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Abstract

With free cash flows, borrowers can accumulate cash or voluntarily pay down debts. However, sometimes creditors impose a mandatory repayment covenant called "excess cash flow sweep" in loan contracts to force borrowers to repay debts ahead of schedule. About 17% of borrowers in our sample (1995-2006) have this covenant attached to at least one of their loans. We find that the sweep covenant is more likely to be imposed on borrowers with higher leverage (i.e., where risk shifting by equity holders is more likely). The results are robust to including borrower fixed effects or using industry median leverage as a proxy. The covenant is more common also in borrowers where equity holders appear to have firmer control, e.g., when more shares are controlled by institutional block holders, when firms are incorporated in states with laws more favorable to hostile takeovers, or when equity holders place higher valuation on *excess* cash holdings. These determinants suggest that the sweep covenant may be motivated by creditor-shareholder conflicts. Finally, we show that the covenant has real effects: borrowers affected by the sweep covenant indeed repay more debts using excess cash flows, and they spend less in capital investment and pay out fewer dividends to shareholders.

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1. Introduction

What do firms do with their free cash flows, i.e., money left over from cash incomes after capital expenditures, scheduled interest payments, and dividend payouts? They may increase cash holdings to prepare for future investment projects and funding shortages. Alternatively, they may pay down existing debts ahead of schedule. They can also do both. The literature on cash holding and capital structure policies typically consider the decisions to be the firms', studying why firms accumulate certain levels of cash holdings (Kim, Mauer, and Sherman, 1998; Foley, Hartzell, Titman and Twite, 2007; Harford, Mansi, and Maxwell, 2008). Firms accumulate more cash if future cash flows are more volatile and investment opportunities are less predictable (Opler, Pinkowitz, Stulz, and Williamson, 1999). They also adjust capital structure with a target debt ratio in mind, trading off tax-shelter benefits and bankruptcy deadweight costs (Scott, 1976), and taking into account adjustment costs and market mispricing (Fama and French, 2002; Baker and Wurgler, 2002; Flannery and Rangan, 2006; Leary and Roberts, 2005). Finally, financially constrained firms with poor access to credit tend to save more cash out of cash flows (Almeida, Campello and Weisbach, 2004; Acharya, Almeida, and Campello 2006).

The classic agency problem of free cash flow is corporate managers' tendency to spend excess cash on value-reducing projects instead of paying out to shareholders (Jensen, 1986; Myers and Rajan, 1998). The literature considers the main conflicts to be those between shareholders and management. However, the interests of creditors and shareholders (who have a convex payoff claim) can diverge and they may disagree on optimal cash holding and capital structure policies. What is considered good corporate governance and good corporate policies from the shareholders' perspective may be detrimental to the creditors' interests (Maxwell and Stephens, 2003; Cremers, Nair, and Wei, 2007; Chava, Livdan, and Purnanandam, 2009; Jiang, Li, and Shao, 2008; Ferreira and Matos, 2007).

Although control rights usually rest with shareholders, cash holding and capital structure policies concern and can be influenced by creditors. Creditors may use loan covenants to protect their own interests in the absence of formal payment defaults (Berlin and Loeys, 1988; Berlin and Mester, 1992; Chava, Kumar, Warga, 2009). With excess cash flows, firms can either save cash or repay debts. If cash is "negative debt" (Acharya,

Almeida, and Campello 2006), the firm and its creditor should be indifferent between the two choices. However, sometimes banks don't allow borrowers to save cash. They use an "excess cash flow sweep" covenant to exercise direct control and force borrowers to disgorge free cash flow. The covenant allows borrowers to invest operational cash incomes in equipment, plants, etc., to pay out to shareholders, but does not allow borrowers to save cash in their own coffers for future investments. Instead, the borrower is required to apply a certain percentage (typically 50% or 75%) of the excess cash flow to the repayment of debts ahead of schedule.

Using the covenant to take active control of free cash flows, creditors must have some concerns about the use and control of cash by management and shareholders. The literature exemplified by Jensen and Meckling (1976) suggests that owner-managers may have incentives to take actions that may negatively affect creditors' wealth, motivating the use of covenants in debt contracts to restrict management behavior. The sweep covenant, by requiring regular payout to creditors, may help discipline management, similar to the role of share dividends for shareholders.

Similar to dividends, the covenant is not costless for borrowers. By reducing the borrowers' cash holdings, it may reduce their financial flexibility and may create higher risk of financial distress for borrowers. It may also encourage the borrower to invest in negative NPV projects or to unnecessarily accelerate future investment projects when experiencing large cash inflows, because the covenant will transfer control of any unused excess cash to creditors.

In this paper, we analyze 3720 private credit agreements to identify the causes and consequences of the sweep covenant. We ask: why do creditors want to control borrowers' free cash flows? And what happens when they are in control?

We find that the sweep covenant tends to be imposed on firms with higher leverage, because the problems of creditor-shareholder conflicts and risk shifting are most severe among highly levered borrowers (see Smith and Warner (1979), Jensen and Meckling (1976), Myers (1977), Parrino and Weisbach, 1999). The results hold also when we exploit within-firm variations in leverage, for borrowers that take out more than one loan during our sample. Using industry median leverage to mitigate endogeneity concerns, we also show that the covenant is more common in highly levered industries.

The covenant is also more likely when more of a firm's shares are owned by institutional block holders, which arguably can exercise greater influence on management to adopt policies in favor of shareholders but maybe at the cost of creditors (Cremers, Nair, and Wei, 2007). The covenant is more likely when the borrower is incorporated in a state where anti-takeover laws are weaker. Anti-takeover statutes can reduce the vulnerability of the firm to hostile takeovers, which are typically value-reducing events for creditors (Asquith and Wizman, 1990; Billett, King, and Mauer, 2004; Warga and Welch, 1993). These results suggest that creditors' attempt to directly control free cash flow may be motivated by creditor-shareholder conflicts of interests. We then show that the covenant is more likely for borrowers whose shareholders put a higher value on excess cash holdings. We interpret the higher value as evidence that shareholders believe that they are in firmer control of the cash and corporate payout policies.

Finally, we show that the covenant is effective in changing corporate policies in favor of creditors. Borrowers with the sweep covenant indeed repay debts faster using excess cash flows. They also spend less in capital investment and pay out fewer dividends, suggesting that the excess cash flow sweep covenant, which requires borrowers to pay out a certain percentage of cash in excess of capital expenditure and dividend payments, does not create perverse incentives for borrowers to dissipate cash inflows inefficiently.

This paper adds to the empirical literature on the shareholder-creditor conflict and how creditor control affects corporate policies. Among the studies in that literature are Bulan, Hull, and Yun (2009) on dividend policy, Roberts and Sufi (2009) on capital structure, Chava and Roberts (2007) and Nini, Smith, and Sufi (2009) on investment policies, Beatty, Chen, and Zhang (2009) on the use of interest rate derivatives, and Cheyne and Nini (2009) on the purchases of business insurance.

The rest of the paper is organized as follows. The next section provides a brief background discussion of the excess cash flow sweep covenant. Section 3 examines the determinants of the covenant and shows that the leverage ratio is a robust predictor. Section 4 uses several proxies of strong shareholder influence to show that creditor-shareholder conflicts may drive creditors' decisions in imposing the sweep covenant. Section 5 controls for the presence of other loan covenants. Section 6 shows that creditors

impose the covenants on firms whose shareholders place a higher value on excess cash holdings. Section 7 shows that the sweep covenant is effective in forcing borrowers to reduce debts with free cash flows, while Section 8 shows that the covenant does not appear to create new distortions in management's incentive in handling cash outlays. Section 9 concludes the paper.

2. The Excess Cash Flow Sweep Covenant

"Excess cash flow sweep" is a mandatory repayment covenant that requires a borrower to use a certain percentage (typically 50% or 75%) of "excess cash flow" to pay down the balance of a loan at the end of each fiscal year when the loan is outstanding, as opposed to a typical constant amortization schedule. A sweep covenant is not used for bonds and rarely seen on investment-grade bank loans, but is frequently seen on levered loans.

Below is a typical excess cash flow sweep covenant. The example is extracted from a credit agreement of the Six Flags Theme Parks Inc. with Bank of America:

> "(c) Subject to the last sentence of this paragraph, unless the Required Prepayment Lenders shall otherwise agree, if, for any fiscal year of Holdings commencing with the fiscal year ending December 31, 2003, there shall be *Excess Cash Flow*, then, on the relevant Excess Cash Flow Application Date, the Tranche B Term Loans shall be prepaid, and/or the Multicurrency Commitments shall be reduced, by an amount equal to 50% of such Excess Cash Flow, as set forth in Section 6.5(d). Each such prepayment and commitment reduction shall be made on a date (an "EXCESS CASH FLOW APPLICATION DATE") no later than ten days after the earlier of (i) the date on which the financial statements of Holdings referred to in Section 9.1, for the fiscal year with respect to which such prepayment is made, are required to be delivered to the Lenders and (ii) the date such financial statements are actually delivered. No prepayment shall be required pursuant to this paragraph (c) in respect of any fiscal year if the Consolidated Leverage Ratio at the end of such fiscal year was less than or equal to 2.5 to 1.0."

The agreement also explicitly defines "excess cash flow." The definition can be found in the Appendix. Unlike an "asset sales sweep" covenant that is triggered and becomes relevant only when the borrower makes a major asset sale, the "excess cash flow sweep" covenant is binding every year when the borrower produces a positive "excess cash flow" from regular operations. In the example above, the sweep requirement can be exempted if the amount of consolidated long-term debts is less than 2.5 times EBITDA, which, however, is not usually the case for an average borrower. Finally, unlike mandatory repayment covenants in bonds where the borrower can be given 6-9 months to make the necessary repayment, the grace period for excess cash flow sweep is short — in the example above no later than 10 days after the financial statements.

Let's take the Six Flags Theme Parks Inc. as an example to illustrate how the covenant affects corporate finance. Every loan Six Flags took out during 1996 and 2005 came with a sweep covenant. Six Flags was highly levered, with a debt to asset ratio of about 50%. An amusement park invests large sums up-front on park facilities and then receives revenues for the next several years. When Six Flags took out the first loan in October 1996, it had a gross sales margin of 52% and a quarterly EBITDA to asset ratio of 12%. A theme park needs to save cash out of cash flows for future replacement and upgrade of its investments. An excess cash flow sweep covenant effectively prevents the park from saving the cash in its own coffers. Instead, the park has to use 50% of the excess cash flows to repay debts when it experiences high cash flows. In the future when the park needs to make new investments to replace and upgrade obsolete facilities, it then needs to negotiate with the bank to obtain a new loan and in the process subject itself to the bank's discipline. Clearly in this case the creditors do not consider cash in the borrower's own custody as "negative debts."

3. The Determinants of the Excess Cash Flow Sweep Covenant

To conduct an empirical analysis, we start from Nini, Smith, and Sufi's (2009) collection of 3720 credit agreements signed by 1939 publicly listed firms during 1996 to 2005. They collect the actual text of the contracts from SEC filings: 13-Ds, 14-Ds, 13-Es, 10-Ks, 10-Qs, 8-Ks, and Registration Statements (S-series filings). The credit terms

(interest rates, maturity, amount, etc.) of these contracts are summarized in Nini, Smith, and Sufi (2009).

We then use an automatic text searching software to parse through the credit agreement files. Among the 3720 credit agreements, 525 (14%) contain the words "excess cash flow." We read the credit agreements and verify that 460 (12.4%) indeed contain "excess cash flow sweep" covenants. The false matches are credit agreements that define the term excess cash flow in the text for purposes (e.g., dividend restrictions) other than mandatory repayment.

In Table 1, we compare borrower characteristics of loans with and without the sweep covenant. Borrowers with the sweep covenants have higher leverage ratios. They are smaller, hold less cash, have less working capital and fixed assets, invest less in R&D, have more intangible assets, and have a lower Tobin's Q ratio. However, they don't seem to be very different in cash flows as measured by EBITDA or EBIT ratios.

More of their shares are controlled by institutional block holders, i.e., institutional investors who control at least 5% of shares outstanding. Their corporate charters have fewer anti-takeover provisions, and they are more likely to have dual class share structures. Finally, they are more likely to be incorporated in states where anti-takeover laws are weaker.

We start by analyzing which borrowers are more likely to have a sweep covenant imposed by their creditors. The literature has provided some guidance on where to look for the determinants.

First, creditors may impose a sweep covenant to mitigate agency problems related to creditor-shareholder conflicts. Creditors are more concerned about cash being controlled by borrowers with more agency problems, worrying that the owner/managers may misuse the cash at the expense of creditors. Highly levered firms are most exposed to such problems (Smith and Warner, 1979; Jensen and Meckling, 1976; Myers, 1977). Shareholders and creditors may disagree on the optimal level of leverage. Shareholders typically desire a higher leverage level than the more risk-averse creditors. We expect that creditors are more likely to impose the covenant on borrowers with higher leverage.

Second, borrowers with less working capital, fewer fixed assets, and more intangible assets should have more agency problems because of the difficulties in

monitoring intangible assets, as well as the increasing bargaining power of shareholders in renegotiations (Davydenko and Strebulaev, 2007). Also, since the sweep covenant forces a borrower to hold less cash than it desires, from the borrowers' perspective, the covenant is less desirable when cash is more valuable.[1]

Finally, the interests of management may not always be aligned with those of shareholders. Sometimes they are more aligned with creditors' interests because management also has fixed claims on the firm. However, management may be less entrenched from shareholders in states with weaker anti-takeover laws and in firms with more shareholder-friendly charters/bylaws. Large institutional investors can also play an active role in directing the management. In those firms, management is more likely to adopt policies consistent with the interests of shareholders and sometimes at the expense of creditors. Arguably, the creditor is more likely to impose the sweep covenant on firms with stronger shareholder control.

To explain why some loan contracts have a sweep covenant, we specify the probability model as follows. The dependent variable is a dummy variable taking the value of 1 when a loan contract has an excess cash flow sweep covenant:

$$\begin{aligned}\text{Prob}(\text{Sweep}=1|X) = \Phi(&\alpha + \lambda_1 \text{Leverage} + \lambda_2 \text{ Shareholder Control} \\ &+ \beta_1 \text{Ln(Sales)} + \beta_2 \text{Working Capital Ratio} + \beta_3 \text{Cash Ratio} + \beta_4 \text{PPE Ratio} \\ &+ \beta_5 \text{R \& D Ratio} + \beta_6 \text{Intangible Ratio} + \beta_7 \text{Tobin's Q} + \beta_8 \text{EBIT} + \varepsilon)\end{aligned} \quad (1)$$

The book leverage ratio is total debts (data51+data45) over total assets (data44). To mitigate endogeneity concerns, all borrower characteristics are measured at the last quarter-end before the signing of the credit agreement. That is, the leverage ratio does not include the new loan in question.

Ln(sales) is Ln(1+data2). Working capital ratio is the ratio of gross current assets (data40) excluding cash holdings (data36) to net assets (data44-data36). Cash ratio is

[1] Cash is more valuable when the borrower has better investment opportunities, which can be proxied by higher R&D intensity, sales growth, and Tobin's Q ratio. Cash also is more important for borrowers and industries with more volatile cash flows. On the other hand, the value of cash is lower when there are fewer hedging needs (i.e., cash flow is high when investment opportunity is high). Cash is more valuable for financially constrained firms and for firms with less access to the capital markets. Borrowers that value cash less should have less desire to accumulate cash and be more willing to pay down debts with excess cash flows.

cash (data36) over total assets. PPE ratio is the ratio of plant, property and equipment assets (data42) to total assets. R&D ratio is R&D expenses (data4) over total assets. The intangible ratio is intangible assets (data234+data235) over total assets. Tobin's Q ratio is (data44+data14*data61-data60-data52)/data44. EBIT ratio measures profitability and is defined as earnings before interest and taxes (data8+data22+data6) over total assets.

In Tables 3, 4, and 5, we do not consider the effect of shareholder control and first aim to establish the robust effect of the leverage ratio on the incidence of the sweep covenant. In Table 3, the probability model is estimated with three alternative methods, to ensure robustness of results. Columns 1 and 2 are based on a Probit model and pooled panel data. Columns 3 and 4 are based on a random effect Probit model. Columns 5 and 6 are based on a linear probability model with borrower fixed effects for borrowers that take out more than one loan during our sample period. Standard errors are adjusted for the clustering of residuals by the same borrowers, because firm characteristics such as the leverage ratio may be persistent over time.

We find that the sweep covenant is more likely to be imposed on more levered firms, suggesting that risk shifting by equity holders may be the main concern that drives creditors to impose a sweep covenant. The Probit coefficient in column 1 suggests that, an increase in the book leverage ratio from 0.237 to 0.551 (i.e., an increase from the 25^{th} to the 75^{th} percentile value) will raise the probability of a sweep covenant by 7.2 percentage points. The effect is economically large and represents a 58% increase from the sample mean, since only 12.4% of loans in the sample carry the sweep covenant.

The results hold also in panel fixed effect models that exploit within-firm variations in leverage and the incidence of the sweep covenant in different loans taken out by the same borrowers. Results in columns 5 and 6 suggest that when a borrower becomes more levered, the new loan it takes out is more likely to come with a sweep covenant than previous loans. We measure firm leverage based on book value of assets (in columns 1, 3, 5) and market value of assets (in columns 2, 4, 6), respectively, and our results are robust to both measures.

We also find that the sweep covenant is more likely to be present in loan contracts when borrowers are smaller, have less working capital or fewer fixed assets (property, plant, and equipments), invest less in R&D, or have more intangible assets. We do not

find lower profitability to be related to the presence of a sweep covenant. The results suggest that banks are more likely to impose the covenant when the borrower's assets have lower liquidation values (i.e., less inventory and fewer accounts receivable, fewer hard assets and more intangible assets, and smaller firms). These characteristics are associated with greater agency problem concerns.[2]

In a panel model with borrower fixed effects (columns 5 and 6), we notice that only the leverage variable remains statistically significant. The changes in other firm characteristics over time, such as size, asset liquidity, R&D intensity, etc., do not significantly determine whether a new loan would come with a sweep covenant.[3]

In column 7, we use the median book leverage ratio in a three-digit SIC industry to replace firm-specific leverage ratios. This alternative specification mitigates the concern that the sweep covenant and the leverage ratio are jointly determined by some common unobserved factors, because the industry median arguably is beyond the control of individual firms in the industry. There are 224 three-digit SIC industries in our sample. The regression results confirm that the sweep covenant is more frequently seen in industries with high book leverage ratios, e.g., amusement parks, hotels, builders, cable networks, and less frequently seen in low-leverage industries, e.g., computer, software, and medical equipments.

In column 8, when we use the industry median of the *market* leverage ratio as an alternative leverage ratio, the coefficient has the right sign but is not statistically significant. However, note that in both columns 7 and 8, standard errors are adjusted to be robust to the clustering of residuals by industry, which has substantially reduced the regression model's statistical power.

In Table 4, we experiment with several alternative definitions of control variables. In column 1, we use the log of assets instead of the log of sales to measure firm size. In

[2] The less frequent presence of a sweep covenant among high R&D firms suggests that the interests of borrowers are accommodated as well, because high R&D firms tend to benefit more from a higher level of cash holdings (in order to prepare for uncertain investment opportunities and to compete effectively with rivals).

[3] The explanation may be that since a loan lasts for many years, creditors are more interested in the long-term tendency of borrowers with these firm characteristics. A short-term increase in asset liquidity may not convince creditors that asset liquidity would not be reduced in the future, and therefore, creditors will continue to impose a sweep covenant. The leverage ratio, however, is the key creditor-shareholder conflict that creditors intend to address, and therefore, they would respond to the current level of the leverage ratio.

column 2, we use net working capital instead of gross working capital to measure asset liquidity. In column 3, we use the market-to-book asset ratio instead of Tobin's Q ratio. In columns 4 and 5, we use EBITDA ratio and the after-tax net income ratio, respectively, to measure profitability. In all specifications, we find that the sweep covenant is more likely to be imposed on more highly levered firms.

In Table 5, we test whether the relation between the leverage ratio and the sweep covenant is stronger for certain types of firms, by including interaction terms between the leverage ratio and some borrower characteristics. In columns 1 and 2, we do not find the relation to be significantly stronger for firms with higher levels of cash holdings or lower Tobin's Q ratios, although the accumulation of cash reserves arguably should be less valuable, and hence a sweep covenant less costly, for such firms with plenty of cash but lower investment opportunities.

In columns 3 and 5, we do find that the sweep covenant responds more to a high leverage ratio among more profitable borrowers as measured by EBIT (the earnings before interest and taxes ratio) or net income (after-tax net income ratio). The combination of high leverage and high cash flows may concern creditors regarding how management may use the free cash. As more profitable firms are targeted, the result suggests that the sweep covenant is imposed not in response to borrowers' financial distress but in response to a higher chance of agency problems related to a combination of high free cash flows and high leverage.

4. Is the Sweep Covenant a Response by Creditors to Strong Shareholder Control?

Creditor-shareholder conflicts of interests exist because shareholders have a convex payoff claim, whereas creditors have a fixed claim. What is considered good corporate governance for shareholders may negatively affect creditors' interests (Cremers, Nair, and Wei, 2007; Chava, Livdan, and Purnanandam). Creditors may use the excess cash flow sweep covenant to prevent shareholders from adopting policies that shift risks to the creditors (e.g., higher leverage, higher dividend payment, risky investments).

In Table 6, we examine this hypothesis by studying whether the sweep covenant is more likely in firms where shareholders exercise stronger control.

Several internal and external factors may contribute to stronger shareholder control, and therefore, we look at a number of different measures. Our first measure is the percentage of institutional block ownership, i.e., the sum of all ownership positions greater than 5% held by institutions investors. A larger number indicates that management is more influenced by larger active shareholders who have an incentive to protect their own investments. This measure is used by Cremers and Nair (2005), Cremers, Nair, and Wei (2007), etc., and is shown to be related to value-enhancing activities for shareholders. About one-third of borrowers in the sample have greater than 20% of their shares controlled by institutional block holders.

Our second measure is the firm-level anti-takeover provision index developed in Bebchuk, Cohen, and Ferrell (2005) and refined from Gompers, Ishii, and Metrick (2003). It measures the number of anti-takeover provisions in a firm's charter and captures the degree of managerial entrenchment due to takeover defenses. Bebchuk et al. (2005) investigate the relative importance of the 24 provisions followed by the Investor Responsibility Research Center (IRRC) and put forward an entrenchment index based on six provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers, and for charter amendments.[4] A small number indicates that management is less protected by anti-takeover provisions and thus more responsive to shareholder demands. We are able to create this measure for only 72% of borrowers in our sample. The IRRC data are updated every two years, but corporate charters do not change often.

Our third measure is the state-level anti-takeover law index developed in Bebchuk and Cohen (2003). The index value ranges from 0 to 5 and covers five types of anti-takeover laws: Control Share Acquisition Statute, Fair Price Statute, Business Combination Statute, Poison Pill Endorsement Statute, and Constituencies Statute. A small index number indicates that it is easier to take over companies incorporated in a certain state and management is therefore less entrenched from the shareholders (Bertrand and Mullainathan, 2003). More than 62% of borrowers in our sample were

[4] They find that increases in index values are monotonically associated with economically significant reductions in firm valuation as well as large negative abnormal returns during the 1990–2003 period. The other 18 IRRC provisions not in their entrenchment index were uncorrelated with either reduced firm valuation or negative abnormal returns.

incorporated in the state of Delaware, where only the Business Combination Statute was in effect. Nearly 27% of borrowers were incorporated in states where four or more of the statutes mentioned above were in effect. Among the most popular states for incorporation, Pennsylvania and Ohio are the least favorable to takeover activities, while California and Texas are the most favorable.

In Table 6, columns 1 and 2 show that a sweep covenant is more likely to be imposed when more of a borrower's shares are owned by institutional investors in the form of large blocks (i.e., greater than 5% of shares outstanding). Column 1 shows that total institutional ownership, which includes small (less than 5%) and likely passive stakes, do not matter. Creditors impose the sweep covenant only when there are many block holders, because large block holders have greater incentives to influence corporate policies in favor of shareholders. In column 3, we use an alternative measure: a dummy variable for borrowers greater than 20% of whose shares are owned by block holders. The previous result still holds.

In column 4, we find that creditors are more likely to impose the sweep covenant on borrowers incorporated in states where laws are friendlier to hostile takeovers. This is consistent with other studies (Klock, Mansi, and Maxwell, 2005; Francis, Hasan, John, and Waisman, 2006; Mansi, Maxwell, and Wald, 2007) that find a negative correlation between anti-takeover laws and credit risks. Note that in the regressions we already control for leverage, which is shown by some studies (Garvey and Hanka, 1999; Francis et al. 2006) to be negatively correlated with state anti-takeover laws.

In column 5, we study the effect of firm-level anti-takeover provisions in corporate charters and bylaws, as well as the effect of dual-class share structures. A lower number for the firm-level anti-takeover index suggests greater shareholder control vs. management. Since management exhibits risk preferences similar to those of fixed income claimants such as creditors, we expect that the creditors will worry more about creditor-shareholder conflicts in borrowers scoring lower in this anti-takeover index, i.e., where management is less entrenched.

A dual-class share structure may have a negative impact on non-controlling shareholders, but it has an ambiguous effect on creditors. The controlling shareholder who gains disproportionate voting rights through the dual-class share structure may direct

corporate policies in favor of shareholders by having a more active and stronger influence on management. However, the controlling shareholder may also have the same preference for stability as creditors.

Results in column 5 show that creditors' imposition of a sweep covenant is not related to anti-takeover provisions in corporate charters, nor is it related to a dual-class share structure. In column 6, we replace the anti-takeover index with a dummy variable for borrowers with an index value equal to or less than 2, which indicates less management entrenchment and greater shareholder control. Still, we do not find the probability of a sweep covenant to be affected by anti-takeover corporate charters.

In columns 7 and 8, we study the interaction effect between leverage and shareholder control. Previous results show that the relation between leverage and a sweep covenant is very robust and that the relation is stronger when the borrower is more profitable. Leverage creates the potential for risk shifting and conflict of interest between creditors and shareholders. Arguably, creditors may worry more about leverage when shareholders have stronger control over corporate policies.

In column 7, we interact the leverage ratio with the share of institutional block ownership. Indeed, we find that creditors impose a sweep covenant on highly levered borrowers much more often when more of the borrower's shares are owned by large institutional block holders. In column 8, we interact the leverage ratio with the firm-level anti-takeover index. Again, we do not find anti-takeover provisions in corporate charters to matter for creditors' decisions in imposing a sweep covenant.

5. Controlling for the Presence of Other Covenants

A loan contract typically contains more than one covenant. It is possible that the creditors use a set of several covenants, which include a sweep covenant, to respond to the same agency problems. Creditors frequently impose debt to cash flow ratio covenants, interest coverage ratio, etc., to prevent borrowers from over-levering themselves. As we show in Table 7A, the incidence of the imposition of a sweep covenant is significantly correlated with several other loan covenants, many of which are not directly targeted at the free cash flow problem.

To support our hypothesis that the excess cash flow sweep covenant has an independent purpose and is used to mitigate free cash flow problems and creditor-shareholder conflicts, we start from the regression model in Table 6, column 2 (which is our most comprehensive model) and now also control for the presence of other loan covenants. The new coefficients indicate, conditional on the presence of another loan covenant, how much the leverage ratio and the institutional block holder share affect the likelihood of a sweep covenant.

The results are reported in Table 7B. In columns 1–4, we include a dummy variable for loans with a capital expenditure restriction covenant, a variable for any debt to cash flow ratio covenants, a variable for any coverage ratio covenants, and a variable for any debt to balance-sheet ratio covenants, respectively.

We find that, even after controlling for the incidence of other loan covenants, a higher leverage ratio and strong shareholder control remain significantly related to a higher incidence of a sweep covenant. In other words, the sweep covenant has an independent purpose and is not just part of a covenant package that creditors routinely impose on borrowers. The sweep covenant is less common (12.4% of the sample loans) than the capex restriction covenant (31.9%), the debt to cash flow ratio covenant (57.5%), the coverage ratio covenant (74.3%), or the debt to balance-sheet ratio covenant (29.2%). The results seem to suggest that the creditors impose the sweep covenant over and above other covenants, when shareholder-creditor conflicts seem to be stronger than usual.

6. Shareholder Valuation of Cash and the Sweep Covenant

We have found that creditors are more likely to impose direct control on free cash flows when a borrower is more levered and when a borrower appears more firmly controlled by shareholders. The results may suggest that creditors use a sweep covenant to respond to shareholder-creditor conflicts of interests. However, it is also possible that both stronger shareholder control and creditor control is responding to the same agency problems. To distinguish the two alternative hypotheses, we estimate the value of cash for shareholders and relate it to the incidence of the imposition of a sweep covenant.

Firms in countries with poor investor protection hold more excess cash (Dittmar, Marht-Smith, and Servaes, 2003) and they are valued less by shareholders (Kalcheva and

Lins, 2007). Cash holdings in poorly governed firms are valued less by shareholders because management may misuse the cash for its private benefit (Pinkowitz, Stulz, and Williamson, 2006; Dittmar and Marht-Smith, 2007). The excess cash flow sweep covenant is supposed to protect the interests of creditors against similar management agency problems. However, the interests of creditors may conflict with the interests of shareholders. For example, shareholders desire that the firm have more cash holdings in order to increase financial flexibility, while creditors want the opposite to prevent, for example, asset substitution problems. Adding a further layer to the complexity is the divergence of interest between management and shareholders.

How is shareholders' valuation of excess cash holdings related to the inclusion of a sweep covenant in loan contracts? For cash holdings in excess of what is needed for operational purposes, the agency problem shareholders are worried about is that management may waste the excess cash reserve in unprofitable acquisitions or investments (Harford, 1999; Mikkelson and Partch, 2003) instead of returning it to shareholders. If we observe that shareholders place higher valuation on a firm's excess cash holdings, it may be an indication that shareholders believe that management may put the cash into the most productive use from the shareholder's perspective. However, it is not clear whether creditors would be more or less likely to impose a sweep covenant in this case. On the one hand, creditors may not want to impose a covenant, since agency problems may be less severe. On the other hand, a higher valuation of the excess cash holdings by shareholders indicates that shareholders have firmer control of the cash. Among many possibilities, shareholders may believe that they can force management to pay out the excess cash holdings to shareholders in the form of dividends (Hu and Kumar, 2004) or in a levered buyout by external bidders (Lehn and Poulsen, 1989). These are all good news to shareholders but clearly indicate higher risks for creditors, and creditors may want to impose an excess cash flow sweep covenant to address this problem (Asquith and Wizman, 1990).

We use the Dittmar and Marht-Smith (2007) method to estimate the value of cash because with the alternative method used by Faulkender and Wang (2006), it is not possible to distinguish between changes in total cash and changes in *excess* cash. Jensen

(1986) argues that managers waste free cash flows, not the cash needed for daily operations.

As in Dittmar and Marht-Smith (2007), the model has the market-to-book ratio as the dependable variable, and on the right-hand side, the excess cash holdings as the explanatory variable, as well as a comprehensive set of control variables that may influence a firm's market valuation. Excess cash holding is the residual from an empirical model that predicts what level of cash holdings a certain firm normally has. We include year dummies to capture macroeconomic and time trend effects and firm fixed effects to capture unobserved heterogeneity and industry effects. The model is specified as follows:

$$\begin{aligned}\frac{MV_{i,t}}{NA_{i,t}} &= \beta_0 + \chi\frac{XCash_{i,t}}{NA_{i,t}} + \varsigma_1 Sweep + \varsigma_2 Sweep * \frac{XCash_{i,t}}{NA_{i,t}} \\ &+ \beta_1\frac{E_{i,t}}{NA_{i,t}} + \beta_2\frac{dE_{i,t}}{NA_{i,t}} + \beta_3\frac{E_{i,t+2}}{NA_{i,t}} + \beta_4\frac{RD_{i,t}}{NA_{i,t}} + \beta_5\frac{dRD_{i,t}}{NA_{i,t}} + \beta_6\frac{dRD_{i,t+2}}{NA_{i,t}} \\ &+ \beta_7\frac{D_{i,t}}{NA_{i,t}} + \beta_8\frac{dD_{i,t}}{NA_{i,t}} + \beta_9\frac{dD_{i,t+2}}{NA_{i,t}} + \beta_{10}\frac{I_{i,t}}{NA_{i,t}} + \beta_{11}\frac{dI_{i,t}}{NA_{i,t}} + \beta_{12}\frac{dI_{i,t+2}}{NA_{i,t}} \\ &+ \beta_{13}\frac{dNA_{i,t}}{NA_{i,t}} + \beta_{14}\frac{dNA_{i,t+2}}{NA_{i,t}} + \beta_{15}\frac{MV_{i,t+2}}{NA_{i,t}} + \sum_t year_t + \sum_i Firm_i + \varepsilon_{i,t}\end{aligned} \quad (6)$$

where dX_t indicates a change in X from time t-2 to t. $MV_{i,t}$=market value of total assets (data199*data25+data181). $NA_{i,t}$=net assets (data6-data1). $E_{i,t}$=earnings before extraordinary items (data18+data15+data50+data51). $RD_{i,t}$=R&D expenses (data46). $D_{i,t}$=common dividends (data21). $I_{i,t}$=interest expenses (data15). $XCash_{i,t}$= cash (data1) minus cash normally needed for operational purposes. XCash is the residual from the following regression model on the determinants of cash holdings:

$$\begin{aligned}\frac{Cash_{i,t}}{NA_{i,t}} &= \beta_0 + \beta_1(NA_{i,t}) + \beta_2\frac{FCF_{i,t}}{NA_{i,t}} + \beta_3\frac{NWC_{i,t}}{NA_{i,t}} + \beta_4\frac{MV_{i,t}}{NA_{i,t}} + \beta_5\frac{RD_{i,t}}{NA_{i,t}} \\ &+ \sum_t Year + \varepsilon_{i,t}\end{aligned} \quad (7)$$

where cash is data1. FCF= free cash flow (data13 – data15-data16). NWC = net working capital (data4-data5-data1). The market-to-book ratio is instrumented using sales growth from the past three years. Table 2 provides summary statistics of the variables.

We augment the Dittmar and Marht-Smith (2007) model to let the valuation of excess cash vary across two different groups of borrowers: those who would have a sweep covenant imposed on them when they borrow, and those that would not. We use an interaction term between excess cash (XCash) and the sweep covenant dummy variable (sweep) to capture the valuation differentials. The sweep dummy variable takes the value of 1 for all 10 years of the sample period if any of the loans taken out by a borrower during the sample period contains a sweep covenant (17% of borrowers do for at least one of their loans). We define the dummy variable this way because we want to capture mainly the cross-sectional difference across the two different types of borrowers.

The regression results are reported in Table 7. The coefficient on the excess cash variable tells us how much shareholders value the excess cash holdings. The larger the coefficient, the more shareholders value the excess cash. In columns 1 and 3, we estimate the model without the sweep covenant dummy. In columns 2 and 4, we include an interaction term between excess cash and the sweep covenant dummy variable. In columns 3 and 4, we also control for firm fixed effects, and therefore, the sweep covenant variable does not enter on its own but only in an interaction term.

We find that the group of firms that face the sweep covenant during the sample period have a lower market-to-book ratio, as evidenced by the negative coefficient on the sweep covenant dummy variable in column 2. Their average market-to-book ratio is 0.207/2.365=8.8% lower than the average of the sample. The covenant is more likely to be imposed on firms with low market-to-book ratios maybe because a free cash problem is most severe among firms with low investment opportunities.

More interesting, we find that firms that would encounter a sweep covenant during the sample period are different from other firms in that their excess cash holdings are valued more by their shareholders. In fact, shareholders in firms that face a sweep covenant value excess cash holdings as being worth between 81% (in column 2) and 130% (in column 4) more than shareholders in firms not facing a sweep covenant.

The results suggest that a sweep covenant can be costly for shareholders when firms borrow from banks, because a sweep covenant, as we will show in the next section, is effective in forcing firms to disgorge cash to creditors. The evidence suggests that there is a creditor-shareholder conflict on the disposal of excess cash holdings: shareholders

place higher valuations on excess cash holdings if they believe that management may use the cash in favor of shareholders, while creditors may consider this as an expropriation of creditors' wealth and, in response, impose the sweep covenant to address this problem and to protect their own interests.

7. The Effects of the Sweep Covenant on Cash and Capital Structure Policy

Next, we examine whether the sweep covenant is effective in changing the borrower's cash holding and debt policy behavior. The sweep covenant requires the borrower to repay debts with excess cash flow instead of saving them. If the covenant is effective, we should observe that the borrower's cash holding increase is less sensitive to cash flow and its debt reduction is more sensitive to cash flow. .

We modify the specifications used by Acharya, Almeida, and Campello (2006) to test the hypotheses. The model is a system of two equations describing annual changes in debt and cash holdings, respectively, and is specified as follows:

$$\Delta Debt_{i,t} = \alpha_0 + \alpha_1 FCF_{i,t} + \vartheta_1 Sweep + \vartheta_2 Sweep * FCF_{i,t} + \alpha_2 Tobin'sQ_{i,t} + \alpha_3 Sales_{i,t} + \alpha_4 \Delta Cash_{i,t} + \alpha_5 Debt_{i,t-1} + \sum_t year_t + \varepsilon^d_{i,t} \quad (2)$$

$$\Delta Cash_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \vartheta_1 Sweep + \vartheta_2 Sweep * FCF_{i,t} + \beta_2 Tobin'sQ_{i,t} + \beta_3 Sales_{i,t} + \beta_4 \Delta Debt_{i,t} + \beta_5 Cash_{i,t-1} + \sum_t year_t + \varepsilon^c_{i,t} \quad (3)$$

The model is estimated based on annual data from fiscal years 1996-2005, which is our sample period. Annual data are appropriate because the sweep covenants apply to fiscal year end cash positions.

The sweep covenant dummy variable takes the value of 1 for the next five years starting from the year when the credit agreement came into effect and 0 otherwise. The contractual maturity of bank credit agreements does not have much relevance because, unlike in public bond indentures, borrowers can terminate the private credit contract (and repay loans) at any time. We do not have information on when a contract is terminated, but the average life of a credit agreement is four to five years.

ΔDebt is the ratio of long-term debt net issuance (data111-data114) to total assets (data6), and ΔCash is the change in cash holdings (data1) divided by total assets. Free cash flow (FCF) is defined as the firm's gross operating income (data13) minus asset depreciation (data14, to proxy for non-discretionary capital reinvestment needs), tax payments(data16), interest expenses(data15), and dividend to equity holders (data19+data21), then scaled by total assets. Sales is Ln (1+data12). Table 2 provides summary statistics of the variables.

In Table 9, in columns 1-4, we estimate the response of cash and debt to cash flow for the whole sample. In columns 1-2, the equations for debt changes and cash changes are estimated separately, while in columns 3-4 they are estimated jointly with the three-stage least squared (3SLS) regression method. The results indicate that our sample of bank loan borrowers behave normally. Facing higher cash flows, firms both accumulate more cash and reduce more debts. As expected, borrowers with greater growth opportunities as proxied by a high Tobin's Q, and who are more financially constrained, as proxied by smaller size, are more likely to accumulate cash and repay debts.

In columns 5-8, we estimate the same models but add an interaction term between the sweep covenant dummy variable and the free cash flow measure. The 3SLS result in Column 7 shows that borrowers redistricted by a sweep covenant repay significantly more debts after a profitable fiscal year, compared with borrowers without that covenant.

According to the coefficients in column 7, for a borrower without the sweep covenant, for every additional dollar of free cash flows, 15.5 cents go to accumulating cash, and 4.2 cents go to reducing debts. In contrast, for a borrower with the sweep covenant, 15.5-5.0=10.5 cents go to cash holdings and 4.2+12.9=17.1 cents go to repaying debts. Note that the coefficients reflect the marginal and not the average effect of free cash flow on cash accumulation and debt reduction, and therefore, in column 7 we do not expect the coefficient on the free cash flow variable to be equal to 0.5 for a loan agreement with a sweep covenant that requires that 50% of excess cash flow go into repaying debts.

Finally, the definition of free cash flow in our model is not equivalent to but is a good approximation of the "excess cash flow" definition in actual credit agreements. The free cash flow variable in our model is defined as gross operating income minus asset

depreciation minus taxes, minus interest expenses, and minus dividends. Definitions of excess cash flow in actual contracts may vary across credit agreements, and a typical example is included in the Appendix.

8. The Effect of the Sweep Covenant on Capital Expenditure and Payout Policies

The sweep covenant is effective in forcing borrowers to use excess cash flow to repay debts, but it may create new incentive distortions. Excess cash flows are defined as cash flows in excess of expenditure incurred in the same period, including capital expenditure and dividend payments. The covenant allows borrowers to invest the cash immediately in equipment, plants, etc., and to pay out to shareholders, but does not allow borrowers to save cash in their own coffers for future investments. This may encourage management to invest in negative NPV projects or unnecessarily accelerate future investment projects when experiencing large cash inflows, because the covenant will transfer the control of any unused excess cash to the creditors.

We test the hypothesis by estimating the following model on capital expenditure:

$$CapEx_{i,t} = \alpha_0 + \alpha_1 FCF_{i,t} + \vartheta_1 Sweep + \vartheta_2 Sweep * FCF_{i,t} + \alpha_2 Tobin'sQ_{i,t} + \alpha_3 Sales_{i,t} + \sum_t year_t + \varepsilon_{i,t} \quad (4)$$

as well as the following model for payout to shareholders:

$$Payout_{i,t} = \alpha_0 + \alpha_1 FCF_{i,t} + \vartheta_1 Sweep + \vartheta_2 Sweep * FCF_{i,t} + \alpha_2 Tobin'sQ_{i,t} + \alpha_3 Sales_{i,t} + \sum_t year_t + \varepsilon_{i,t} \quad (5)$$

The results are reported in Table 10. In column 1, the dependent variable is capital expenditure (data128) divided by total assets. In column 2, the dependent variable is capital expenditure (data128) minus deprecation charges (data14), divided by total assets. The net capital expenditure arguably measures the discretionary component of capital expenditures, i.e., those that are not budgeted to replace depreciated equipment. In column 3, the dependent variable is the same as in Column 1, but the measure of free cash flow now has the depreciation charges added back, because depreciation charges are just an accounting measure and it is up to management to decide when to replace old equipment.

In columns 1-3, we find that firms with higher cash flows invest more in capital expenditures. However, the sweep covenant has the effect of reducing the sensitivity of capital expenditure to free cash flow. The coefficients in column 1 suggest that, for a borrower without the sweep covenant, for every 1 additional dollar of free cash flow, 14.9 cents go to capital expenditure. For a firm with a sweep covenant, only 6.7 cents go to capital expenditure.

In column 4, the dependent variable is common shares dividends (data21) divided by total assets, and in column 5, the numerator also includes share repurchase (data115). The two variables both measure the discretionary payouts of cash to common shareholders. In both columns 4 and 5, the measure of free cash flow has the common share dividends added back.

First, we find that firms with higher cash flows do pay out more dividends. Then we find that the sweep covenant is effective in reducing the sensitivity of payouts to free cash flow. The coefficients in columns 4 and 5 suggest that, for a borrower without a sweep covenant, for every 1 additional dollar of free cash flow, 1.3 cents go to dividend payment to shareholders (and 5.8 cents if share repurchases are included). For a firm with a sweep covenant, there is no dividend increase (and only 4.6 cents if share repurchases are included).

Overall, the evidence above does *not* suggest that management responds to creditor control of free cash flow by intentionally reducing free cash flow with higher capital expenditure or higher payouts to shareholders, which may harm creditors' interests (Maxwell and Stephens, 2003). In contrast, borrowers with the excess cash flow sweep covenant actually exhibit lower sensitivity of capital expenditure or payouts to free cash flows. The results are unlikely driven by other covenants, because no other covenants are linked to free cash flows. Covenants imposing capital expenditure restrictions and dividend payment restrictions are rarely specified as a percentage of free cash flow. They may explain why borrowers with a sweep covenant in general make fewer capital expenditures and dividend payments, but they cannot explain their (lower) sensitivity to free cash flow. To sum up, our evidence suggests that the sweep covenant is effective in forcing management to disgorge cash without distorting management's policies in handling cash flows.

9. Conclusions

With free cash flows borrowers can accumulate cash or repay existing debts. However, sometimes banks impose a mandatory repayment covenant called an "excess cash flow sweep" in loan contracts to force borrowers to disgorge cash. This happened in at least one loan for 17% of borrowers in our sample between 1996 and 2005. We find that this covenant is more likely to be imposed on firms that are more levered, where institutional investors control large blocks of shares, and whose shareholders place higher valuation on excess cash holdings. It is also more likely in states with laws more favorable to hostile takeovers. These determinants suggest that the sweep covenant is creditors' response to agency problems related to creditor-shareholder conflicts. Finally, we find that the covenant has real effects: borrowers affected by the sweep covenant indeed de-lever more using excess cash flows, and they spend less in capital investment and pay out fewer dividends to shareholders.

The findings suggest that creditors have important influence on corporate policies even for firms that are current on debt payments, and that future research can provide more insights by explicitly considering creditors' role in corporate decisions and not assuming that control rights always rest with shareholders.

Appendix:

An example of the definition of "Excess Cash Flow" (extracted from a credit agreement of *Six Flags Park Inc.* with *Bank of America*)

"EXCESS CASH FLOW": for any fiscal year of Holdings, the difference, if any, of (a) the sum, without duplication, of (i) Consolidated Net Income for such fiscal year, (ii) the amount of all non-cash charges (including depreciation and amortization) deducted in arriving at such Consolidated Net Income, (iii) the amount of the decrease, if any, in Consolidated Working Capital for such fiscal year, (iv) the aggregate net amount of non-cash loss on the Disposition of Property by Holdings and its Subsidiaries during such fiscal year (other than sales of inventory in the ordinary course of business), to the extent deducted in arriving at such Consolidated Net Income and (v) the net increase during such fiscal year (if any) in deferred tax accounts of Holdings MINUS
(b) the sum, without duplication, of (i) the amount of all non-cash credits included in arriving at such Consolidated Net Income, (ii) the aggregate amount actually paid by Holdings and its Subsidiaries in cash during such fiscal year on account of Capital Expenditures (minus the principal amount of Indebtedness incurred in connection with such expenditures, and excluding any such expenditures financed with the proceeds of any Reinvestment Deferred Amount and any such expenditures financed with the Unused Equity Proceeds Amount), (iii) the aggregate amount of all prepayments or repayments of Revolving Credit Loans, Swing Line Loans and Multicurrency Loans during such fiscal year to the extent accompanying permanent optional reductions of the Revolving Credit Commitments or Multicurrency Commitments, as the case may be, and all optional prepayments of the Tranche B Term Loans and other Funded Debt during such fiscal year, (iv) the aggregate amount of all regularly scheduled principal payments of Funded Debt (including, without limitation, the Tranche B Term Loans) of Holdings and its Subsidiaries made during such fiscal year (other than in respect of any revolving credit facility to the extent there is not an equivalent permanent reduction in commitments thereunder), (v) the amount of the increase, if any, in Consolidated Working Capital for such fiscal year, (vi) the aggregate net amount of non-cash gain on the Disposition of Property by Holdings and its Subsidiaries during such fiscal year (other than sales of inventory in the ordinary course of business), to the extent included in arriving at such Consolidated Net Income, (vii) the net decrease during such fiscal year (if any) in deferred tax accounts of Holdings, (viii) the aggregate amount of Restricted Payments made in cash during such fiscal year (to the extent permitted under Section 10.5), and (ix) the aggregate amount of Investments made in cash during such fiscal year (to the extent permitted under clauses (h), (j), (l), (m) and (n) of Section 10.7) except to the extent such investments are financed with (A) the Unused Equity Proceeds Amount or (B) the proceeds of any Indebtedness of Holdings or any Subsidiary.

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Table 1: Summary statistics of borrower characteristics (loan-level regressions)
The sample includes 3720 credit agreements from 1939 borrowers. The borrower characteristics are measured at the end of the last quarter before the signing of the credit agreements. 460 of the credit agreements contain a sweep covenant.

	Mean	25th	Median	75th
	With Sweep Covenant			
Book leverage	0.419	0.237	0.399	0.551
Market leverage	0.295	0.156	0.278	0.424
Block holders %	17.877	6.010	14.700	27.200
Institution %	50.974	24.150	52.800	76.600
State anti-takeover index	1.793	1.000	1.000	1.000
Firm anti-takeover index	2.368	1.000	2.000	3.000
Dual-class shares (dummy)	0.137	0.000	0.000	0.000
Tobin's Q	1.678	1.118	1.421	1.921
Ln (Sales)	4.603	3.783	4.608	5.449
Ln (Assets)	6.181	5.282	6.245	7.028
EBITDA Ratio	0.033	0.019	0.032	0.047
EBIT Ratio	0.017	0.005	0.020	0.034
Net Income Ratio	0.003	-0.004	0.006	0.017
Cash Ratio	0.070	0.012	0.029	0.082
Working Capital Ratio	0.313	0.118	0.292	0.478
PPE Ratio	0.314	0.134	0.265	0.444
R&D Ratio	0.010	0.000	0.000	0.000
Intangible Ratio	0.112	0.000	0.000	0.153
	Without Sweep Covenant			
Book leverage	0.287	0.143	0.273	0.406
Market leverage	0.216	0.077	0.190	0.316
Block holders %	15.899	5.500	13.400	24.000
Institution %	54.960	33.835	59.280	78.145
State anti-takeover index	2.060	1.000	1.000	4.000
Firm anti-takeover index	2.442	1.000	3.000	3.000
Dual-class shares (dummy)	0.124	0.000	0.000	0.000
Tobin's Q	1.749	1.097	1.395	1.934
Ln (Sales)	5.289	4.120	5.259	6.450
Ln (Assets)	6.690	5.470	6.613	7.843
EBITDA Ratio	0.033	0.019	0.033	0.049
EBIT Ratio	0.018	0.009	0.021	0.035
Net Income Ratio	0.006	0.001	0.011	0.020
Cash Ratio	0.074	0.012	0.034	0.088
Working Capital Ratio	0.353	0.155	0.341	0.517
PPE Ratio	0.351	0.144	0.282	0.531
R&D Ratio	0.027	0.000	0.000	0.000
Intangible Ratio	0.072	0.000	0.000	0.076

Table 2: Summary statistics of borrower characteristics (firm level regressions)

The sample includes an unbalanced annual panel of 1939 borrowers across 10 years (fiscal year 1996 to 2005). Sweep covenant (5 years) dummy variable takes the value of 1 for the next five years starting from the year when the borrower signs a credit agreement with a sweep covenant. Sweep covenant (ever) dummy variable takes the value of 1 for all 10 years if at least one of the loans taken out by a borrower during the 10-year period contains a sweep covenant.

	Mean	25th	Median	75th
Sweep covenant (5 years)	0.075	0.000	0.000	0.000
Δ Debt /Assets	0.015	-0.027	0.000	0.045
Δ Cash /Assets	0.012	-0.011	0.002	0.026
Free Cash Flow (FCF)	0.011	0.000	0.032	0.064
FCF+ Depreciation	0.062	0.039	0.075	0.115
FCF + Dividend	0.020	0.007	0.039	0.073
Tobin's Q	1.816	1.080	1.398	1.975
Ln (Sale)	6.247	5.137	6.268	7.447
Lagged Debt	0.245	0.069	0.220	0.357
Lagged Cash	0.093	0.013	0.038	0.116
Sweep covenant (ever)	0.172	0.000	0.000	0.000
Market to Book Ratio	2.365	1.162	1.519	2.252
Excess Cash	0.038	-0.098	-0.043	0.036
EBITDA ratio	0.027	0.026	0.068	0.106
R&D ratio	0.036	0.000	0.000	0.019
Dividend ratio	0.010	0.000	0.000	0.009
Interest expense ratio	0.026	0.009	0.020	0.033
Δ Net assets	0.106	-0.014	0.157	0.369

Table 3: Cash flow sweep covenants are imposed on more highly levered firms

The dependent variable is a dummy variable taking the value of 1 for credit agreements with an excess cash flow sweep covenant, and 0 otherwise. Models 1 and 2 are Probit models estimated on pooled panel data. Models 3 and 4 are Probit models with random effects. Models 5 and 6 are linear probability models with fixed effects for a sub-group of borrowers taking out more than one loan during the sample period. Models 7 and 8 use 3-digit SIC industry median of the same year to replace firm-specific leverage ratios, and the standard errors are adjusted for the clustering of residuals by industry. In Models 1, 2, 5, and 6, standard errors are adjusted for the clustering of residuals by the same borrowers. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Method	Probit	Probit	Probit RE	Probit RE	Linear FE	Linear FE	Industry Median	Industry Median
Book Leverage	1.309***		1.693***		0.161**		0.993***	
	(0.199)		(0.196)		(0.0643)		(0.361)	
Market Leverage		1.491***		1.928***		0.145*		0.434
		(0.185)		(0.271)		(0.0774)		(0.410)
Ln (Sales)	-0.182***	-0.176***	-0.246***	-0.242***	-0.00395	-0.00641	-0.186***	-0.182***
	(0.0188)	(0.0189)	(0.0334)	(0.0337)	(0.0142)	(0.0142)	(0.0273)	(0.0275)
Working Capital	-0.490**	-0.541***	-1.013***	-1.080***	-0.167	-0.162	-0.637**	-0.762***
	(0.194)	(0.189)	(0.272)	(0.274)	(0.120)	(0.122)	(0.270)	(0.288)
Cash Ratio	0.246	0.121	0.196	0.0254	0.0574	0.0379	-0.294	-0.387
	(0.330)	(0.330)	(0.472)	(0.473)	(0.118)	(0.119)	(0.440)	(0.458)
PPE Ratio	-0.793***	-0.812***	-1.238***	-1.263***	0.111	0.107	-0.852**	-0.840**
	(0.173)	(0.174)	(0.260)	(0.262)	(0.129)	(0.130)	(0.354)	(0.378)
R&D Ratio	-1.893**	-2.040**	-2.324**	-2.483**	-0.00493	0.00177	-1.772**	-2.095**
	(0.928)	(0.964)	(1.038)	(1.053)	(0.00637)	(0.00567)	(0.873)	(1.022)
Intangible Ratio	0.636***	0.671***	0.531**	0.558**	-0.0688	-0.0665	0.649**	0.588**
	(0.202)	(0.204)	(0.269)	(0.271)	(0.0641)	(0.0640)	(0.272)	(0.279)
Tobin's Q	-0.0191	0.0513**	-0.0559	0.0424	-0.00909	-0.00423	-0.00405	-0.00691
	(0.0302)	(0.0243)	(0.0467)	(0.0402)	(0.00953)	(0.00951)	(0.0300)	(0.0308)
EBIT Ratio	0.737	0.564	1.078	0.900	0.0448	0.0481	-0.0188	-0.0716
	(0.665)	(0.621)	(0.973)	(0.972)	(0.176)	(0.176)	(0.737)	(0.759)
Constant	-0.286	-0.330*	-0.321	-0.398	0.129	0.151	0.0105	0.234
	(0.194)	(0.182)	(0.265)	(0.272)	(0.111)	(0.111)	(0.264)	(0.279)
Observations	3720	3720	3720	3720	2697	2697	3720	3720
R-squared					0.012	0.008		
# Borrower	1939	1939	1939	1939	940	940	1939	1939

Table 4: Cash flow sweep covenants are imposed on more levered firms (robustness tests)

The dependent variable is a dummy variable taking the value of 1 for credit agreements with an excess cash flow sweep covenant, and 0 otherwise. The models are Probit models estimated on pooled panel data. Model 1 uses total asset as an alternative measure of size. Model 2 replaces the gross working capital ratio with the net working capital ratio. Model 3 uses the market-to-book ratio to replace the Tobin's Q ratio. Models 4 and 5 replace the EBIT ratio with the EBITDA ratio and net income ratio, respectively. All standard errors are adjusted for the clustering of residuals by the same borrowers. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)	(5)
Book leverage	1.324***	1.337***	1.309***	1.301***	1.322***
	(0.204)	(0.211)	(0.199)	(0.203)	(0.199)
Ln (Sale)		-0.180***	-0.182***	-0.183***	-0.181***
		(0.0186)	(0.0188)	(0.0190)	(0.0187)
Ln (Asset)	-0.165***				
	(0.0190)				
Working Capital	-0.827***		-0.490**	-0.500**	-0.487**
	(0.208)		(0.194)	(0.195)	(0.194)
Net Working Capital		-0.154			
		(0.178)			
Cash Ratio	0.447	0.286	0.257	0.268	0.246
	(0.335)	(0.342)	(0.330)	(0.330)	(0.331)
PPE Ratio	-0.759***	-0.570***	-0.792***	-0.812***	-0.798***
	(0.177)	(0.164)	(0.173)	(0.173)	(0.173)
R&D Ratio	-1.732**	-2.015**	-1.877**	-1.907**	-1.911**
	(0.877)	(1.008)	(0.924)	(0.944)	(0.930)
Intangible Ratio	0.619***	0.800***	0.636***	0.639***	0.634***
	(0.205)	(0.197)	(0.203)	(0.202)	(0.202)
Tobin's Q	-0.0233	-0.0243		-0.0248	-0.0165
	(0.0311)	(0.0315)		(0.0319)	(0.0296)
Market to Book			-0.0231		
			(0.0313)		
EBIT ratio	0.364	0.800	0.764		
	(0.624)	(0.669)	(0.668)		
EBITDA ratio				1.220	
				(0.906)	
Net Income					0.754
					(0.647)
Constant	-0.0338	-0.541***	-0.282	-0.289	-0.288
	(0.220)	(0.160)	(0.194)	(0.194)	(0.194)
Observations	3720	3720	3720	3720	3720

Table 5: Creditors respond more to high leverage in firms with high cash flows

The dependent variable is a dummy variable taking the value of 1 for credit agreements with an excess cash flow sweep covenant, and 0 otherwise. The models are Probit models estimated based on pooled panel data. In models 1-5, the leverage ratio is interacted with the cash ratio, Tobin's Q, EBIT ratio, EBITDA ratio, and net income ratio, respectively. All standard errors are adjusted for the clustering of residuals by the same borrowers. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)	(5)
Book leverage	1.322***	1.648***	1.357***	1.188***	1.477***
	(0.213)	(0.254)	(0.155)	(0.231)	(0.160)
Ln (Sale)	-0.182***	-0.182***	-0.181***	-0.182***	-0.181***
	(0.0189)	(0.0189)	(0.0189)	(0.0190)	(0.0188)
Working Capital	-0.492**	-0.459**	-0.448**	-0.495***	-0.424**
	(0.195)	(0.190)	(0.188)	(0.192)	(0.188)
PPE Ratio	-0.794***	-0.801***	-0.784***	-0.812***	-0.790***
	(0.173)	(0.174)	(0.174)	(0.174)	(0.174)
R&D Ratio	-1.895**	-1.953**	-1.928**	-1.887**	-1.948**
	(0.927)	(0.936)	(0.928)	(0.922)	(0.923)
Intangible Ratio	0.636***	0.649***	0.648***	0.639***	0.652***
	(0.202)	(0.204)	(0.203)	(0.202)	(0.202)
Cash Ratio	0.283	0.278	0.314	0.302	0.336
	(0.396)	(0.327)	(0.328)	(0.327)	(0.328)
Cash Ratio*Leverage	-0.166				
	(1.339)				
Tobin's Q	-0.0190	0.0159	-0.0115	-0.0228	-0.00615
	(0.0301)	(0.0284)	(0.0297)	(0.0322)	(0.0289)
Tobin's Q * Leverage		-0.143			
		(0.113)			
EBIT Ratio	0.727	0.702	-0.696		
	(0.651)	(0.631)	(0.880)		
EBIT Ratio * Leverage			3.486*		
			(2.006)		
EBITDA				-0.130	
				(1.227)	
EBITDA * Leverage				4.303	
				(3.651)	
Net Income					-0.952
					(0.757)
Net Income * Leverage					4.077***
					(1.524)
Constant	-0.290	-0.395**	-0.335*	-0.264	-0.383**
	(0.195)	(0.184)	(0.182)	(0.195)	(0.182)
Observations	3720	3720	3720	3720	3720

Table 6: Shareholder corporate governance and the sweep covenant

The dependent variable is a dummy variable taking the value of 1 for credit agreements with an excess cash flow sweep covenant, and 0 otherwise. The models are Probit models estimated on pooled panel data. All standard errors are adjusted for the clustering of residuals by the same borrowers. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
∑5% Block	0.00580**	0.00564***		0.00553***	0.00479**	0.00479**	-0.000703	0.00465*
	(0.00271)	(0.00207)		(0.00207)	(0.00239)	(0.00239)	(0.00398)	(0.00241)
% Institution	-0.000142							
	(0.00189)							
(∑5% Block) ≥20%			0.132**					
			(0.0646)					
State Anti-takeover index				-0.0446**				
				(0.0216)				
IRRC anti-takeover provisions [0,6]					-0.00733			
					(0.0268)			
IRRC≤2						-0.000135		0.191
						(0.0725)		(0.133)
Dual Class					0.0723	0.0792		
					(0.107)	(0.105)		
Leverage * ∑5% Block							0.0179*	
							(0.00957)	
Leverage * IRRC≤2								-0.524
								(0.333)
Leverage	1.326***	1.328***	1.320***	1.312***	1.138***	1.138***	1.097***	1.450***
	(0.203)	(0.199)	(0.198)	(0.198)	(0.209)	(0.209)	(0.250)	(0.230)
Ln (Sales)	-0.185***	-0.186***	-0.184***	-0.185***	-0.195***	-0.195***	-0.187***	-0.195***
	(0.0253)	(0.0192)	(0.0191)	(0.0191)	(0.0217)	(0.0217)	(0.0192)	(0.0218)
Working Capital	-0.489**	-0.487**	-0.485**	-0.471**	-0.637***	-0.641***	-0.458**	-0.630***
	(0.196)	(0.195)	(0.194)	(0.195)	(0.204)	(0.203)	(0.191)	(0.200)
Cash Ratio	0.238	0.236	0.240	0.222	0.368	0.369	0.255	0.369
	(0.332)	(0.331)	(0.332)	(0.331)	(0.353)	(0.353)	(0.328)	(0.349)
PPE Ratio	-0.774***	-0.774***	-0.778***	-0.778***	-0.776***	-0.778***	-0.766***	-0.781***
	(0.173)	(0.173)	(0.173)	(0.173)	(0.187)	(0.187)	(0.174)	(0.187)
R&D Ratio	-1.902**	-1.904**	-1.872**	-1.926**	-1.700*	-1.699*	-1.861**	-1.662*
	(0.941)	(0.941)	(0.939)	(0.929)	(0.990)	(0.991)	(0.916)	(0.981)
Intangible Ratio	0.603***	0.600***	0.610***	0.600***	0.482**	0.479**	0.612***	0.477**
	(0.207)	(0.204)	(0.203)	(0.204)	(0.228)	(0.227)	(0.204)	(0.229)
Tobin's Q	-0.0133	-0.0139	-0.0167	-0.0185	-0.00187	-0.00181	-0.0149	0.00413
	(0.0300)	(0.0295)	(0.0298)	(0.0298)	(0.0300)	(0.0300)	(0.0289)	(0.0287)
EBIT Ratio	0.728	0.724	0.774	0.756	0.490	0.489	0.718	0.352
	(0.667)	(0.666)	(0.667)	(0.670)	(0.761)	(0.759)	(0.640)	(0.734)
Constant	-0.379*	-0.378*	-0.336*	-0.286	-0.239	-0.255	-0.300	-0.365*
	(0.195)	(0.195)	(0.194)	(0.200)	(0.219)	(0.218)	(0.201)	(0.214)
Observations	3720	3720	3720	3720	2709	2709	3720	2709

Table 7A: Correlation between loan covenants

The table presents pairwise correlations between the incidence of the imposition of an excess cash flow sweep covenant and several other common covenants in bank contracts. All the variables are dummy variables. Significance at the 1% level is indicated by a *.

	(1) Excess Cash Flow Sweep Covenant	(2) Capex Restriction Covenant	(3) Any Debt to Cash Flow Ratio Covenant	(4) Any Coverage Ratio Covenant	(5) Any Debt to Balance-Sheet Ratio Covenant
(1)	1				
(2)	0.3075*	1			
(3)	0.2485*	0.1874*	1		
(4)	0.1879*	0.1504*	0.3821*	1	
(5)	-0.1487*	-0.1750*	-0.4116*	-0.0996*	1
Obs	3720	3720	3603	3603	3603
Mean	0.124	0.319	0.575	0.743	0.292

Table 7B: Controlling for the presence of other covenants

The dependent variable is a dummy variable taking the value of 1 for credit agreements with an excess cash flow sweep covenant, and 0 otherwise. The models are Probit models estimated on pooled panel data. All standard errors are adjusted for the clustering of residuals by the same borrowers. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)
∑5% Block	0.00539**	0.00383*	0.00427*	0.00430**
	(0.00219)	(0.00232)	(0.00225)	(0.00218)
Leverage	1.157***	1.389***	1.352***	1.241***
	(0.195)	(0.202)	(0.231)	(0.200)
Ln (Sales)	-0.136***	-0.180***	-0.174***	-0.170***
	(0.0219)	(0.0226)	(0.0218)	(0.0202)
Working Capital	-0.775***	-0.388*	-0.525**	-0.619***
	(0.206)	(0.206)	(0.210)	(0.194)
Cash Ratio	0.349	0.391	0.462	0.265
	(0.371)	(0.347)	(0.351)	(0.349)
PPE Ratio	-0.688***	-0.523***	-0.697***	-0.773***
	(0.182)	(0.178)	(0.180)	(0.176)
R&D Ratio	-1.497	-1.291*	-1.194	-1.831*
	(1.037)	(0.784)	(0.823)	(0.944)
Intangible Ratio	0.624***	0.491**	0.586***	0.461**
	(0.209)	(0.207)	(0.207)	(0.203)
Tobin's Q	0.00293	-0.0530	-0.00654	-0.0167
	(0.0281)	(0.0374)	(0.0348)	(0.0311)
EBIT Ratio	1.395*	-0.408	-0.184	0.776
	(0.714)	(0.700)	(0.759)	(0.665)
Capex Covenant	0.930***			
	(0.0729)			
Any Debt to Cash Flow Covenant		1.049***		
		(0.0909)		
Any Coverage Ratio Covenant			1.097***	
			(0.138)	
Any Debt to Balance Sheet Covenant				-0.510***
				(0.0922)
Constant	-0.985***	-1.229***	-1.426***	-0.262
	(0.211)	(0.214)	(0.264)	(0.199)
Observations	3720	3603	3603	3603

Table 8: Covenants are imposed on firms where shareholders place higher value on excess cash holdings

The dependent variable is the market-to-book ratio of firm assets. The sweep covenant dummy variable takes the value of 1 if the one of the loans taken out by the borrower during 1996-2005 contains a sweep covenant. Excess cash is the residual from an empirical model that includes firm characteristics that affect the normal level of cash holdings required for operations, such as firm size, profitability, asset liquidity, growth opportunities, R&D intensity, and year fixed effects. ΔL2 indicates the two-year lagged change, while Δ2 the future two-year change of a variable. The model is a modified version of Dittmar and Marht-Smith (2007). Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)
Excess Cash	2.159***	2.087***	1.526***	1.455***
	(0.361)	(0.357)	(0.395)	(0.392)
Sweep Covenant		-0.207**		
		(0.104)		
Sweep * Cash		1.697**		1.896**
		(0.861)		(0.804)
Earnings / Assets	1.009	1.000	0.400	0.349
	(0.682)	(0.686)	(0.653)	(0.650)
ΔL2 Earnings / Assets	-0.636**	-0.617**	-0.445	-0.427
	(0.313)	(0.307)	(0.273)	(0.265)
Δ2 Earnings / Assets	-1.042***	-1.055***	-1.023***	-1.038***
	(0.401)	(0.395)	(0.350)	(0.345)
R&D / Assets	10.72***	10.71***	6.874***	6.854***
	(0.957)	(0.960)	(0.771)	(0.760)
ΔL2 R&D / Assets	-0.357	-0.436	1.821	1.713
	(2.103)	(2.156)	(1.383)	(1.427)
Δ2 R&D / Assets	-1.330	-1.336	0.280	0.272
	(0.936)	(0.927)	(0.952)	(0.938)
Dividends / Assets	5.776**	4.110*	4.222*	2.062
	(2.295)	(2.154)	(2.361)	(2.246)
ΔL2 Dividends / Assets	-2.310	-0.757	-1.761	-0.125
	(1.436)	(1.223)	(1.193)	(1.152)
Δ2 Dividends / Assets	1.917*	2.287**	0.832	0.874
	(1.155)	(1.165)	(1.258)	(1.277)
Interests / Assets	5.412	6.381	9.701	10.57
	(5.963)	(6.185)	(8.166)	(8.107)
ΔL2 Interests / Assets	1.199	0.171	-0.801	-1.870
	(5.698)	(5.874)	(4.885)	(5.027)
Δ2 Interests / Assets	-15.04***	-14.76***	-11.60***	-11.32***
	(3.734)	(3.665)	(4.104)	(4.062)
ΔL2 Assets	0.213	0.267	0.225	0.284
	(0.349)	(0.360)	(0.306)	(0.314)
Δ2 Assets	0.617***	0.604***	0.584***	0.570***
	(0.187)	(0.183)	(0.188)	(0.186)
Δ2 Market Values/Assets	-0.0219	-0.0217	-0.0560*	-0.0552*
	(0.0319)	(0.0320)	(0.0331)	(0.0333)
Constant	1.647***	1.676***	1.834***	1.840***
	(0.197)	(0.190)	(0.236)	(0.234)
Borrower Fixed Effect			Y	Y
Year Dummy	Y	Y	Y	Y
Observations	14239	14239	14239	14239
R-squared	0.619	0.624	0.612	0.620
# Borrower			1825	1825

Table 9: Sweep covenants are effective in influencing cash holding and capital structure policies

In models 1, 3, 5, 7, the dependent variable is the net issuance (retirement) of debt divided by total assets. In models 2, 4, 6, 8, the dependent variable is the change in cash holdings divided by total assets. The sweep covenant dummy variable takes the value of 1 for the next five years starting from the year when the borrower signs a credit agreement including a sweep covenant. Regressions 3 and 4 are estimated jointly with 3SLS, so are regressions 7 and 8. All standard errors are adjusted for the clustering of residuals by borrowers.Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	Δ Debt	Δ Cash	Δ Debt	Δ Cash	Δ Debt	Δ Cash	Δ Debt	Δ Cash
Free Cash Flow (FCF)	-0.0533***	0.143***	-0.0439***	0.157***	-0.0508**	0.145***	-0.0415***	0.155***
	(0.0192)	(0.0315)	(0.0108)	(0.00706)	(0.0198)	(0.0322)	(0.0110)	(0.00656)
Sweep covenant					0.0309***	-0.00696***	0.0306***	-0.0134***
					(0.00613)	(0.00200)	(0.00397)	(0.00358)
Sweep * FCF					-0.124	-0.0853*	-0.129***	-0.0496
					(0.0893)	(0.0478)	(0.0415)	(0.0348)
Tobin's Q	-0.00193	0.0139***	-0.00128	0.0145***	-0.00178	0.0139***	-0.00113	0.0143***
	(0.00132)	(0.00173)	(0.000829)	(0.000548)	(0.00134)	(0.00173)	(0.000828)	(0.000522)
Ln (Sales)	0.00183***	-0.00621***	0.00159**	-0.00673***	0.00198***	-0.00626***	0.00175***	-0.00669***
	(0.000685)	(0.000744)	(0.000642)	(0.000538)	(0.000689)	(0.000748)	(0.000642)	(0.000516)
Δ Cash	0.0406*		-0.0203		0.0409*		-0.0189	
	(0.0213)		(0.0522)		(0.0213)		(0.0520)	
Lag (Debt)	-0.0480***		-0.0476***		-0.0559***		-0.0554***	
	(0.00882)		(0.00485)		(0.00927)		(0.00496)	
Δ Debt		0.0269**		0.396***		0.0272**		0.320***
		(0.0135)		(0.0898)		(0.0135)		(0.0757)
Lag (Cash)		-0.156***		-0.165***		-0.158***		-0.165***
		(0.0153)		(0.00731)		(0.0153)		(0.00702)
Constant	0.0181***	0.0495***	0.0197***	0.0469***	0.0184***	0.0499***	0.0199***	0.0482***
	(0.00627)	(0.00605)	(0.00523)	(0.00436)	(0.00635)	(0.00606)	(0.00522)	(0.00418)
Year Dummy	Y	Y	Y	Y	Y	Y	Y	Y
3SLS			Y	Y			Y	Y
Observations	15768	15792	15768	15768	15768	15792	15768	15768
R-squared	0.031	0.116	0.029	-0.095	0.035	0.117	0.033	-0.015

Table 10: The sweep covenant, capital investment, and payout policies

In models 1 and 3, the dependent variable is the capital expenditure to total assets ratio. In model 2, the dependent variable is capital expenditure minus depreciation divided by total assets. In model 4, the dependent variable is dividend to ordinary shareholders divided by total assets. In model 5, share repurchase is included as well. The free cash flow (FCF) variable is defined as gross operating income minus asset depreciation minus taxes, minus interest expenses, and minus dividends. In model 3, free cash flow includes depreciation charges. In models 4 and 5, free cash flow has dividend payment added back. Statistical significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively.

Dependent variable	(1) Capex to total asset ratio	(2) Net Capex to total asset ratio	(3) Capex to total asset ratio	(4) Dividend to total asset ratio	(5) (Dividend + Repurchase)/ Total asset
Free Cash Flow (FCF)	0.0149*	0.0959***			
	(0.00811)	(0.0147)			
FCF + Depreciation (DP)			0.0743***		
			(0.0109)		
FCF + Dividend (DVC)				0.0128***	0.0583***
				(0.00344)	(0.00955)
Sweep covenant	-0.00997***	-0.00951***	-0.00902**	-0.00469***	-0.00809***
	(0.00354)	(0.00292)	(0.00442)	(0.000784)	(0.00222)
Sweep * FCF	-0.0817**	0.00503			
	(0.0389)	(0.0365)			
Sweep * (FCF +DP)			-0.0298		
			(0.0469)		
Sweep * (FCF +DVC)				-0.0139***	-0.0125
				(0.00472)	(0.0227)
Tobin's Q	0.000990**	0.00103**	0.000953**	0.00107***	0.00574***
	(0.000498)	(0.000479)	(0.000482)	(0.000333)	(0.00135)
Log (sale)	-0.00584***	-0.00478***	-0.00699***	0.00121***	0.00281***
	(0.000881)	(0.000740)	(0.000902)	(0.000276)	(0.000512)
Constant	0.113***	0.0581***	0.115***	0.00537*	0.000128
	(0.00620)	(0.00525)	(0.00623)	(0.00314)	(0.00517)
Observations	15820	15820	15820	15820	15820
R-squared	0.050	0.079	0.066	0.013	0.041