a firm dominated by transient institutional shareholders, bondholders are less likely to attack such a firm when a technical default happens.

It is an empirical question with regard to the influence of different types of institutional shareholders in bondholder activism. To ensure that institutional ownership is likely to be influential, the sample is restricted to firms with at least five percent of institutional stockholdings. Following Bushee (1998), we use a dummy variable to indicate the predominance of one group of institutions (DED for dedicated, QIN for quasi-indexer, and TRA for transient) in a firm. The indicator variable equals one if the proportion of ownership by one group in a firm is in the top quintile, and zero otherwise.

3.2.3. Bank loans

Bank loans may mitigate shareholder's self-dealing and hence can prevent the decrease in $V*$. According to equation (4), the welfare improvement from bondholder activism activity is smaller when bondholders are already under the protection of bank loans. The protection offered by bank loans comes from the bank monitoring and the stringent loan covenants.

The widespread ownership of bonds does not provide incentives for each bondholder to monitor shareholders, but bank loans can provide cross-monitoring benefits to bondholders. Cross-monitoring occurs when observable monitoring by one type of creditor diminishes the duplicative monitoring costs of other debt holders. The unique monitoring role of banks is highlighted by a number of theoretical models (Campbell and Kracaw, 1980; Diamond, 1984; Ramakrishnan and Thakor, 1984; Fama, 1985). Empirical work also supports this view. Datta, Iskandar-Datta and Patel (1999) find that the existence of bank loan lowers the at-issue yield spreads for initial public straight bond offers by about 68 basis points.

Relationship bank lenders are considered more informative of borrowers than others. Informed lenders provide better monitoring than uninformed lenders (Holmstrom, 1979; Holmstrom and Tirole, 1997; and Gorton and Pennachi, 1995). Lenders close to borrowers are better informed and hence provide better monitoring because the close relationship help lenders obtain extensive knowledge of borrowers' operations and well developed channels of communication with firms' managers facilitate the timely receipt of information from borrowers. Banks in sole-lender bank loans and lead arrangers in syndicate loans establish and maintain a relationship with the borrower, and take on the primary information collection and monitoring responsibilities in a loan. Sufi (2007) finds that the information asymmetry is lower between the borrower and its relationship-based lead arranger and the lead arranger retains a larger share of the loan and forms a more concentrated syndicate when borrowing firms require more intense due diligence and monitoring.

We follow Bharath et al. (2006) to classify the relationship bank lender. We search for all of a firm's previous loans over the five years preceding the loan's offering date. For every previous loan, we identify the bank in sole-lender loans and the lead arrangers in syndicated loans. If the bank in the case of sole-lender loans or at least one of the loan's lead arrangers in the case of syndicate loans had been a sole-lender or a lead arranger of loans previously issued to the firm, we classify the loan has being issued by a relationship lender. If more than 50% of a firm's loans are issued by a relationship lender, the firm is identified as having relationship lenders (i.e. BNK=1, otherwise BNK=0).

3.3 Research design

In addition to the above factors that may affect bondholders behavior, we include the discount rate r, time to maturity remaining τ, bond face value F, and firm value V that appear in the decision function (4) as control variables in a logit model to do the empirical analysis.

$$\mathrm{Prob}(Notice=1) = F(\beta_0 + \beta_1 GVT + \beta_2 RPT + \beta_3 PIH + \beta_4 DED + \beta_5 QIN + \beta_6 TRA + \beta_7 BNK$$
$$+ \beta_8 TRD + \beta_9 CPN + \beta_{10} HY + \beta_{11} RF + \beta_{12} RTG + \beta_{13} NR + \beta_{14} MAT + \beta_{15} BND + \beta_{16} AT)$$

where $F(\cdot)$ is the logistic cumulative density function.

The bond discount rate, r, is affected by the risk free rate and the borrower's credit rating.[13] A higher risk free rate and a poor credit rating correspond to a higher r. We extrapolate the risk free rate, RF, from the treasury yield curve at the time of late filing. The credit rating, RTG, is measured by the numeric transformation of S&P long-term debt rating. If the S&P long-term debt rating is A+, RTG=1; if the S&P long-term rating is A, RTG=2; …; if S&P long-term rating is D, RTG=18; and if no S&P rating, RTG= 19. A dummy variable (NR) indicating the lack of S&P rating is included as a control variable.

We use the logarithm of value weighted average of τ to measure the maturity of the bonds outstanding for each borrowing firm, labeled as MAT. We use the logarithm of principal value of bonds outstanding at the time of late filing (BND) to measure F. If a firm has multiple bonds outstanding, the logarithm of sum of bond value is taken. The firm value at late filing, V, is proxied by the logarithm of total assets at the end of fiscal year prior to the date of late filing, labeled as AT.

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[13] A direct measure of r is the yield to maturity. Due to the infrequent trading in the bond market, r is not observable on a daily basis. The stale r does not reflect the most current information.

IV. Sample Description

We begin with late filing firms identified as filing NT-10K or NT-10Q forms with SEC during the period of 2005-2007, because bondholders started to become active to enforce their creditor rights when issuers delay in financial reporting since 2005 (see WSJ, 2006). We then keep firms that have financial data available in COMPUSTAT and public bonds outstanding. There are 516 firms meeting these criteria and 1213 NT forms were filed. We perform a keyword search in the LexisNexis database utilizing the key word "default notice", "late filing", and "delay in filing". We identify 68 firms that received the letter of default notice from trustees or bondholders because of delay in financial reporting. On the firm basis, around 13% (=68/516) firms that file NT forms received letters of default notice from bondholders. Because bondholders may send the letter of default notice in response to several NT forms, we treat the first NT form as the one that triggers the default. In this way, 81 NT forms are identified default-triggering, i.e. almost 7% (=81/1213) NT forms will trigger the issuance of default notice. The sample selection process is summarized in Table 2. Daily data of stock returns are obtained from CRSP. Institutional investor's shareholding data are from Thomson Reuters CDA/Spectrum Institutional 13F database.

Table 3, Panel A provides summary statistics of the variables. The sample is divided into two groups: firms that do not receive the default notice from bondholders, and firms that do. Although all the firms in our sample are late in filing their financial reports, the reasons for late filing are different across these two groups. Firms that receive the default notice are more often to claim the SEC investigation, executive compensation issues, accounting issues, and restatement as the late filing reasons. Compared with firms not

attacked by bondholders, the attacked firms have higher institutional holding percentage but are less likely to be dominated by quasi-indexer or transitory institutions. The proportion of firms with a majority of loans issued by relationship banks is smaller in the attacked firms than in the un-attacked firms.

Although trading in the bond market is thin, the attacked group has relatively more active trading activities. The risk-free interest rate is higher in the attacked group. There is not much difference in credit rating across these two groups, but firms attacked by bondholders are more often rated below the investment grade. On average 9% of the firms are not rated by S&P in both groups. There is not much difference in terms of time to maturity and total assets between these two groups. It is clear that firms receiving the default notice issue bonds of larger size than firms not receiving the default notice.

Table 3, Panel B presents the correlation matrix among the variables. Pearson (Spearman) correlation is above (below) the diagonal. By construction of the variables, RTG is positively correlated with HY and NR. AT is highly positively correlated with BND and negatively with RTG because firms with greater assets are more likely to issue bonds of larger size, and have a better credit rating (i.e. a lower RTG).

V. Results and Discussions

5.1 Factors contributing to the selective enforcement of creditor's rights

Estimation results of the logit model are reported in Table 4. Financial firms are excluded from the sample. Because the same firm may delay financial reports and receive default notices several times, the Z-statistics are adjusted by clusters of firms and the corresponding p-values are reported behind each coefficient. The marginal effect, dy/dx,

represents the change in probability that the firm receives a default notice given a change in the independent variable over a standard deviation at the means. For indicator variable, the marginal represents the change in probability when the indicator value changes from 0 to 1.

The significant coefficients before GVT and RPT indicate that bondholders treat firms differently depending on late filing reasons. If the late filing reasons relate to SEC investigations or executive compensation issues, the probability of receiving the default notice will increase by 4.5%. If the late filing is caused by accounting problems or restatement, the probability of receiving the default notice will increase by 2.3%.

Consistent with the hypothesis that firms under greater influence of institutional shareholders are more likely to be attacked by bondholder, the coefficient on PIH is significantly positive. One standard deviation increase in PIH corresponds to 3.7% increase in the probability of receiving the default notice. This suggests that in the eyes of the activist bondholders the costs of expropriation by institutional shareholders outweigh the benefits associated with institutional shareholder's management discipline function.

The significant negative coefficients on QIN and TRA suggest that firms predominated by short-term oriented institutions are less likely to be attacked by bondholders. When transitory institutions become predominant in a late filing firm, the probability of receiving the default notice can decrease by 3.0%; and if quasi-indexer institutions become dominant, the probability will decrease by 2.6%. These results support the argument that bondholders view short-term oriented shareholders to be less likely to expropriate from them and hence bondholders are less likely to attack firms dominated by short-term oriented shareholders.

The significant negative coefficient on BNK indicates that bondholder activism is less likely to occur to firms with loans issued by relationship banks. The probability of receiving the default notice letter will decrease by 2.4% if the majority of a firm's loans come from relationship banks, which reflects that bondholders value the cross-monitoring offered by banks.

The above analysis suggests that bondholder activism is more vigorous in firms monitored less by banks, and under greater influence of dedicated institutional shareholders, where the conflict of interests between shareholders and bondholders is more severe. Our results are consistent with the findings by Chava and Roberts (2008), who document that capital investment declines sharply following a bank covenant violation, and the reduction in investment is concentrated in situations where agency and information problems are more severe.

The significantly positive coefficient on TRD supports the prediction that bondholders are more likely to actively implement their creditor's rights when bond trading is active, because active bond trading make it less costly for activist bondholders to acquire 25% of bonds outstanding to be eligible to attack borrowers. Consistent with the predictions generated from equation (4), the coefficient on HY is significantly positive and the coefficient on CPN is negative. These results indicates that ceteris paribus, bondholders are more likely to attack covenant violators when the payoff from taking no action is lower (i.e. the default risk is higher, and the coupon payment is lower).

5.2 Market reactions

To check whether bondholder activism is to maximize bondholders' wealth at the cost of shareholders, we examine the stock and bond market reaction in response to the event of late filing and the event of receiving default notice.

In the stock market, the abnormal return is calculated as the daily stock return minus the daily return on NYSE-AMEX-NASDAQ index. We follow the recommendation by Bessembinder et al. (2008) to calculate the daily abnormal bond return, which is the daily bond return minus the value weighted average return on the matching portfolio based on Moody's seven major rating categories (Aaa, Aa, A, Baa, Ba, B and below B). The bond return is calculated using the clean price.[14] If a bond is traded several times in a given day, the weighted average return for trades larger than $10,000 is used as the daily bond return. If a firm has multiple bonds outstanding, the market value weighted average of abnormal returns of all the bonds is used as the abnormal return for that firm.[15]

Abnormal return on event day (AR) is the average abnormal return of all the firms on a given day, and the two-tailed p-value is reported behind each AR. Cumulative abnormal return (CAR) is the sum of AR from the beginning of the event window to the event day. The CARs in the stock market and the bond market are depicted in the same chart. Figure 3 and Figure 4 demonstrate the CARs around the event of late filing and the event of receiving the default notice, respectively.

Table 5 reports the stock and bond market reactions to the event of late filing. The date that firms file NT forms is defined as the event date and labeled as 0. The event window is from 5 days before to 10 days after the event date. The sample consists of

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[14] Using clean prices to calculate bond return could be problematic for bonds in which the accrued intests differs significantly from the average accrued interest for the matching portfolio. Bessembinder et al (2009) find the bias using clean prices to calculate bond return is small in a small event window study.

[15] See Bessembinder et al. (2008) for more detail on daily abnormal bond return calculation.

firms that have bonds outstanding and delay filing financial reports. On the event day, the abnormal stock return and the abnormal bond return are both significantly negative. The downward CAR in the stock and bond markets suggests that late filing is an unfavorable signal to investors.

Table 6 reports the stock and bond market reactions to the event of receiving the default notice. The date that firms receive the default notice is defined as the event date and labeled as 0. The event window is from 5 days before to 10 days after the event date. The sample consists of firms that delay filing financial reports and hence receive the default notice. On the event day, the abnormal stock return is significantly negative and the abnormal bond return is significantly positive. The downward CAR in the stock market and the upward CAR in the bond market further support the view that shareholders lose and bondholders gain when a firm becomes activist bondholders' target.

Taken together, the results in Table 6 and Table 7 indicate that although late filing delivers negative information to both the stock and bond market, bondholders can increase their wealth at the cost of shareholders by taking on firms on the ground of breach of bond covenants, i.e. delay in filing financial reports.

VI. Conclusion

In this paper, we take advantage of a recent increase in bondholder activism incidences in response to failure in timely filing corporate financial statements, to study the nature of bondholder activism and find the factors that contribute to it. Despite its importance, there is a dearth of large-sample evidence about bondholders' active enforcement of creditor rights. Historically, it appears that bondholders and companies

enjoy a cozy relationship. And the lack of large sample of activist bondholder taking action against borrowing companies has limited research on bondholder activism.

We study the selective property of bondholder activism with the perspective of associated benefits and costs. We find that activist bondholders are more likely to issue default notice when late filings are caused by SEC investigations, executive compensation issues, accounting problems, and restatements. Bondholders are less likely to attack late filings due to time constraint, change of reporting requirements (e.g. implementation of Sarbanes-Oxley Act), and shortage of personnel.

We find that firms owned by more institutional shareholders are more likely to receive the default notice from bondholders. A further study on the types of institutional shareholders reveals that firms predominated by short-term oriented transient or quasi-indexer institutions (as defined by Bushee, 1998) are less susceptible to bondholder activism than firms dominated by dedicated institutions. There is evidence that bondholders are less likely to target a late filer if a majority of the borrower's loans come from relationship banks, which reflects that bondholders value the cross-monitoring provided by banks. Taken together, these results imply that bondholders will be more actively to enforce their creditor's rights where conflicts of interests between shareholders and bondholders are more severe, because bondholders could potentially receive more welfare improvement by taking actions against the violators.

A large proportion of costs is legal and administrative costs and has low cross sectional variability. However, the difficulty in collecting 25% bonds outstanding to be eligible to attack firms is lower if bonds are actively traded. We find that firms with more actively traded bonds are more likely to be targeted by activist bondholders.

Event study on the stock market and bond market reveals that late filing is interpreted as negative information by both the stock market and the bond market. But the bond price goes up and stock price drops when the late filing firm is targeted by activist bondholders, which suggests that bondholders can increase their wealth at the cost of shareholders by taking on firms upon the triggering of bond covenants.

This paper has three main contributions. First, this paper makes the first step to provide empirical evidence on activist bondholder behavior and identify factors contributing to bondholder activism. Further, this paper is the first to study the covenant of timely financial reporting and the first to study the bond market reaction to the event of late filing. This paper provides direct evidence regarding to the importance of financial reports in the public bond market. Last, this paper focuses on an emerging activity by activist bondholders and could offer some implications to industry practitioners.

References

Alexander, G. J., Edwards, A.K., Ferri, M.G., 2000. The determinants of trading volume of high-yield corporate bonds. Journal of Financial Markets 3, 177-204.

Alford, Andrew W., Jennifer J. Jones, and Mark Zmijewski, 1994. Extensions and Violations of the Statutory SEC Form 10-K Filing Requirements. Journal of Accounting and Economics 17, (1-2). 229-254.

Barber, Brad M., 2006. Monitoring the monitor: Evaluation CalPERS' shareholder activism, Journal of Investing.

Beneish, M. and E. Press, 1993. Cost of technical violation of accounting-based debt covenants. The Accounting Review 68 (2), 233-257.

Bessembinder, Hendrik (Hank), Kahle, Kathleen M., Maxwell, William F. and Xu, Danielle, 2008. Measuring Abnormal Bond Performance. Review of Financial Studies, Forthcoming.

Bharath, S. T. S. Dahiya, A. Saunders, and A. Srinivasan, 2006. Lending relationships and loan contract terms: Does size matter?, Working Paper.

Bhojraj, Sanjeev and Partha Sengupta, 2003. Effect of corporate governance on bond ratings and yields: the role of institutional investors and outside directors. Journal of Business, 76 (3), 455-476.

Black, Bernard S., 1998. Shareholder activism and corporate governance in the United States, in Peter Newman, ed.: The New Palgrave Dictionary of Economics and the Law (Palgrave Macmillan: New York, NY).

Brav, Alon, Wei Jiang, Frank Partnoy, and Randall Thomas, 2008. Hedge fund activism, corporate governance, and firm performance. Journal of Finance, LXIII (4), 1729-1775.

Bushee, B., The Influence of Institutional Investors on Myopic R&D Investment Behavior, Accounting Review 73 (1998): 305-333.

Campbell, T., Kracaw, W., 1980. Information production, market signaling, and the theory of intermediation. The Journal of Finance 35, 863-882.

Carleton, Willard T., James M. Nelson, and Michael S. Weisbach, 1998. The influence of institutions on corporate governance through private negotiations: Evidence from TIAA-CREF, Journal of Finance 53, 1335-1362.

Chakravarty, S., Sarkar, A., 2003. Trading costs in three U.S. bond markets. The Journal of Fixed Income 13, 39-48.

Chava, Sudheer and Michael R. Roberts, 2008. How does financing impact investment? The role of debt covenants. The Journal of Finance, LXIII 5.

Chen, K., and K. Wei, 1993. Creditors'decisions to waive violations of accounting-based debt covenants, The Accounting Review 68 (2), 258-288.

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner, 1994. Accounting choice in troubled companies. Journal of Accounting and Economics 17, 113-143.

Del Guercio, Diane, and Jennifer Hawkins, 1999. The motivation and impact of pension fund activism. Journal of Financial Economics 52, 293-340.

Datta, Sudip, Mai Iskandar-Datta, and Ajay Patel, 1999. Bank monitoring and the pricing of corporate public debt, Journal of Financial Economics 51, 435-449.

Del Guercio, Diane, and Jennifer Hawkins, 1999. The motivation and impact of pension fund activism. Journal of Financial Economics 52, 293-340.

Diamond, Douglas, 1984. Financial intermediation and delegated monitoring, Review of Economic Studies 51, 393-414.

Diamond, Douglas, 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. Journal of Political Economy 99, 689-721.

Dichev, Ilia D., and Douglas J. Skinner, 2002. Large sample evidence on the debt covenant hypothesis, Journal of Accounting Research 40, 1091-1123.

Ericson, M., M. Hanlon and E. Maydew, 2004, How much will firms pay for earnings that do not exist? Evidence of taxes paid on fraudulent earnings. The Accounting Review.

Fama, E., 1985. What's different about banks? Journal of Monetary Economics 15, 29-39.

Gillan, Stuart, and Laura Starks, 2000. Corporate governance proposals and shareholder activism: The role of institutional investors, Journal of Financial Economics 57, 275-305.

Gillan, Stuart, and Laura Starks, 2007. The evolution of shareholder activism in the United States, Journal of Applied Corporate Finance 19, 55-73.

Gompers, Paul, and Andrew Metrick, 2001. Institutional investors and equity prices, Quarterly Journal of Economics, Vol. 116, No. 1, 229-259.

Green, R., 1984. Investment incentives, debt, and warrants. Journal of Financial Economics 13, 115-136.

Healy, Paul M., and Krishna G. Palepu, 1990. Effectiveness of accounting-based dividend covenants. Journal of Accounting and Economics 12, 97-123.

Holthausen, Robert, and Ross Watts, 2001. The relevance of the value relevance literature for financial accounting standard setting. Journal of Accounting and Economics 31, 3-75.

Hong, G., Warga, A., 2000. An empirical study of bond market transactions. Financial Analyst Journal 58, 32-46.

Ikenberry, David, and Josef Lakonishok, 1993. Corporate governance throught the proxy contest: Evidence and implications, Journal of Business 66, 405-435.

Jensen, Michael C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76, 323-329.

Jensen, Michael C., and William H. Meckling, 1976. Theory of the firm: Managerial behavior, agency costs, and capital structure, Journal of Financial Economics 3, 305-360.

Kahan, Marcel, and Bruce Tuckman, 1995. Private versus public lending: Evidence form covenants, in John D. Finnerty and martin S. Fridson, eds.: The Yearbook of Fixed Income Investing (Irwin, New York).

Kahan, Marcel, and Edward B. Rock, 2008. Hedge fund activism and the enforcement of bondholder rights. Working paper. ECGI, New York University, and University of Pennsylvania.

Karpoff, Jonathan M., Paul H, Malatesta, and Ralph A. Walkling, 1996. Corporate governance and shareholder initiatives: Empirical evidence. Journal of Financial Economics 42, 365-395.

Klein, A., and Emanuel Zur, 2009. Entrepreneurial shareholder activism: Hedge funds and other private investors. Journal of Finance LXIV (1).

Lattman, Peter, and Karen Richardson, August 29, 2006. Hedge funds play hardball with firms filing late financials, Wall Street Journal, A1.

Leftwich, Richard, 1981. Evidence on the impact of mandatory changes in accounting principles in corporate loan agreements. Journal of Accounting and Economics 3, 3-36.

Leftwich, Richard, 1983. Accounting information in private markets: Evidence from private lending agreements. The Accounting Review 58, 23-42.

Maxwell, William F. and Clifford P. Stephens, 2003. The wealth effects of repurchases on bondholders. The Journal of Finance Vol. 58, No. 2, 895-919.

Monks, Robert, and Nell Minow, 1995. Corporate governance. Cambridge, Massachusetts: Blackwell.

Nunn, K.P., Hill, J. Jr., Schneeweis, T., 1986. Corporate bond price date sources and return/risk measurement. Journal of Financial and Quantitative Analysis 21, 197-208.

Opler, Tim C., and Jonathan Sokobin, 1997, Does coordinated institutional activism work? An analysis of the activities of the council of institutional investors. Ohio State University working paper.

Palmrose, Z-V., and Scholz, S. 2004. "The Accounting Causes and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements." Contemporary Accounting Research 21, (Spring): 139-180.

Ramakrishnan, R., and A. Thakor, 1984. Information reliability and a theory of financial intermediation. Review of Economic Studies 51, 415-432.

Rock, Edward, 1992. The logic and (uncertain) significance of institutional shareholder activism, Georgetown Law Review 79, 445-506.

Romano, Roberta, 1993. Public pension fund activism in corporate governance reconsidered, Columbia Law Review 93, 795-853.

Romano, Roberta, 2001. Less is more: Making institutional investor activism a valuable mechanism of corporate governance, Yale Journal of Regulation 18, 174-251.

Sarig, O., Warga, A., 1989. Bond price data and bond market liquidity, Journal of Financial and Quantitative Analysis 24, 367-378.

Smith, Michael P., 1996. Shareholder activism by institutional investors: Evidence from CalPERS, Journal of Finance 51, 227-252.

Smith, Clifford W., and Jerome B. Warner, 1979, On financial contracting: An analysis of bond covenants, Journal of Financial Economics 7, 117-161.

Shleifer, A., and R. Vishny, 1986. Larger shareholders and corporate control. Journal of Political Economy 94, 461-488.

Sufi, A. 2007. Information asymmetry and financing arrangements: evidence from syndicated loans. Journal of Finance LXII (2), 629-668.

Sweeney, Amy P., 1994. Debt covenant violations and managers' accounting responses. Journal of Accounting and Economics 17, 281-308.

Tirole, Jean, 2006, The Theory of Corporate Finance (Princeton University Press, Princeton).

Wahal, Sunil, 1996. Pension fund activism and firm performance, Journal of Financial and Quantitative Analysis 31, 1-23.

Appendix. An Examples: Novelis Inc.

Novelis Inc. (NYSE: NVL, TSX: NVL) is a global leader in aluminum rolled products and aluminum-can recycling business. The company operates in 11 countries and has approximately 13,000 employees. On July 25, 2006, Novelis Inc. received a notice of default from the trustee for the bondholders with respect to its $1.4 billion 7-1/4% Senior Notes due 2015. The default resulted from Novelis' failure to file its 2005 Form 10-K and its Form 10-Q for the first quarter of 2006 on a timely basis. In its press release, Novelis Inc. stated that:

> *The notice informs Novelis that it is in default of its financial reporting obligations and requires that it cure the default within 60 days. If the Company does not file the delayed 10-K and 10-Q by September 19, 2006, the date which marks the end of the specified cure period, an event of default occurs. At that point, the trustee or holders of at least 25% in aggregate principal amount of the Senior Notes may elect to immediately accelerate the maturity of the Senior Notes ($1.4 billion principal amount outstanding).*

In response to the default notice made by bondholders, Novelis stated that they would seek to file its 2005 Form 10-K and its Form 10-Q for the first quarter of 2006 within the cure period, i.e., on or before September 19, 2006. At the same time, Novelis anticipated the eventual receipt of a proper notice of default and attempted, in the period between June 5 and July 19 in 2006, to proactively resolve the issue by obtaining a waiver from the bondholders pursuant to a consent solicitation. Under this consent solicitation, Novelis paid $21 million to the bondholders who agreed to grant the waiver. Later a second consent solicitation is made that if Novelis does not file its Form 10-K for year 2005, with the SEC by 5:30 p.m., New York City time, on September 30, 2006, the company will pay an additional $5.00 for each $1,000 in principal amount of Notes to the bondholders as "consent fees" to settle the late filing violation.

Table 1. Definition of variables and data source

Variable	Definition	Data Source
NOTICE: Indicator for receiving a letter of default notice from bondholders	1 if receive a letter of default notice, 0 otherwise	8-K forms, LexisNexis
GVT: Indicator for late filing due to SEC investigations or executive compensation issues.	1 if the late filing reason is related to SEC investigation or executive compensation issues.	Audit Analytics
RPT: Indicator for late filing due to accounting issues or restatements.	1 if the late filing reason is related to accounting issues or restatements.	Audit Analytics
PIH: Percentage of institutional holdings	$\frac{\text{Total shares held by institutional investors}}{\text{total shares outstanding}}$	Thomson Reuters 13f Institutional Holdings
DED: Indicator for predominant ownership by dedicated institutional shareholders	1 if the percentage of dedicated institutinal shareholders holdings scaled by PIH is in top quintile of distribution, 0 otherwize.	Updated Bushee (1998)
QIN: Indicator for predominant ownership by quasi-	1 if the percentage of quasi-indexer institutional shareholders holdings scaled by PIH is in top quintile of distribution, 0 otherwize.	Updated Bushee (1998)
TRA: Indicator for predominant ownership by transient institutional shareholders	1 if the percentage of transient institutional shareholders holdings scaled by PIH is in top quintile of distribution, 0 otherwize.	Updated Bushee (1998)
BNK: Indicator for firms with majority (>=50%) bank loans issued by relationship lenders	1 if the majority (>=50%) of a firm's outstanding loans are issued by a relationship lender, 0 otherwize. A loan is considered to be issued by a relationship lender if at least one of the laon's lead arrangers in a syndicated loan or the bank in a sole-lender loan had been a lead arranger or the sole-lender of borrower's previous loans over the 5 years preceeding the loan's issuance date.	Dealscan

Table 1. Definition of variables and data source (continued)

Variable	Definition	Data Source
TRD: Trading volume during the 10 day period after the late filing date.	Trading volume devided by outstanding principal during the 10 day period right after the late filing date.	TRACE, FISD Mergent
CPN: Coupon rate.	Bond coupon rate. If a firm has multiple bonds outstanding, the principle weighted average value is taken (in percentage).	FISD
HY: Indicator for a firm rated below investment grade	1 if RATING>=11 (i.e. S&P rating is B or below), 0 otherwise.	Compustat
RF: Risk free rate.	The interest rate extrapolated from the treasury yield curve at the time of late filing.	Federal Reserve Bank of New York
RTG: Numeric transformation of S&P credit rating.	If the S&P long-term rating is 'A+', RATING=1; if the S&P long-term rating is 'A', RATING=2; … if the S&P long-term rating is 'D', RATING=18; and if no S&P rating, RATING=19 .	Compustat
NR: Indictor for lack of ratings by S&P	1 if no S&P rating, 0 otherwise.	Compustat
MAT: Time to maturity when a firm files an NT form.	Logarithm of weighted average of time to maturity (in months).	FISD Mergent, Compustat
BND: The bond size measured when a firm files an NT form.	The logarithm of amount of bonds outstanding when a firm files an NT form. If a firm has multiple bonds outstanding, the sum is used.	FISD Mergent
AT: Logarithm of total asset at the end of the last fiscal year prior to the late filing.	Logarithm of average total assets at the fiscal year end prior to the late filing.	Compustat

Table 2. Sample selection

	Number of Firms	Number of Late Filing Events
File NT forms, financial data available from COMPUSTAT, and bonds outstanding[a]	516	1213
Receive letter of default notice	68	81 [b]
File NT forms, financial data available from COMPUSTAT, and bonds outstanding-- excluding financial firms[a]	458	1066
Receive letter of default notice -- excluding financial firms	61	73 [b]

(a) A firm is identified to have bonds outstanding when this firm issues bonds before it files NT forms and the date of maturity is after the NT filing date. Bond information is available from Mergent FISD.

(b) When a firm receives the letter of default notice from bondholders because the firm delays in filing financial reports, the most recently filed NT form is identified as the event that triggers the default.

Table 3. Descriptive statistics

Panel A. Simple descriptive statistics

This panel reports simple descriptive statistics for firms that delay financial reports but do not receive default notice from bondholders and for firms that delay financial reports and receive default notice from bondholders. Financial firms are excluded from the sample. Definition of variables is in Table 1.

| | Default Notice=0 | | | Default Notice=1 | | | Difference (P-Value) | |
	Median	MEAN	STD	Median	MEAN	STD	Wilcoxon	T Test
GVT	0.00	0.21	0.41	1.00	0.50	0.50	<.0001	<.0001
RPT	0.00	0.49	0.50	1.00	0.60	0.49	0.05	0.05
PIH	0.43	0.45	0.40	0.77	0.61	0.38	0.00	0.00
DED	0.00	0.13	0.34	0.00	0.14	0.35	0.86	0.86
QIN	0.00	0.12	0.32	0.00	0.06	0.24	0.10	0.04
TRA	0.00	0.10	0.31	0.00	0.02	0.15	0.02	<.0001
BNK	0.00	0.25	0.43	0.00	0.16	0.37	0.06	0.03
TRD	0.00	0.03	0.10	0.01	0.05	0.08	0.01	0.28
CPN	7.10	6.73	3.32	4.99	5.22	3.38	<.0001	0.00
HY	1.00	0.90	0.30	1.00	0.96	0.19	0.07	0.01
RF	4.63	4.47	0.57	4.73	4.65	0.43	0.00	0.00
RTG	13.00	13.64	5.13	12.00	14.17	4.67	0.28	0.34
NR	0.00	0.09	0.29	0.00	0.09	0.29	0.97	0.97
MAT	4.09	4.05	1.06	3.96	4.06	0.81	0.99	0.91
BND	13.02	12.93	1.49	13.17	13.23	1.01	0.11	0.02
AT	6.74	6.99	1.59	6.73	6.90	1.43	0.60	0.62

Panel B. Correlation matrix

This panel reports the correlation matrix among the independent variables. Pearson (Spearman) correlation is above (below) the diagonal. Financial firms are excluded from the sample. Definition of variables is in Table 1.

	GVT	RPT	PIH	DED	QIN	TRA	BNK	TRD	CPN	HY	RF	RTN	NR	MAT	BND	AT
GVT		0.18	0.22	-0.06	-0.02	-0.03	0.03	-0.03	-0.32	-0.13	0.16	0.06	-0.01	0.02	0.06	0.07
RPT	0.18		0.20	-0.02	-0.06	0.00	0.09	-0.05	-0.09	-0.05	-0.02	-0.12	-0.08	0.02	0.13	0.20
PIH	0.19	0.18		0.09	0.02	0.09	0.24	0.00	-0.24	-0.18	0.06	-0.23	-0.08	0.22	0.12	0.31
DED	-0.06	-0.02	0.11		-0.10	-0.09	0.10	0.14	-0.05	-0.02	0.02	-0.02	-0.01	0.12	0.11	0.14
QIN	-0.02	-0.06	0.06	-0.10		-0.04	-0.05	0.00	0.06	0.04	-0.01	0.08	0.00	-0.03	-0.10	-0.06
TRA	-0.03	0.00	0.12	-0.09	-0.04		0.05	-0.04	0.05	0.09	0.00	0.13	-0.04	0.02	-0.12	-0.08
BNK	0.03	0.09	0.24	0.10	-0.05	0.05		0.10	0.05	-0.12	0.00	-0.28	-0.13	0.13	0.17	0.30
TRD	0.02	0.01	0.02	0.07	0.02	-0.10	0.14		0.04	-0.02	0.00	-0.03	-0.07	0.09	0.25	0.22
CPN	-0.32	-0.09	-0.22	-0.06	0.06	0.05	0.04	-0.01		0.18	-0.13	-0.16	-0.05	-0.29	-0.10	-0.15
HY	-0.13	-0.05	-0.17	-0.02	0.04	0.09	-0.12	-0.01	0.20		-0.02	0.25	0.10	-0.16	0.01	-0.19
RF	0.17	-0.02	0.07	0.05	-0.02	0.00	-0.01	-0.06	-0.19	-0.09		0.08	0.01	0.09	0.01	0.02
RTN	0.06	-0.12	-0.19	-0.03	0.07	0.13	-0.28	-0.12	-0.15	0.21	0.08		0.33	-0.23	-0.33	-0.48
NR	-0.01	-0.08	-0.07	-0.01	0.00	-0.04	-0.13	-0.11	-0.05	0.10	0.03	0.34		-0.14	-0.06	-0.21
MAT	0.05	0.02	0.24	0.14	-0.03	0.02	0.13	0.10	-0.32	-0.17	0.10	-0.23	-0.15		0.22	0.36
BND	0.05	0.13	0.07	0.09	-0.07	-0.14	0.16	0.42	-0.07	-0.02	0.01	-0.37	-0.06	0.17		0.71
AT	0.10	0.21	0.31	0.10	-0.07	-0.07	0.31	0.30	-0.17	-0.20	0.01	-0.53	-0.21	0.34	0.71	

Table 4. Logit regression of indicator for default notice (Notice) on contributing factors

$$\mathrm{Pr}ob(Notice=1) = F(\beta_0 + \beta_1 GVT + \beta_2 RPT + \beta_3 PIH + \beta_4 DED + \beta_5 QIN + \beta_6 TRA + \beta_7 BNK$$
$$+ \beta_8 TRD + \beta_9 CPN + \beta_{10} HY + \beta_{11} RF + \beta_{12} RTG + \beta_{13} NR + \beta_{14} MAT + \beta_{15} BND + \beta_{16} AT)$$

This table reports the estimation results of the logit model. Financial firms are excluded from the sample. Variables are defined in Table 1. Z-statistics are adjusted by clusters of firms and the corresponding P-values are reported behind coefficients. The marginal effect, dy/dx, represents the change in probability that the firm receives a default notice given a change in the independent variable over a standard deviation at the means of the independent variables. For indicator variable, the marginal effect represents the change in probability that the firm receives a default notice when the indictor value changes from 0 to 1.

NOTICE=1/0	Factors in Decision Model	Predicted Sign	Coeff.	P>|z|	dy/dx
GVT	V*	+	0.99	0.00	4.46%
RPT	V*	+	0.66	0.07	2.25%
PIH	V*	+/-	1.10	0.01	3.73%
DED	V*	+/-	-0.33	0.38	-1.01%
QIN	V*	+/-	-1.05	0.05	-2.56%
TRA	V*	+/-	-1.36	0.08	-2.97%
BNK	V*	-	-0.83	0.02	-2.45%
TRD	-C	+	1.88	0.03	6.34%
CPN	i	-	-0.10	0.09	-0.33%
HY	α	+	1.61	0.01	3.30%
RF	r	?	0.51	0.18	1.72%
RTN	r	?	0.03	0.46	0.09%
NR	control for r, α	?	-0.01	0.99	-0.03%
MAT	τ	?	-0.02	0.87	-0.07%
BND	F	?	0.23	0.18	0.76%
AT	V	?	-0.24	0.15	-0.82%
Intercept			-7.77	0.00	
Obs	66/966				
Pseudo R2	0.16				
Clusters	416				

Table 5. Stock and bond markets reaction to late filings

The date that firms file NT forms is defined as the event date. The event window is from 5 days before to 10 days after the event date. The sample consists of firms that have bonds outstanding and delay filing financial reports.

In the stock market, the abnormal return is calculated as the daily stock return minus the daily return on value weighted NYSE-AMEX-NASDAQ index. In the bond market, the abnormal return is calculated as the daily bond return minus the value weighted average return on the matching portfolio based on Moody's seven major rating categories (Aaa, Aa, A, Baa, Ba, B and below B). The bond return is calculated using a clean price. The market value weighted average of abnormal returns of all the bonds issued by the same firm is used as the abnormal return for that firm.

Abnormal return on event day (AR) is the average abnormal return of all the firms on a given day, and the two tailed P-value is reported behind AR. Cumulative abnormal return (CAR) is the sum of AR from the beginning of the event window to the event day.

	Stock Market Reaction			Bond Market Reaction		
Event Day	AR	P	CAR	AR	P	CAR
-5	-0.19%	0.05	-0.19%	-0.18%	0.39	-0.18%
-4	-0.26%	0.03	-0.45%	-0.11%	0.56	-0.29%
-3	-0.02%	0.87	-0.47%	0.43%	0.04	0.14%
-2	-0.23%	0.15	-0.69%	0.42%	0.10	0.56%
-1	-0.34%	0.01	-1.03%	-0.10%	0.77	0.46%
0	-0.36%	0.01	-1.39%	-0.84%	0.01	-0.38%
1	-0.77%	0.00	-2.16%	-0.21%	0.47	-0.59%
2	0.09%	0.62	-2.07%	-0.06%	0.68	-0.65%
3	-0.02%	0.86	-2.09%	-0.09%	0.54	-0.74%
4	-0.14%	0.29	-2.23%	-0.06%	0.77	-0.80%
5	-0.06%	0.64	-2.29%	0.30%	0.11	-0.50%
6	0.14%	0.29	-2.15%	-0.50%	0.21	-1.00%
7	0.13%	0.22	-2.02%	-0.11%	0.78	-1.11%
8	0.00%	0.99	-2.02%	0.00%	0.99	-1.11%
9	-0.12%	0.24	-2.13%	-0.19%	0.29	-1.30%
10	0.10%	0.32	-2.03%	-0.85%	0.14	-2.15%

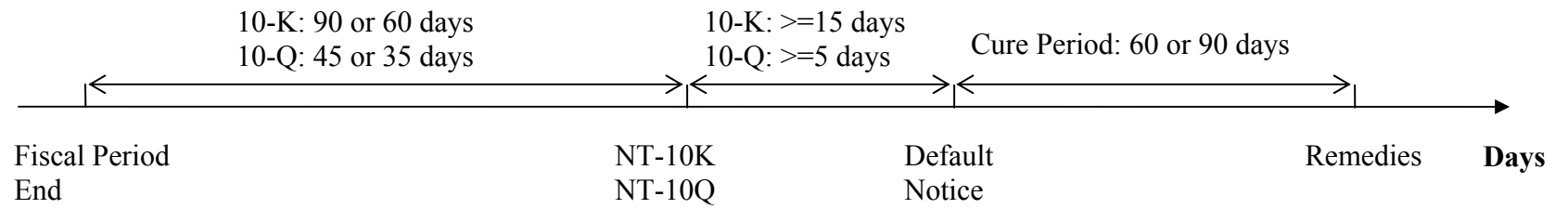**Table 6. Stock and bond markets reaction to bondholders' notice of default**

The date that firms receive the default notice from bondholders is defined as the event date. The event window is from 5 days before to 10 days after the event date. The sample consists of firms that receive the default notice due to delay in filing financial reports.

In the stock market, the abnormal return is calculated as the daily stock return minus the daily return on NYSE-AMEX-NASDAQ index. In the bond market, the abnormal return is calculated as the daily bond return minus the value weighted average return on the matching portfolio based on Moody's seven major rating categories (Aaa, Aa, A, Baa, Ba, B and below B). The bond return is calculated using a clean price. The market value weighted average of abnormal returns of all the bonds issued by the same firm is used as the abnormal return for that firm.

Abnormal return on event day (AR) is the average abnormal return of all the firms on a given day, and the two tailed P-value is reported behind AR. Cumulative abnormal return (CAR) is the sum of AR from the beginning of the event window to the event day.
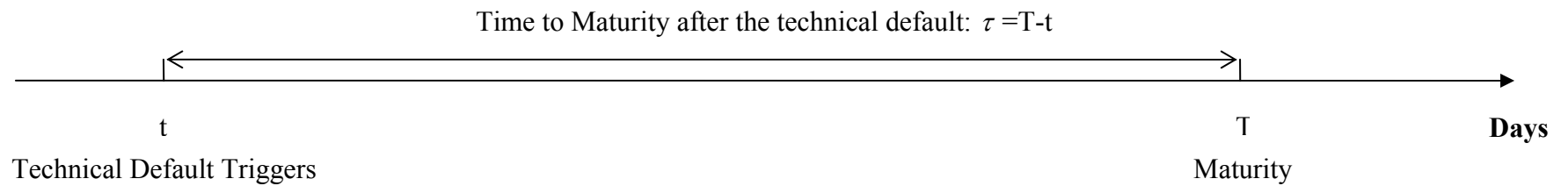
Event Day	Stock Market Reaction				Bond Market Reaction		
	AR	P	CAR		AR	P	CAR
-5	0.32%	0.22	0.32%		-0.70%	0.12	-0.70%
-4	-0.14%	0.66	0.18%		0.03%	0.82	-0.67%
-3	-0.10%	0.77	0.08%		0.31%	0.22	-0.36%
-2	-0.28%	0.43	-0.21%		-0.19%	0.35	-0.55%
-1	0.29%	0.33	0.08%		0.03%	0.97	-0.52%
0	-0.61%	0.04	-0.53%		0.18%	0.08	-0.34%
1	-0.53%	0.27	-1.05%		-0.10%	0.85	-0.44%
2	-0.01%	0.97	-1.07%		-0.34%	0.24	-0.79%
3	0.26%	0.43	-0.81%		-0.25%	0.30	-1.03%
4	-0.05%	0.86	-0.85%		0.36%	0.42	-0.68%
5	-0.11%	0.70	-0.97%		0.24%	0.71	-0.43%
6	0.14%	0.58	-0.82%		0.08%	0.30	-0.36%
7	-0.03%	0.88	-0.86%		0.19%	0.51	-0.17%
8	-0.08%	0.82	-0.94%		0.23%	0.48	0.06%
9	-0.10%	0.70	-1.04%		0.73%	0.14	0.79%
10	-0.31%	0.18	-1.35%		-0.14%	0.45	0.65%

Figure 1. The timeline of bondholder activism in response to timely reporting violations

	10-K: 90 or 60 days 10-Q: 45 or 35 days	10-K: >=15 days 10-Q: >=5 days	Cure Period: 60 or 90 days	

Fiscal Period   NT-10K   Default   Remedies **Days**
End   NT-10Q   Notice

Figure 2. The payoff to bondholders in case of action and inaction

Time to Maturity after the technical default: $\tau = T-t$
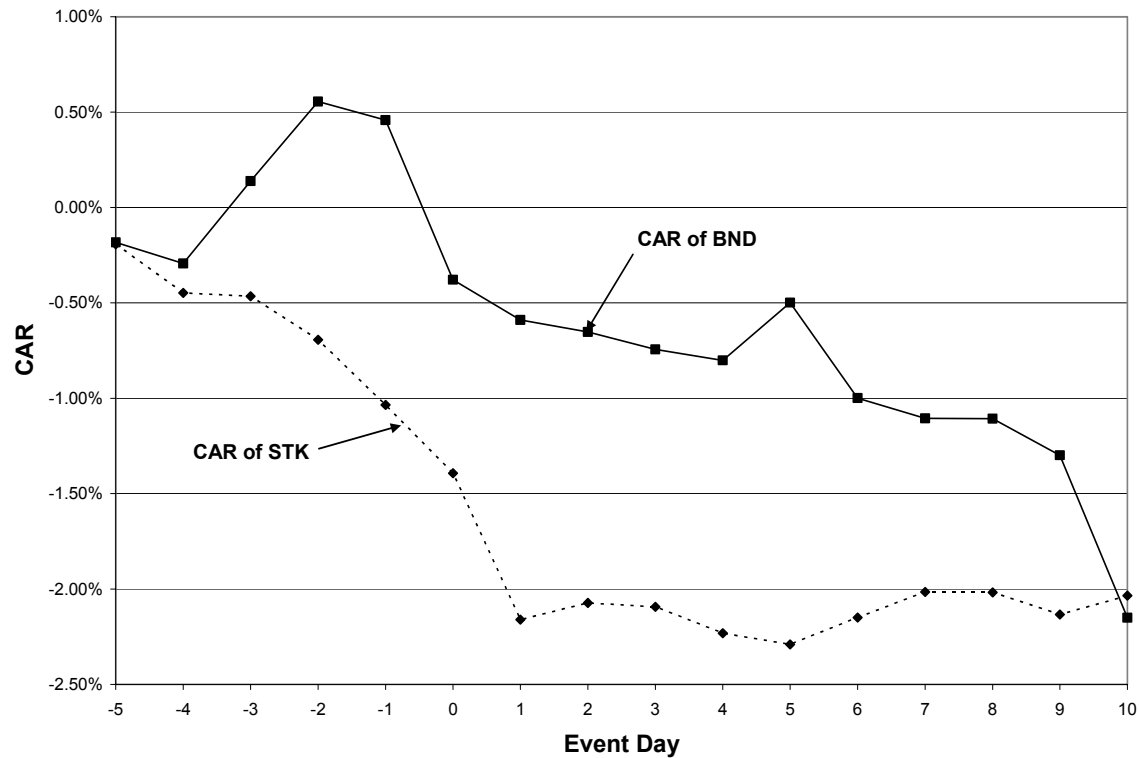
t

T

Days

Technical Default Triggers

Maturity

Payoff at t if take action: D=min(F, V)-C

Expected payoff at t if hold to maturity: $D^* = \{\alpha V^* + (1-\alpha)[F + iF \bullet \dfrac{e^{r\tau}-1}{e^r-1}]\} \bullet \exp(-r\tau)$

Figure 3. Stock and bond markets reaction to late filings

The date that firms file NT forms is defined as the event date. The event window is from 5 days before to 10 days after the event date. The sample consists of firms that have bonds outstanding and delay filing financial reports. In the stock market, the abnormal return is calculated as the daily stock return minus the daily return on NYSE-AMEX-NASDAQ index. In the bond market, the abnormal return is calculated as the daily bond return minus the value weighted average return on the matching portfolio based on Moody's seven major rating categories (Aaa, Aa, A, Baa, Ba, B and below B). The market value weighted average of abnormal returns of all the bonds issued by the same firm is used as the abnormal return for that firm. Abnormal return on event day (AR) is the average abnormal return of all the firms on a given day, and cumulative abnormal return (CAR) is the sum of AR from the beginning of the event window to the event day.

Figure 4. Stock and bond markets reaction to bondholders' notice of default

The date that firms receive the default notice from bondholders is defined as the event date. The event window is from 5 days before to 10 days after the event date. The sample consists of firms that receive the default notice due to delay in filing financial reports. In the stock market, the abnormal return is calculated as the daily stock return minus the daily return on NYSE-AMEX-NASDAQ index. In the bond market, the abnormal return is calculated as the daily bond return minus the value weighted average return on the matching portfolio based on Moody's seven major rating categories (Aaa, Aa, A, Baa, Ba, B and below B). The market value weighted average of abnormal returns of all the bonds issued by the same firm is used as the abnormal return for that firm. Abnormal return on event day (AR) is the average abnormal return of all the firms on a given day, and cumulative abnormal return (CAR) is the sum of AR from the beginning of the event window to the event day.