Friends with Threats: Credit Conditions Under Common Ownership

LUCA X. LIN*

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Abstract

I show that firms are less likely to violate loan covenants as their shareholders hold more shares in their industry peers. This link is more pronounced for firms with higher financial risks and a stronger tendency to overinvest. When violations do occur, firms with more such common owners experience smaller cuts in capital investments than those without. These results support that creditors benefit from better governance under common ownership. However, firms with higher common ownership experience substantially larger payout cuts after violations. Shareholders with more common ownership are also more likely to exit in the quarters after violations. Such evidence suggests that better governance by common owners can come at the expense of heightened shareholder-creditor conflict when the firm approaches financial distress.

Keywords: Credit Risk, Common Ownership, Corporate Governance

JEL Codes: G23, G32, G34

*Emails: llin@iese.edu. IESE Business School, University of Navarra. Av Pearson, 21, 08034 Barcelona, Spain. I am grateful to Miguel Antón, José Azar, Andreas Benz, Simon Döring, Christian Eufinger, Mireia Gine, Yun Lou, Robert Marquez, Jeremy Ruiz, Stefano Sacchetto, Joel Shapiro, Phu Thien, and seminar participants in 2nd CESC Conference, FMA Europe 2019, EFMA 2019, FMA Asia/Pacific 2019, Asian FA 2019 Conference for helpful comments. I thank Amir Sufi for sharing his data on loan covenant violations.

1 Introduction

There is an emerging common ownership literature looking at when a firm's shareholders also hold shares in its industry peers. Earlier research focuses on the implications of common ownership for product market competition (Azar et al., 2018, 2016; He and Huang, 2017). Follow-up studies have investigated theoretically and empirically the implications of common ownership for managers and other shareholders[1]. Does common ownership matter to creditors? Creditors play an essential role in corporate finance. Debt financing is the dominant source of external funding. More specifically, private bank loan is the most important source of external finance for corporations in developed economies, larger than public debt and equity combined according to Gorton and Winton (2003). Recent research has shown that creditors are also getting more involved in corporate governance over firm investment, financial, and payout policies (Chava and Roberts, 2008; Nini et al., 2009, 2012). There has been strong evidence supporting a link between different forms of firm ownership structure and credit risk in existing literature[2]. Yet limited attention has been paid to creditors in a high common ownership environment.

To the best of my knowledge, the paper by Massa and Zaldokas (2017) is so far the only published study looking at the implications of common ownership for creditors. They argue that common ownership allows creditors to learn critical information on how large shareholders behave by observing the focal firm's commonly-held peers, and show a positive correlation of credit risk indicators among commonly-held firms. In this paper I aim to investigate the more direct link of how common ownership influence on corporate actions leads to benefit and cost for creditors. This can help shed light on what the information transfer mechanism identified by their study is enabling creditors to actually learn. I do this by studying firms' likelihood of violating loan covenants and their policy changes after violations do happen.

[1] See, for example, Anton et al. (2018a), He et al. (2017), Gutiérrez and Philippon (2016), and Anton et al. (2018b) for empirical studies; for theoretical evidence, see, for example, Lopez and Vives (2016) and Edmans et al. (2018).

[2] See, for example, the link between credit risk and government ownership (Borisova et al., 2015); dual ownership, when a firm has shareholders who are also its creditors (Jiang et al., 2010); ownership-control wedge, when there is a divergence between the firm's ultimate owner's control rights and cash flow rights (Lin et al., 2011)

Covenant violation is an ideal setting to examine the direct implications of common ownership for creditors in three ways. First, the likelihood of a covenant violation provides indications of a firm's financial riskiness and agency conflicts. A violation is a technical default that signals early signs of financial problems and it happens frequently, allowing a large sample study of creditor responses to the potential cost and benefit induced by common ownership[3]. Second, Denis and Wang (2014) show that covenants are frequently renegotiated with creditors as firms get closer to covenant thresholds, and such negotiations lead to changes in managerial decisions. Therefore, the triggering of an actual violation can imply that creditors feel the needs to exert stronger influence on corporate policies. Finally, after a violation, creditor monitoring becomes more prominent since creditors can have a say on corporate decisions through threats of loan acceleration or termination. This allows us to see what types of risks creditors attempt to address through the policies with which they intervene.

For shareholders with diversified holdings across an industry, the externalities of one individual portfolio firm's behavior are internalized by other industry peers they hold, affecting the value of their whole portfolio (Hansen and Lott, 1996). Therefore, common owners should be more incentivized to monitor against managerial misbehvaior since one manager shirking could lead to an increase in riskiness for many other industry rival firms they hold. Such increased incentives should also apply to passive index fund investors since they have to hold on to their shares through thick and thin[4](Appel et al., 2016). Empirical evidence has specifically shown that this link is also true for credit conditions among commonly-owned firms (Massa and Zaldokas, 2017). A firm is more likely to have a covenant violation when its commonly-held peers have more violations.

In addition to stronger incentives, common owners are also better equipped to monitor with their industry-wide information and governance expertise. Recent empirical evidence

[3]During the sample period of 1997 to 2007, 35% of the 7,841 sample firms have violated a covenant at least once, a percentage similar to that found in previous studies (Nini et al., 2012).

[4]Scott, Mike, April 6, 2014, Passive investment, active ownership, Financial Times, https://www.ft.com/content/7c5f8d60-ba91-11e3-b391-00144feabdc0

shows that common owners indeed are more involved in disciplining management through more effective monitoring (He et al., 2017; Kang et al., 2018). For investors who can use the exit mechanism, common ownership strengthens governance as it gives investors more flexibility to sell and impound information on stock prices (Edmans et al., 2018). More passive investors, who usually cannot exit, can also leverage their substantial voting rights[5] to exert strong influence on governance issues through the voice channel (Appel et al., 2016; He et al., 2017).

Since common ownership can lead to better governance over management, creditors should benefit from a reduction of managerial agency costs (the monitoring hypothesis). Such agency costs are often reflected in managerial overinvestment (Jensen, 1986), which is detrimental to both creditors and shareholders. A common way for shareholders to discipline managerial overinvestment is to pressure for more payouts (Jensen, 1986). Crane et al. (2016) provides empirical evidence that payout is an important channel for institutional investors to mitigate managerial agency costs. Meanwhile, payout can also serve as a way of transferring wealth from creditors to shareholders (Jensen and Meckling, 1976; Chu, 2017), especially as the firm's financial risks increase. Therefore, creditors can also be harmed by increased shareholder wealth transferring potential under common ownership, when the borrower firm is closer to financial distress (the wealth transfer hypothesis).

My baseline results show that firms with higher common ownership are less likely to violate loan covenants. To address the reverse causality concern that institutional investors self-select into becoming common owners of firms with better governance and lower credit risk within the industry, I examine the exogenous variation in common ownership generated by mergers between financial institutions. This identification strategy employs the approach proposed by Lewellen and Lowry (2019) and include only mergers that took place before the financial crisis, mitigating the concerns over crisis-related firm/industry responses. The results do support a

[5]Krouse, Sarah, David Benoit, and Tom McGinty, October 24, 2016, Meet the new corporate power brokers: Passive investors, Wall Street Journal, https://www.wsj.com/articles/the-new-corporate-power-brokers-passive-investors-1477320101

causal link between common ownership and violation probability.

This link is particularly pronounced for firms with higher financial risks and a stronger tendency to overinvest. Such evidence supports the monitoring hypothesis positing that creditors benefit from better governance over management by common owners. On the contrary, common ownership have the opposite relationship with covenant violation in firms with lower financial risks and managerial agency costs. This provides hints on the wealth transfer hypothesis that conjectures higher potential of wealth transfer from creditors to common owners. In the case when default risk and managerial discretion are less of a concern, the threat of common ownership influence on corporate actions appears to outweigh the benefit for creditors. Creditors could therefore prefer a covenant violation rather than a covenant renegotiation to gain more bargaining power against the powerful common owners.

To further test the monitoring and the wealth transfer hypotheses, I look at what happens to firm investment and payout policies after a violation does happen. Following a loan covenant violation, creditor control tends to be heightened, inducing violating firms to cut investment and payout to be more conservative (Nini et al., 2012). Following the "quasi-discontinuity" regression design of Nini et al. (2012), I first show that while firms generally experience a reduction in capital investments during the four quarters after a covenant violation, those with higher common ownership on average suffer less of such investment conservatism. This suggests that investment policies in firms with higher common ownership are relatively more efficient for creditors, providing further support to the monitoring hypothesis.

On the other hand, violating firms with higher common ownership experience substantially larger payout cuts in the post-violation period than those without. This result first supports the idea that pressuring for more payout appears to be a channel through which common owners discipline managers. In addition, it is also in favor of the wealth transfer hypothesis and suggests that there is heightened shareholder-creditor conflict when the borrower firm shows signs of financial distress. Although a covenant violation is a technical default in which the firm is often far from the actual default state, it serves as a signal of increased financial

riskiness. Amid such increased risks, creditors appear to find payout policies less optimal under higher common ownership. For creditors, the benefit of better governance by common ownership can come at the expense of more exposure to wealth transfer by such powerful shareholders when financial risks are high.

Finally, I analyze shareholder actions in response to heightened creditor control. Following a violation, shareholders of the violating firm are more likely to sell their shares. Analyses above indicate that creditors tend to be tougher on shareholders in firms with higher common ownership. I show that shareholders with more common ownership have a higher propensity to sell their shares in the violating firm. During the four quarters after violation, even shareholders with large holdings and low portfolio turnovers tend to exhibit a stronger tendency to sell as their ownership in the firm's industry peers increases. These results again support the notion that common owners' involvement in corporate actions can lead to increased shareholder-creditor conflict.

This paper first contributes to the growing common ownership literature. While many have looked at the implications of common ownership for market competition (Azar et al., 2018; He and Huang, 2017), managers (Anton et al., 2018a; Kang et al., 2018), corporate policies (Gutiérrez and Philippon, 2016; He et al., 2017; Edmans et al., 2018; Lopez and Vives, 2016), and concentrated shareholders (Anton et al., 2018b), less attention has been paid to how creditors can be influenced by it. I complement the findings of Massa and Zaldokas (2017) and present evidence of how common ownership can directly influence a firm's credit condition. By showing that creditors can benefit from more effective monitoring against managerial discretion by common owners, I also complement the findings of He et al. (2017) on the more active governance role of common owners with further direct evidence from firm behavior and creditor reaction.

Additionally, my findings also point to a largely unexplored problem that can be raised by common ownership becoming more influential on corporate decisions, which is an increase of shareholder-creditor conflict. This also adds to the existing literature on shareholder-creditor conflict from earlier theoretical work by Jensen and Meckling (1976) and Myers (1977) to recent

empirical evidence based on simultaneous institutional holding of debt and equity (Jiang et al., 2010; Chava et al., 2017; Chu, 2017; Anton and Lin, 2018).

The cost of debt literature has uncovered evidence relating borrower credit risk to different forms of firm ownership structure including dual ownership (Jiang et al., 2010), ownership-control wedge (Lin et al., 2011), and government ownership (Borisova et al., 2015). I add to this strand of literature with evidence on mixed credit risk implications from common ownership. Finally, I also contribute to the burgeoning literature on creditor governance, especially studies based on evidence from covenant inclusion (Nini et al., 2009), renegotiation (Denis and Wang, 2014), and post-violation intervention in corporate policies (Chava and Roberts, 2008; Nini et al., 2012; Ferreira et al., 2018).

The rest of this paper is organized as follows: Section 2 provides an overview of the sample and research design. Section 3 presents the detailed empirical analyses on violation probability including the identification strategy and cross-sectional tests. Section 4 provides analyses on creditor and shareholder actions following covenant violations. Finally, Section 5 provides the concluding remarks.

2 Sample Overview and Empirical Design

The full sample of this paper consists of quarterly observations for U.S. listed firms from 1997 to 2007[6]. Covenant violation data is provided by Amir Sufi from his study in Nini et al. (2012). I obtain financial data from Compustat, stock price data from CRSP, and institutional ownership data from the 13F institutional holding database provided by Thomson Reuters. Following prior literature, I aggregate all BlackRock asset managers under one brand. Industries are defined using the 4-digit SIC code following common practice in the common ownership litera-

[6]Covenant violation data provided on Amir Sufi's website ranges from 1996 to 2008 yet data on Year 2008 appears largely incomplete. I curb the sample in 2007 following the reasoning provided by Ferreira et al. (2018): First, the 2008-2009 financial crisis led to major changes in bank behavior, regulations, credit market conditions, and the financial performance of borrower firms; Second, there was a rapid rise of covenant-light contracts after 2006, which have the same number of covenants but weak enforcement. These two factors can corrupt the effectiveness of post covenant violation behaviors as a vehicle to test my hypotheses.

ture (He and Huang, 2017)[7]. Firms in the finance (6000-6999), utility (4900-4999), and regulated (>9000) industries are dropped.

Out of the 7,841 sample firms, 2,756 (35%) have violated a loan covenant at least once during the sample period. Among them, 1,889 (24%) firms have violated a covenant more than once. Consistent with previous studies, covenant violations happen often in this sample. Figure 1 shows a substantial increase in common ownership during the early 2000s, a trend similar to that identified by prior common ownership literature which can be mainly attributed to the rise of index investing and mergers between large financial institutions following the repeal of the Glass-Steagall Act (Gramm–Leach–Bliley Act).

To test the governance effect of common ownership, I use firm-level measures instead of the industry-level measure used to study product market competition, $MHHID$. The key common ownership measure in this paper is CO, which measures the ownership firm j's shareholder is have in its industry peers ks. For each firm pair j has with k, β_{ij} is the ownership investor i has in firm j while β_{ik} is the ownership held by i in firm k. The product of the two ownership shares measures how much interest i has in the joint value of the firm pair. The measure is higher when i's interest is more symmetrically spread between j and k. All firm pairs j has with ks are then averaged based on market value of ks (value weight w_k) for the focal firm j. This measure is used in Azar (2012, ch. 5) and recently employed by Anton et al. (2018b) and Lewellen and Lowry (2019).

$$CO_j = \sum_{k=1}^{k} \sum_{i=1}^{I} w_k \beta_{ij} \beta_{ik}, \tag{1}$$

To test for the firm's probability of violating a covenant, I use a linear probability model of regressing the dummy variable $Violation$ which equals one if the firm reports a violation in a given quarter, on the firm's CO from the prior quarter, controlling for firm characteristics that have been identified by previous literature to have an influence on firm default probability, as

[7] This is based on the historical COMPUSTAT 4-digit SIC codes. For robustness check I also conduct the baseline analyses using the Hoberg and Phillips (2010, 2016) industry classifications and Fama-French 48 industry codes which lead to similar results.

well as industry and year-quarter fixed effects. For robustness check I also repeat the analysis with a probit model. Furthermore, I conduct additional analyses including the more stringent industry×time fixed effect to control for industry-specific cycles, and firm fixed effect to isolate time-invariant firm-specific characteristics.

$$Violation_{i,j,t} = \beta CO_{i,t-1} + \delta' X_{i,t-1} + \gamma_j + \tau_t + \epsilon_{i,t} \tag{2}$$

In Equation 2, i, j, and t indicate the firm, the firm's industry, and the year-quarter respectively. γ_j is industry fixed effect and τ_t is year-quarter fixed effect. Xs are firm level control variables including leverage ratio, size as proxied by log of total assets, market-to-book ratio, return-on-assets (ROA), operating cash flow scaled by average total assets, and Z score. I further control for total institutional ownership to address the possibility that high common ownership might simply be capturing a high level of institutional ownership. Table 1 resents summary statistics of the variables used in the empirical analyses. Variable definitions are further explained in Appendix C.1.

3 Empirical Results

3.1 Common Ownership and the Probability of Covenant Violation

Table 2 presents the baseline results based on Equation 2. Column (1) shows the regression of violation probability on only the control variables. Firms with higher financial risks (high leverage and low Z score) are more likely to violate a loan covenant. Larger and more profitable firms have lower violation probability. Firms with more growth opportunities have higher violation probability, while those with more operating cash flows and higher institutional ownership have lower violation probability.

Column (2) indicates that common ownership is negatively associated with violation probability. A one standard deviation increase in common ownership leads to 0.3% lower probability

of the firm violating a loan covenant in the next quarter. This result has strong economic significance regarding the sample average violation probability of 6%, indicating a 5% decrease in the propensity to violate a loan covenant with one standard deviation increase in common ownership. This link remains robust to the inclusion of industry×year-quarter fixed effect controlling for industry-specific cycles (column (3)), as well as firm fixed effect controlling for time-invariant firm-specific characteristics (column (4)). Finally, I conduct a probit analysis of violation on common ownership. Column (5) shows that in the probit model a one standard deviation increase in common ownership leads to a 0.7% decrease in violation probability. Therefore, the baseline result in column (2) provides a relatively more conservative estimate of the effect common ownership has on violation probability.

3.2 Identification Strategy - Financial Institution Mergers

The endogeneity concern has been identified as a main issue in advancing the common ownership literature. There can be omitted variables driving both the rise of common ownership and improvement in governance that leads to lower violation probability. One can also argue based on reverse causality that lower violation probability signals better credit conditions and less creditor interference which attract more common ownership. The various fixed effects employed in the baseline analyses mitigate the omitted variable problem and using lagged common ownership lessen the reverse causality concern to some extent. Yet it is still possible that institutional investors gain private information about a firm or industry's credit conditions through their research and self-select into holding more of such firms within an industry.

To further address this self-selection concern, I follow He and Huang (2017) and use the mergers between large financial institutions as a quasi-natural experiment to generate exogenenous variation in common ownership. Financial institution mergers are unlikely to be related to portfolio fundamentals or superior information. The newly merged institution usually does not significantly rebalance its holdings in portfolio firms right after the merger, due to transaction cost and liquidity concerns, as argued by prior literature using this shock for

external validity (Chu, 2017; He and Huang, 2017). Lewellen and Lowry (2019) show that this approach is more effective in capturing exogenous increases of common ownership in comparison to other approaches such as the reconstitutions of Russell Indexes, inclusion in the S&P 500, mutual fund flows, and the BlackRock-BGI merger alone.

As pointed out by Lewellen and Lowry (2019), using mergers that happened during or right after the financial crisis can contaminate the experiment since there can be substantial changes in firm or industry behavior in response to the crisis. Therefore, I follow the list of mergers provided by He and Huang (2017) and only include mergers with announcement dates after 1997 and completion dates before 2007. I identify industry peers held separately by the acquirer and the target before a merger's announcement. Lewellen and Lowry (2019) also show that the vast majority of treated firms are concentrated in mergers during 2008-2009, especially the BlackRock-BGI merger. To generate enough observations, I alter the ownership threshld to be included in the treatment sample to 1% from the 5% used by He and Huang (2017); Lewellen and Lowry (2019). The key assumption is that with 1% of ownership an institutional shareholder can still have the incentive and bargaining power to influence corporate actions, following Jiang et al. (2010).

If a firm has at least 1% held by one of the merging institutions in the quarter before the announcement and the other institution holds at least 1% in one of this firm's industry peers, this pair of firms are considered treated. I then identify firms held by the merging institutions that do not form such links after the merger. From these firms, I select control firms after matching with treated firms on market capitalization, institutional ownership percentage, leverage, and market-to-book. In this way investor skills are also controlled for since control firms are held by either of the merging institutions.

Another alternation from the design of He and Huang (2017) and Lewellen and Lowry (2019) is the event window. Unlike their studies, which are conducted at the annual level, my analyses are conducted based on quarterly data. I therefore follow the design of Li et al. (2018) and use a (-4, +4) window looking at the firm's violation probability in the four quarters before

the merger announcement and the four quarters after the merger completion. I end up with 796 treated firms and 875 control firms in 12 mergers throughout 1997 to 2005.

Table 3 presents the results of this difference-in-difference (DID) analysis. Based on column (1) and (2), the treated firms experience significant increase in *CO* in the post-merger period whereas there is no such increase for the control firms. For a more intuitive interpretation of whether the experiment actually captures an exogenous increase in common ownership, I create a dummy variable *High CO* that equals one if the firm-quarter observations has a *CO* that is in the top quartile of the overall DID sample distribution. Column (3) and (4) indicate that treated firms are 3.5% more likely to have high common ownership in the post period, robust to the inclusion of various fixed effects such as industry×year-quarter and firm×merger fixed effects. These results support that the "shock" in this DID experiment captures a significant increase in common ownership for the treated firms while not affecting that of the control firms.

Column (5) to (11) present the results of the main DID analysis on violation probability. I first only control for industry and year-quarter fixed effect as in the baseline regression in Equation 2. I additionally control for merger fixed effect to isolate potential merger-specific influence affecting both common ownership and credit conditions. As in Table 2, I further control for the more stringent industry×time fixed effect, firm fixed effect, as well as firm×merger fixed effect as in He and Huang (2017) from column (6) to (8). In column (9) to (11) I include control variables from Table 2. The coefficient of $Treat \times Post$ stays consistently robust across all specifications. The treated firms are 2.4% to 2.8% less likely to violate a covenant in the post-treatment period. These results support the notion that higher common ownership can lead to lower probability of the firm violating a loan covenant.

3.3 Cross-Section Analyses - Firm Heterogeneity

In the cross-section, I examine what types of firms in which the relationship identified in the baseline and DID analyses is more pronounced. If creditors were to benefit from any common

ownership influence on corporate decisions, such influence should most importantly address the firm's default risk. Therefore, I expect the link between common ownership and violation probability to be stronger or even mostly coming from firms with higher financial risks. Furthermore, since I hypothesize after previous findings (He et al., 2017; Kang et al., 2018; Edmans et al., 2018) that an important channel through which common ownership can benefit creditors is better governance over management, the result should be stronger for firms with exposure to managerial agency costs.

Table 4 Panel A presents the results of these cross-sectional tests. I define a dummy variable high (low) Z that equals one if the firm has a Z score that is in the top (bottom) quartile among all firms in a given quarter. I define the same dummy variables for firm leverage. Firms with low Z scores and high leverage ratios have more financial risks. Column (1) and (2) support the idea that common ownership lowers covenant violation probability mainly for firms subject to more financial risks. On the contrary, for firms not subject to such risks, common ownership appears to have the opposite effect on violation probability, hinting on the notion that wealth transferring threat by common owners becomes a primary concern for creditors when their borrower firms are less likely to default.

I proxy for managerial agency cost by creating a measure of overinvestment tendency following the rationale of Jensen (1986). Firms with poor growth opportunities and ample cash flows are likely to overinvest. A firm is considered having high tendency to overinvest if it has operating cash flow in the top quartile among all firms in a given quarter while also having market-to-book in the bottom quartile among all firms in a given quarter, and having low tendency to overinvest vice versa. The result indicates that common ownership leads to lower violation probability for firms with a higher tendency to overinvest and the opposite effect for those with lower tendency to overinvest. Overall these results combined support both the monitoring and wealth transfer hypotheses.

In my last cross-sectional test I address the alternative hypothesis that common ownership has an anti-competitive effect by facilitating better product market coordination which in turn

lowers credit risk. As shown by Valta (2012), intense competition within the industry can increase a firm's credit risk. I proxy competition with the HHI. A firm is considered having low (high) HHI if it has an HHI in the bottom (top) quartile among all firms in a given quarter. Based on column (4) in Table 4 Panel A, there does not appear to be any significant variation of common ownership influence on violation probability across firms in different competitive environments. Therefore, the relationship identified in the baseline results should be most likely coming from the governance influence of common ownership rather than its effect on industry competitive dynamics.

3.4 Cross-Sectional Analyses - Investor Heterogeneity

As pointed out by Bushee (1998); Gaspar et al. (2005); Chen et al. (2007), investor horizon matters when it comes to incentive and ability to monitor corporate decisions. If the effect identified in the baseline analyses is due to more effective monitoring, it should be driven more by long term investors rather than short term investors. I use the investor classifications provided by Bushee (1998) and compute CO for long term and short term investors separately. Investors are considered long term if they are classified as dedicated or quasi-indexer. Investors are considered short term if they are classified as transient which are mainly investors focusing on momentum trading with high portfolio turnovers. As shown in Panel B of Table 4, CO_DED/QIX has a much stronger effect on violation probability than CO_TRA in terms of both economic and statistical significance. he effect found in the main results appear to be driven by investors with sufficient incentives and influence to monitor, supporting the key monitoring channel identified above. Common owners' long-term investment horizons are important sources of effective monitoring as they can accumulate better quality industry-wide information and governance experience (Kang et al., 2018).

I further examine whether my results are mainly driven by a few very large passive investors. From Table 4 Panel B column (3) to (4), I compute CO for only top indexers including BlackRock, State Street, Vanguard, and Barclays Global Investors, as CO_Index, as well as

CO for all investors excluding the aforementioned four index fund families, *CO_NonIndex*. The results indicate that both top indexers and other investors have significant effect on violation probability. The relationship between common ownership and violation probability is not solely driven by a few large index fund families. In addition, this provides further support that the effect is not just driven by the endogenous choice by active fund managers, as these index funds do not choose their portfolio firms based on private information.

4 Post-Violation Policy Changes Under Common Ownership

4.1 Investment Conservatism

As mentioned in the introduction, one advantage of using the covenant violation setting is that it allows us to see creditor responses when a violation does happen. By examining the policy changes during the period following the violation, it can be more directly observed which corporate policies are regarded as efficient or inefficient through the lens of the creditors.

Based on the findings of Chava and Roberts (2008) and Nini et al. (2012), creditors pressure for more conservative investment policies and lead to investment cuts during the period following a covenant violation. The monitoring hypothesis argues that common owners have more incentive (internalizing externalities on industry peers) and better ability (industry-wide information/monitoring expertise) to conduct better governance over management. This should in turn lead to an alleviation of managerial agency costs which can often be reflected in overinvestment. Investment policies in firms with higher common ownership should therefore be more efficient thanks to such common ownership monitoring. As a result, this hypothesis predicts that creditors will find less investment inefficiency there is to be mitigated in the firm when they gain informal control rights after a technical default.

$$\Delta y_{q,q+4} = \beta_1 Violation_{i,q} + \beta_2 Violation_{i,q} \times CO_{i,q} + \beta_3 CO_{i,q} + \delta' X_{i,q} + \gamma_j + \tau_q + \epsilon_{i,q} \quad (3)$$

To test this prediction, I follow the "quasi-discontinuity" regression design of Nini et al. (2012) and analyze a firm's post-violation investment changes factoring in the existence of common ownership. This design addresses the problem that the contractual level of each individual covenant cannot be observed in order to precisely determine firms around the thresholds. The regression includes financial covenant controls, i.e. operating cash flow to assets, leverage ratio, interest expense to assets, net worth to assets, current ratio, market-to-book ratio, the second and third power of these covenant controls (higher order covenant controls), as well as the four quarter lagged covenant controls. In this way firms with similar financial performance trends are compared. In addition, higher order covenant controls specifically control for effect individual covenant controls can have on the outcome variable. Finally, the lagged covenant controls help control for the firm's financial conditions when the contract was initiated.

The regression is a first difference regression with the change in y from the violation quarter q to four quarters after $q+4$. y is the outcome variable which is investment in this section and payout in the following section. I further control for the level and first difference of firm size (Ln(assets)), the level and first difference of (PPE/assets), and institutional ownership. Industry and year-quarter fixed effects are included. I also include the more stringent industry$\times$year-quarter fixed effect in some specifications to control for industry-specific cycles. Finally, standard errors are clustered at both the firm and year-quarter level to correct for heteroskedasticity and serial correlation.

To examine post-violation investment changes, I use the change in capital expenditures and the log of plant, property, and equipment (LnPPE). Column (1) and (4) in Table 5 first confirm previous findings that capital investment on average decreases during the four quarters following a covenant violation. Column (2) and (5) show that common ownership indeed mitigates this investment cut, as predicted by the monitoring hypothesis. A one standard deviation increase in common ownership offset the adverse effect of violation by 33% for change in capital expenditures and 100% for change in LnPPE. Therefore, these results support the notion that when creditors gain informal control right over firm policies after a violation, they find less

inefficiency to correct for in investment policies of firms with higher common ownership. In addition, these results provide further direct evidence on how better governance by common ownership argued by prior literature (He et al., 2017; Kang et al., 2018; Edmans et al., 2018) affect real firm behavior.

4.2 Payout Conservatism

How do common owners improve investment efficiency? Jensen (1986) points out that shareholder payout is an important channel through which shareholders can mitigate managerial overinvestment. By pressuring managers for more payout, free cash flow that would have been otherwise used for wasteful investments is redirected towards shareholders. Recent studies have provided empirical evidence that pressuring for payout is indeed an important channel for institutional shareholders to monitor against managerial agency costs (Crane et al., 2016). I expect payout to be even more leveraged for monitoring by common owners since they have stronger incentive to mitigate managerial agency costs.

Meanwhile, payout is also considered a way for shareholders to transfer wealth from creditors to themselves, which is particularly a threat as the firm approaches financial distress (Jensen and Meckling, 1976). Chu (2017) provides empirical evidence that payout level indeed reflects shareholder-creditor conflict. The way common owners monitor managerial overinvestment could in turn post wealth transferring threat to creditors when the firm starts showing signs of increasing financial risks. Therefore, I expect creditors to be more aggressive in pressuring the violating firm for payout conservatism in the post-violation period.

Table 6 presents the results of the analyses on post-violation payout behavior. A violation indeed leads to a decline in dividend in the four quarters after the violation. Common ownership amplifies this negative effect violation has on dividend. A one standard deviation increase in common ownership more than double the post-violation dividend cut. As pointed out in recent payout literature, repurchase has grown to replace dividend as the more popular payout method since it is more flexible. I further examine the post-violation repurchasing activities. Vi-

olation itself does not appear to have a significant effect on shareholder repurchases. This could be due to the financial flexibility repurchases provide compared to the stickiness of maintaining dividend levels. Creditors therefore do not seem to be bothered by such activities. However, in firms with high common ownership, there is a significant cut in repurchasing activities after a violation. This shows further support to the increased wealth transferring concern creditors have on common owners amid signs of financial weakness. Creditors appear to feel the need to prevent the possibility that common owners try to escape the burden of debt by pressuring for more payout and leaving them holding an empty shell, as suggested by Black (1976).

4.3 Shareholder Exit - Evidence from Post-Violation Institutional Trading

In the previous section I show that creditors tend to become tougher on common owners amid heightened shareholder-creditor conflict during the post-violation period. Following Kempf et al. (2016), who show that shareholders tend to sell their shares after the announcement of a value-destroying acquisition, I examine shareholders' exit behavior following a covenant violation. With heightened shareholder-creditor conflict and creditors gaining more bargaining power over corporate policies, I expect to see shareholders with more ownership in the firm's industry peers to have a higher propensity to sell, either as an exit mechanism to oppose certain policy changes imposed by creditors or simply as a withdraw due to creditor pressure.

$$\begin{aligned} Sell_{i,\mu,q} = \beta_1 Violation_{i,q} + \beta_2 Violation_{i,q} \times PeerOwnership_{\mu,q-1} + \beta_3 PeerOwnership_{\mu,q-1} \\ + \delta' X_{i,q} + \alpha' Z_{\mu,q-1} + \gamma_j \times \tau_y + \tau_q + \theta_\mu + \epsilon_{\mu,q} \end{aligned} \tag{4}$$

The empirical design to test this prediction follows Kempf et al. (2016). *Sell* is the absolute value of the negative percentage change in ownership percentage investor μ has in firm i from q-1 to q. *Sell* equals zero if there is no negative change in ownership. Peer ownership is the weighted sum of investor μ's ownership percentage across firm i's industry peers, based

on each peer's market value. X is a set of firm level controls including current quarter stock return, lagged quarterly return, current quarter turnover, lagged quarterly turnover, one-year lagged turnover, and the book-to-market ratio in the previous quarter. Z is a set of investor controls including ownership percentage in the prior quarter, weight of firm i holding in investor μ's portfolio in the prior quarter, and μ's size calculated as the log of its total dollar value holdings across all firms in the prior quarter. I further control for industry$\times$year fixed effect, fiscal quarter fixed effect, and investor fixed effect. Finally, standard errors are clustered at the investor-quarter date level.

Table 7 presents the results of this analysis on institutional trading after covenant violations. As shown in column (1) and (5), there is indeed more selling activities following a covenant violation as predicted, both immediately in the quarter of violation and in the four quarters after violation. I differentiate investors based on their average portfolio turnovers in the previous year, using the churn ratio proposed by Gaspar et al. (2005). Investors with low churn ratios tend to have a longer investment horizon and low portfolio turnover. Investors with churn ratios in the bottom tercile among all investors in the previous year are classified as low churn investors. As presented in column (2) to (4), having more peer ownership does not appear to have very significant immediate impact on an investor's decision to sell. The propensity to sell is only increased for investors with more flexible portfolio turnovers.

However, when I extend the window to (q-1,q+4), the influence of peer ownership becomes highly significant for all investors. According to column (6) to (8), even investors with longer investment horizons tend to have a higher propensity to sell during the four quarters after a covenant violation. A one standard deviation increase in peer ownership increases the investor's propensity to sell by 37.5% (0.006/0.016) for all investors and 29.6% (0.008/0.027) for low churn investors. Since the previous section has shown that creditors tend to exert tougher influence on shareholder payout policies during the four quarters after a violation, these results provide further evidence of the heightening of shareholder-creditor conflict by common ownership.

Finally, in Table 8 I focus on shareholders with the most incentive and power to influence the firm. I look at three groups of investors, those with ownership shares among the top ten and top five in the firm, as well as investors who are identified as having long investment horizons by Bushee (1998), i.e. dedicated and quasi-indexer investors. The results show that while such large and long-term investors do not react immediately based on their peer ownership, they end up increasing their selling activities in accordance to their holdings in the firm's industry peers during the four quarters after a violation, which is when creditors exert stronger influence on corporate policies. Overall this section provides additional evidence on the threat of common ownership in increasing shareholder-creditor conflict. These results also complement the argument made by Ertan and Karolyi (2016) that shareholders recognize the difficulties of negotiating with creditors after technical defaults.

5 Concluding Remarks

Despite emerging studies in the common ownership literature, its direct implications for creditors remain largely unexplored. An earlier study by Massa and Zaldokas (2017) sheds light on this matter by showing that a firm's creditors can learn critical information on shareholder behavior by observing how common owners influence its commonly-held peers. In this paper I explore a more direct link of how common ownership influence on corporate actions actually affects the firm's creditors. This provides a better idea of what the information transfer mechanism they have identified can actually enable creditors to learn.

When a firm's shareholders also hold shares in its industry peers, their incentives and abilities to monitor against managerial discretion are stronger. A high level of such common ownership equips shareholders with superior industry-wide information and expertise. Meanwhile, they are also more incentivized to play a monitoring role as the firm's behavior can have externalities on their overall industry portfolios. This paper empirically shows that common ownership leads to lower probability of the firm having a technical default. Using financial institution

mergers to generate exogenous variation in common ownership, I show that this link is indeed rooted in a causal relationship. The effect of common ownership on covenant violation probability is more pronounced for firms with higher financial risks and a stronger tendency to overinvest, supporting the notion that creditors benefit from better governance by common ownership. Meanwhile, the effect becomes opposite for those with lower financial risks and a weak tendency to overinvet, suggesting that the threat of higher wealth transferring potential by common ownership outweighs the benefit of effective monitoring when default risk and agency costs are less concerning.

Post-violation investment and payout patterns provide further evidence for both the monitoring and the wealth transfer hypotheses. Institutional trading in the quarters following a violation also supports the idea that for creditors, the benefit of better governance can come at the expense of heightened shareholder-creditor conflict when the debtor firm starts showing signs of financial weakness. Such an increase in shareholder-creditor conflict is largely unexplored in the existing common ownership literature, yet it is of great importance especially regarding the growing studies on creditor governance. Further studies are called for to examine the potential bargaining dynamic between creditors and large shareholders with high common ownership in more adverse situations such as loan renegotiation and bankruptcy negotiation.

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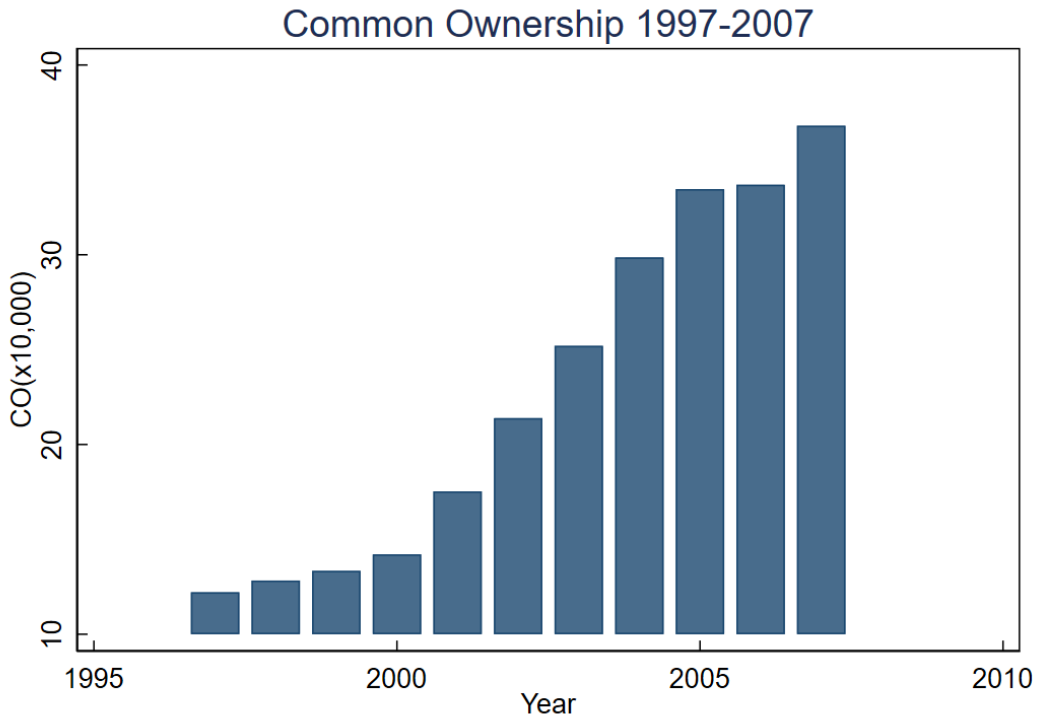
A Figures

Figure 1. Trend of Common Ownership in Sample Firms 1997-2007. The first figure shows the average common ownership, as measured by *CO* (calculated using Equation 2), for all sample firms in each sample year.



B Tables

Table 1. Summary Statistics.
This table provides summary statistics of the variables used in the analyses. Detailed variable definitions can be referred to Appendix C.1.

	Obs	Mean	S.D.	5%	Median	95%
CO (×10,000)	159,370	21.52	33.26	0.00	6.14	89.36
Violation	159,370	0.06	0.24	0.00	0.00	1.00
Leverage	159,370	0.21	0.22	0.00	0.16	0.63
Size	159,370	5.22	1.99	2.18	5.08	8.70
Market-to-Book	159,370	1.78	2.07	0.20	1.11	5.76
ROA	159,370	0.01	0.11	-0.13	0.03	0.08
Operating Cash Flow	159,370	0.00	0.15	-0.29	0.02	0.18
Institutional Ownership	159,370	0.33	0.33	0.00	0.23	0.92
Z-score	159,370	1.36	3.38	-4.03	1.46	5.90
CAPEX	159,370	0.04	0.05	0.00	0.02	0.14
LnPPE	159,130	3.41	2.46	-0.43	3.32	7.56
Ln(1+Dividend)	159,370	0.55	1.30	0.00	0.00	3.66
Ln(1+Repurchase)	159,370	0.65	1.48	0.00	0.00	4.33

Table 2. Common Ownership and Covenant Violation Probability.

This table presents the regression of the dummy violation that equals one if the firm reports a covenant violation in the given quarter, on common ownership using Equation 2 in Section 3.1. *CO* is standardized. Industry fixed effect is at the 2-digit SIC level. Column (5) is a probit model with the bold text displaying the marginal effect. Detailed variable definition can be referred to Appendix C.1. All non-log control variables are winsorized at the 1% and 99% level. Standard errors are clustered at the firm level. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	Violation				
	(1)	(2)	(3)	(4)	(5)
CO		-0.003***	-0.004***	-0.003**	-0.063***
		(-2.809)	(-2.989)	(-2.396)	(-3.721)
					-0.007* **
Leverage	0.137***	0.137***	0.134***	0.129***	0.913***
	(16.64)	(16.61)	(16.17)	(11.28)	(17.28)
Size	-0.012***	-0.011***	-0.012***	0.018***	-0.105***
	(-14.97)	(-14.66)	(-14.72)	(5.780)	(-14.31)
Market-to-Book	0.020**	0.020**	0.020**	-0.020*	0.023
	(2.140)	(2.138)	(2.084)	(-1.904)	(0.308)
ROA	-0.010***	-0.010***	-0.010***	-0.004***	-0.164***
	(-21.39)	(-21.33)	(-21.17)	(-7.478)	(-14.61)
Cash Flow	-0.042**	-0.042**	-0.038**	-0.078**	-0.297**
	(-2.250)	(-2.256)	(-2.170)	(-2.311)	(-2.419)
Institutional Ownership	-0.031***	-0.025***	-0.023***	-0.036***	-0.162***
	(-8.061)	(-5.232)	(-4.863)	(-4.859)	(-3.157)
Z score	-0.001***	-0.001***	-0.001***	-0.001**	-0.014***
	(-2.723)	(-2.717)	(-3.265)	(-2.565)	(-4.237)
N	150,453	150,453	150,275	149,859	150,378
Firm FE	No	No	No	Yes	No
Industry FE	Yes	Yes	No	No	Yes
Year-Quarter FE	Yes	Yes	No	No	Yes
Industry × Year-Quarter FE	No	No	Yes	Yes	No
R-squared (Pseudo R-squared)	0.05	0.05	0.06	0.26	0.10

Table 3. Identification Strategy - Financial Institution Mergers.

This table presents the difference-in-difference regression based on 12 financial institution mergers from 1997 to 2005 as described in Section 3.2. *Treat* is a dummy variable that equals one if the firm is identified as a treated firm. *Post* is a dummy variable that equals one if the firm-quarter observation is in the four quarters after the merger completion quarter. Industry fixed effect is at the 2-digit SIC level. *CO* is standardized and *High CO* is a dummy variable that equals one if the firm-quarter observation has a *CO* that is in the top quarter of the full DID sample distribution. Detailed variable definition can be referred to Appendix C.1. All non-log control variables are winsorized at the 1% and 99% level. Standard errors are clustered at the firm level. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	CO		High CO		Violation						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Treat×Post	0.096***	0.090***	0.033*	0.035**	-0.024***	-0.027***	-0.028***	-0.027***	-0.025***	-0.024**	-0.025**
	(2.841)	(2.709)	(1.897)	(2.001)	(-3.158)	(-3.047)	(-3.175)	(-2.970)	(-2.609)	(-2.562)	(-2.545)
Treat	0.015		0.006		0.001	0.001	0.014**		-0.002	0.015**	
	(0.421)		(0.369)		(0.236)	(0.237)	(2.171)		(-0.246)	(2.193)	
Post	0.025	0.008	-0.009	-0.011	0.031**	0.037***	0.039***	0.040***	0.030**	0.033**	0.034**
	(0.580)	(0.227)	(-0.367)	(-0.460)	(2.444)	(2.650)	(2.844)	(2.890)	(2.017)	(2.250)	(2.225)
Size									-0.013***	-0.004	0.002
									(-6.355)	(-0.459)	(0.178)
Leverage									0.085***	0.068**	0.076**
									(4.206)	(2.174)	(2.291)
Operating Cash Flow									0.096**	0.042	0.017
									(2.372)	(0.916)	(0.361)
Market-to-Book									-0.003**	0.002	0.002
									(-2.479)	(1.004)	(0.909)
ROA									-0.547***	-0.803***	-0.751***
									(-4.393)	(-5.351)	(-4.922)
Institutional Ownership									-0.025**	-0.010	-0.001
									(-2.088)	(-0.457)	(-0.0561)
Z score									-0.006***	-0.004*	-0.003
									(-3.448)	(-1.777)	(-1.118)
N	17,814	17,810	17,814	17,810	18,128	17,814	17,813	17,810	15,460	15,452	15,435
Industry FE	No	No	No	No	Yes	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	No	No	Yes	No
Year-Quarter FE	No	No	No	No	Yes	No	No	No	No	No	No
Merger FE	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No
Industry×Year-Quarter FE	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm×Merger FE	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes
R-squared	0.29	0.83	0.27	0.73	0.03	0.12	0.34	0.38	0.15	0.36	0.41

Table 4. Common Ownership and Covenant Violation Probability - Firm/Investor Heterogeneity.

This table presents the baseline regression with different cross-sections as described in Section 3.3 and 3.4. X stands for Z score, leverge, overinvest, and HHI in different cross-sections. I define a dummy variable high (low) Z that equals one if the firm has a Z score that is in the top (bottom) quartile among all firms in a given quarter. I define the same dummy variables for firm leverage. A firm is considered having high tendency to overinvest (High Overinvest=1) if it has operating cash flow in the top quartile among all firms in a given quarter while also having market-to-book in the bottom quartile among all firms in a given quarter, and having low tendency to overinvest vice versa (Low Overinvest=1). A firm is considered having high (low) HHI if it has HHI in the top (bottom) quartile among all firms in a given quarter. CO_DED/QIX is computed using Equation 1 with only holdings by investors classified as dedicated or quasi-indexer. CO_TRA only uses investors classfied as transient. CO_Index only uses holdings by BlackRock, Vanguard, State Street, and Barclays Global Investors. CO_Non-Index uses all other investors except the aforementioned four index investors. The same control variables from Table 2 are included. Standard errors are clustered at the firm level. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A: Firm Heterogeneity				
	Violation			
	(1)	(2)	(3)	(4)
Cross-Sections (X's)	Z Score	Leverage	Overinvest	HHI
CO	-0.005***	-0.004***	-0.003***	-0.004**
	(-3.797)	(-3.052)	(-2.761)	(-2.499)
CO×High X	0.013***	-0.010***	-0.009**	-0.000
	(8.461)	(-4.500)	(-2.413)	(-0.018)
CO×Low X	-0.013***	0.019***	0.011***	-0.001
	(-4.395)	(10.89)	(3.920)	(-0.444)
High X	-0.034***	0.011**	0.003	-0.005*
	(-10.93)	(2.214)	(0.613)	(-1.688)
Low X	0.027***	-0.034***	-0.018***	-0.009***
	(6.919)	(-11.89)	(-5.426)	(-2.733)
N	150,453	150,453	150,453	150,453
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
R-squared	0.05	0.05	0.05	0.05

Panel B: Investor Heterogeneity				
	Violation			
	(1)	(2)	(3)	(4)
CO_DED/QIX	-0.003***			
	(-3.573)			
CO_TRA		-0.001*		
		(-1.663)		
CO_Non-Index			-0.002**	
			(-2.199)	
CO_Index				-0.003**
				(-2.504)
N	150,453	150,453	150,453	150,453
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
R-squared	0.05	0.05	0.05	0.05

Table 5. Post-Covenant Violation Capital Investment Behavior.

This table presents the first-difference estimates of the marginal effect of covenant violation on capital expenditures and LnPPE after four quarters, during 1997 to 2007 from Section 4.1. Detailed variable definition can be referred to Appendix C.1. covenant violation is a dummy that equals one if in the given quarter the firm violates a debt covenant for its first time. *CO* is standardized. Size is the log of total assets. Higher-order covenant controls are the second and third power of the control variables. Lagged covenant controls are the control variables lagged four quarters. All control variables are winsorized at the 1% and 99% level. Industry fixed effect is at the 2-Digit SIC level. Standard errors are clustered at the firm and year-quarter level. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	$\Delta CAPEX_{(q, q+4)}$			$\Delta LnPPE_{(q, q+4)}$		
	(1)	(2)	(3)	(4)	(5)	(6)
Violation	-0.003***	-0.003***	-0.003***	-0.012**	-0.010**	-0.011**
	(-5.436)	(-5.276)	(-5.157)	(-2.561)	(-2.283)	(-2.475)
CO×Violation		0.001*	0.001*		0.010**	0.012***
		(1.808)	(1.880)		(2.660)	(3.082)
CO		0.000***	0.000***		-0.003**	-0.002
		(3.283)	(3.664)		(-2.209)	(-1.176)
Size	-0.000*	-0.000**	-0.000*	0.002*	0.002*	0.002**
	(-1.768)	(-2.049)	(-1.896)	(1.888)	(1.986)	(2.109)
Institutional Ownership	-0.001**	-0.002***	-0.002***	0.006	0.010**	0.009*
	(-2.458)	(-3.993)	(-4.077)	(1.338)	(2.209)	(1.803)
Market-to-Book	0.001**	0.001**	0.001**	0.024***	0.025***	0.025***
	(2.586)	(2.606)	(2.451)	(5.206)	(5.223)	(5.290)
Operating cash flow/average assets	0.014***	0.014***	0.014***	0.096***	0.096***	0.101***
	(4.577)	(4.574)	(4.797)	(3.796)	(3.801)	(3.949)
Leverage ratio	-0.021***	-0.021***	-0.022***	0.132**	0.133**	0.123**
	(-4.539)	(-4.552)	(-4.680)	(2.406)	(2.434)	(2.304)
Interest expense/average assets	0.194***	0.195***	0.198***	1.416**	1.409**	1.451**
	(2.928)	(2.930)	(3.032)	(2.310)	(2.298)	(2.478)
Net worth/assets	-0.018***	-0.018***	-0.016***	0.080**	0.080**	0.070*
	(-5.495)	(-5.509)	(-4.993)	(2.130)	(2.121)	(1.871)
Current ratio	0.001***	0.001***	0.001***	0.006***	0.006***	0.006***
	(7.377)	(7.353)	(7.083)	(3.715)	(3.711)	(3.550)
N	119,226	119,226	119,045	119,116	119,116	118,935
Lagged Covenant Controls	Yes	Yes	Yes	Yes	Yes	Yes
Higher Order Covenant Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	No	Yes	Yes	No
Year-Quarter FE	Yes	Yes	No	Yes	Yes	No
Industry×Year-Quarter FE	No	No	Yes	No	No	Yes
R-squared	0.10	0.10	0.13	0.64	0.64	0.64

Table 6. Post-Covenant Violation Shareholder Payout Behavior.

This table presents the first-difference estimates of the marginal effect of covenant violation on dividends and share repurchases after four quarters, during 1997 to 2007 from Section 4.2. Detailed variable definition can be referred to Appendix C.1. covenant violation is a dummy that equals one if in the given quarter the firm violates a debt covenant for its first time. *CO* is standardized. Size is the log of total assets. Higher-order covenant controls are the second and third power of the control variables. Lagged covenant controls are the control variables lagged four quarters. All control variables are winsorized at the 1% and 99% level. Industry fixed effect is at the 2-Digit SIC level. Standard errors are clustered at the firm and year-quarter level. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	ΔLn(1+Dividend)$_{(q,\ q+4)}$			ΔLn(1+Repurchase)$_{(q,\ q+4)}$		
	(1)	(2)	(3)	(4)	(5)	(6)
Violation	-0.027***	-0.041***	-0.040***	0.021	0.003	0.002
	(-3.974)	(-4.282)	(-4.150)	(1.463)	(0.182)	(0.147)
CO×Violation		-0.060***	-0.059***		-0.077***	-0.071***
		(-3.394)	(-3.327)		(-3.239)	(-3.074)
CO		0.006	0.007*		0.037***	0.037***
		(1.616)	(1.861)		(4.769)	(4.617)
Size	0.009***	0.009***	0.009***	0.031***	0.030***	0.030***
	(2.820)	(2.744)	(2.756)	(2.982)	(2.838)	(2.819)
Institutional Ownership	-0.002	-0.010	-0.012	0.075***	0.007	0.005
	(-0.234)	(-0.966)	(-1.162)	(4.718)	(0.376)	(0.294)
Market-to-Book	0.037***	0.036***	0.038***	0.133***	0.133***	0.125***
	(5.638)	(5.548)	(5.635)	(7.985)	(8.018)	(7.618)
Operating cash flow/average assets	0.087***	0.087***	0.087***	0.240***	0.238***	0.262***
	(3.292)	(3.280)	(3.347)	(3.774)	(3.770)	(4.401)
Leverage ratio	-0.025	-0.030	-0.047	-0.352**	-0.367**	-0.414***
	(-0.370)	(-0.454)	(-0.696)	(-2.497)	(-2.611)	(-3.001)
Interest expense/average assets	-0.491	-0.461	-0.280	1.516	1.594	1.642
	(-0.699)	(-0.652)	(-0.396)	(0.547)	(0.574)	(0.641)
Net worth/assets	0.144***	0.146***	0.149***	0.337***	0.339***	0.329***
	(2.999)	(3.038)	(3.147)	(3.687)	(3.743)	(3.641)
Current ratio	0.000	0.001	0.001	0.003	0.003	0.002
	(0.629)	(0.698)	(0.764)	(1.127)	(1.125)	(0.945)
N	119,254	119,254	119,073	119,254	119,254	119,073
Lagged Covenant Controls	Yes	Yes	Yes	Yes	Yes	Yes
Higher Order Covenant Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	No	Yes	Yes	No
Year-Quarter FE	Yes	Yes	No	Yes	Yes	No
Industry×Year-Quarter FE	No	No	Yes	No	No	Yes
R-squared	0.02	0.02	0.04	0.02	0.03	0.05

Table 7. Post-Covenant Violation Shareholder Trading.

This table presents regressions of investor selling activities following a covenant violation in Section 4.3. *Sell* is the absolute value of the negative percentage change in ownership percentage investor μ has in firm i from q-1 to q. *Sell* equals zero if there is no negative change in ownership. Peer ownership is the weighted sum of investor μ's ownership percentage across firm i's industry peers, based on each peer's market value. Portfolio weight is calculated as the dollar value weight the firm has on the investor's full portfolio. Investor size is calculated as the log of its total dollar value holdings across all firms. Investors with churn ratios in the bottom tercile among all investors in the previous year are classified as low churn investors. The churn ratio is calculated following Gaspar et al. (2005). Industry fixed effect is at the 2-digit SIC level. Standard errors are clustered at the investor×year-quarter level to obtain robust P-value. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	$Sell_{(q-1, q)}$				$Sell_{(q-1, q+4)}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Investors	All Investors	Exclude Low Churn Investors	Only Low Churn Investors	All Investors	All Investors	Exclude Low Churn Investors	Only Low Churn Investors
Violation	0.021***	0.021***	0.022***	0.020***	0.016***	0.016***	0.014***	0.027***
	(17.93)	(17.86)	(16.05)	(8.935)	(11.35)	(11.27)	(8.759)	(8.787)
Violation×Peer Ownership		**0.001**	**0.002***	**-0.002**		**0.006*****	**0.003****	**0.008****
		(0.925)	**(1.793)**	**(-0.994)**		**(3.980)**	**(2.571)**	**(2.201)**
Peer Ownership		0.000	0.000	-0.000		0.000	-0.001**	0.003**
		(0.579)	(0.506)	(-0.393)		(0.197)	(-2.354)	(2.200)
Current Return	-0.057***	-0.057***	-0.068***	0.001	-0.014***	-0.014***	-0.018***	0.011
	(-23.66)	(-23.66)	(-26.28)	(0.177)	(-4.340)	(-4.340)	(-6.185)	(1.420)
Lagged Return	-0.042***	-0.042***	-0.047***	-0.012**	-0.034***	-0.034***	-0.035***	-0.025***
	(-19.15)	(-19.16)	(-19.78)	(-2.448)	(-12.82)	(-12.83)	(-13.84)	(-3.188)
Current Turnover	0.091***	0.091***	0.097***	0.052***	0.012***	0.012***	0.012***	0.013***
	(63.68)	(63.66)	(63.01)	(16.18)	(7.191)	(7.196)	(7.346)	(2.610)
Lagged Turnover	-0.016***	-0.016***	-0.016***	-0.013***	0.046***	0.046***	0.051***	0.018***
	(-12.83)	(-12.84)	(-11.71)	(-4.691)	(26.06)	(26.06)	(29.84)	(3.652)
One-year Lagged Turnover	-0.012***	-0.012***	-0.012***	-0.006***	-0.033***	-0.033***	-0.036***	-0.013***
	(-14.02)	(-14.02)	(-13.47)	(-3.242)	(-26.32)	(-26.33)	(-27.53)	(-4.881)
Book-to_market	0.009***	0.009***	0.009***	0.009***	0.008***	0.008***	0.006***	0.017***
	(23.75)	(23.77)	(21.49)	(10.39)	(14.59)	(14.60)	(11.33)	(11.29)
Lagged Ownership Percentage	-1.810***	-1.811***	-1.893***	-0.932***	0.843***	0.842***	0.889***	0.0982
	(-54.07)	(-55.41)	(-54.85)	(-10.71)	(19.13)	(19.58)	(20.22)	(0.907)
Lagged Weight in Portfolio	-0.695***	-0.695***	-0.791***	-0.484***	-0.020	-0.020	0.127***	-0.288***
	(-43.20)	(-43.34)	(-42.23)	(-17.67)	(-1.128)	(-1.167)	(6.299)	(-8.648)
Lagged Investor Size	-0.011***	-0.011***	-0.011***	-0.005	-0.001	-0.001	0.001	0.021**
	(-4.812)	(-4.854)	(-4.500)	(-0.674)	(-0.277)	(-0.296)	(0.303)	(2.545)
N	4,042,311	4,042,311	3,316,727	725,535	4,042,727	4,042,727	3,317,186	725,491
Industry×Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.16	0.16	0.15	0.16	0.19	0.19	0.16	0.42

Table 8. Post-Covenant Violation Shareholder Trading - Large and Long-Term Shareholders.

This table presents regressions of investor selling activities following a covenant violation in Section 4.3. *Sell* is the absolute value of the negative percentage change in ownership percentage investor μ has in firm i from q-1 to q. *Sell* equals zero if there is no negative change in ownership. Peer ownership is the weighted sum of investor μ's ownership percentage across firm i's industry peers, based on each peer's market value. Portfolio weight is calculated as the dollar value weight the firm has on the investor's full portfolio. Investor size is calculated as the log of its total dollar value holdings across all firms. Investors are ranked within each firm based on their ownership percentage. Investors are classified as dedicated or quasi-indexer following Bushee (1998). Industry fixed effect is at the 2-digit SIC level. Standard errors are clustered at the investor×year-quarter level to obtain robust P-value. T-statistics are displayed in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	$Sell_{(q-1, q)}$			$Sell_{(q-1, q+4)}$		
	(1)	(2)	(3)	(4)	(5)	(6)
	Top 10	Top 5	DED/QIX	Top 10	Top 5	DED/QIX
Violation	0.017***	0.014***	0.023***	0.014***	0.017***	0.029***
	(10.04)	(6.423)	(5.440)	(6.269)	(6.074)	(5.543)
Violation×Peer Ownership	**-0.001**	**-0.001**	**-0.001**	**0.005*** **	**0.004** **	**0.008** **
	(-0.573)	**(-0.723)**	**(-0.680)**	**(3.209)**	**(2.054)**	**(2.507)**
Peer Ownership	-0.000	-0.000	-0.001	-0.002***	-0.002***	-0.004*
	(-0.049)	(-0.088)	(-0.665)	(-2.623)	(-3.422)	(-1.700)
Current Return	-0.038***	-0.030***	-0.023***	0.001	0.006*	-0.001
	(-15.17)	(-11.00)	(-2.679)	(0.306)	(1.695)	(-0.0656)
Lagged Return	-0.034***	-0.024***	-0.026***	-0.018***	-0.012***	-0.030***
	(-15.30)	(-9.918)	(-3.725)	(-5.825)	(-3.218)	(-3.194)
Current Turnover	0.128***	0.138***	0.075***	0.044***	0.053***	0.006
	(51.79)	(45.72)	(13.16)	(16.07)	(15.95)	(0.813)
Lagged Turnover	-0.036***	-0.042***	-0.015***	0.062***	0.073***	0.029***
	(-17.88)	(-16.62)	(-3.608)	(23.19)	(23.05)	(4.749)
One-year Lagged Turnover	-0.015***	-0.016***	-0.013***	-0.037***	-0.038***	-0.018***
	(-11.30)	(-10.47)	(-4.766)	(-18.60)	(-15.80)	(-3.803)
Book-to_market	0.009***	0.007***	0.014***	0.009***	0.010***	0.018***
	(15.90)	(11.89)	(7.481)	(9.880)	(9.507)	(6.313)
Lagged Ownership	-1.184***	-1.027***	-1.250***	-0.311***	-0.502***	0.579***
	(-36.55)	(-29.00)	(-9.450)	(-7.572)	(-10.46)	(4.363)
Lagged Weight in Portfolio	-0.557***	-0.432***	-0.682***	-0.346***	-0.418***	-0.357***
	(-29.69)	(-19.72)	(-13.84)	(-14.10)	(-14.22)	(-6.758)
Lagged Investor Size	-0.005*	-0.005*	-0.005	0.001	0.001	-0.018**
	(-1.857)	(-1.935)	(-0.496)	(0.522)	(0.417)	(-2.035)
N	879,624	466,528	328,388	880,140	466,864	328,356
Industry×Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.15	0.15	0.13	0.28	0.30	0.26

C Appendices

C.1 Variable Definitions

Variables	Description
CO	Firm level measure on the level of ownership overlap between the focal firm and its industry peers, measuring the interest the firm's shareholders have in both its rivals' and its own values.
Violation	A dummy variable that equals one if the firm reports a covenant violation in the quarter.
Size	The log of total assets.
Leverage	The sum of debt in current liabilities and long term debt divided by total assets.
Market-to-Book	The sum of debt in current liabilities, long term debts, preferred stocks, deferred taxes, and market value, divided by total assets.
ROA	Return on assets as operating income divided by total assets.
Cash Flow	Operating cash flow divided by average total assets.
Z Score	Firm distance to default measure. Z=1.2*(working capital/total assets)+1.4*(retained earnings/total assets)+3.3*(EBIT/total assets)+0.6*(shareholder equity/debt)+1.0*(sales/total assets).
Institutional Ownership	Percentage of shares outstanding held by institutional investors.
HHI	The level of industry concentration based on sales market shares, taken at the prior fiscal year end, calculated as the sum of square of market shares within the 4-digit SIC industry.
CAPEX	Quarterly capital expenditures scaled by average total assets.
Ln(PPE)	The log of (net plant, property, and equipment).
Ln(1+Dividend)	The log of (1 + dividend paid).
Ln(1+Repurchase)	The log of (1 + share buybacks).