

Performance Measures in Earnings-Based Financial Covenants in Debt Contracts*

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Abstract

This paper examines how performance measures are used in the three most common earnings-based financial covenants in debt contracts: interest coverage, fixed charges coverage, and debt to cash flows covenants. I first provide stronger evidence than in Li [2010] regarding the use of transitory earnings and conservative adjustments in performance measures in debt contracts, and then examine the use of accounting accruals in covenant measurement. The primary findings for accruals are as follows. First, depreciation and amortization expenses are generally excluded from the performance measures (with capital expenditure also subtracted sometimes), while working capital accruals are generally included (with non-cash income or other non-cash expense excluded sometimes), indicating working capital accruals are generally useful, and more useful than long-term accruals, in measuring credit risk. Second, firms with higher agency costs of debt are more likely to exclude long-term accruals, non-cash income, and other non-cash expense from the performance measures, suggesting that accrual reliability is one primary concern in covenant measurement. Finally, the likelihood of using “free cash flows” (adding back depreciation and amortization expense and subtracting capital expenditure) in the performance measure increases with the volatility of capital expenditure, consistent with the usefulness of free cash flows decreasing in the variability of investments in fixed assets.

1. Introduction

Debt contracting is an important demand for accounting numbers that shapes accounting rules and financial reporting practice. Debt contracting parties' preference for accounting numbers are reflected in how they define accounting variables, which could be inconsistent with GAAP definitions (Leftwich [1983], Li [2010]). Li [2010] investigates contractual definitions of net income and their cross-sectional variation to shed light on the debt contracting demand for earnings numbers. He finds that excluding transitory earnings is the most important economic reason underlying the contractual definition of net income, while conservative adjustment, in the sense of including certain types of negative earnings but not the corresponding positive earnings (e.g., including losses, but not gains, from asset sales), does not seem to be a primary consideration in measuring net income.¹

Net income can be used in debt contracts in a cumulative manner (e.g., in dividend restrictions or income escalators in net worth covenants), as an input variable to define other performance measures (e.g., EBITDA or EBIT), or in other manners.² Although by examining the contractual definitions of net income, Li [2010] is informative about how earnings are used in debt contracts *in general*, it does not address how performance measures are used in earnings-based financial covenants, which are the most important accounting-based financial covenants in terms of frequency (Dichev and Skinner [2002], Demerjian [2011], Christensen and Nilolaev [2011]). Earnings-based financial covenants are typically measured with EBITDA or EBIT (Demerjian [2009]), whose definitions also contain rich adjustments (Begley and Freedman [2004]).

¹ Following Li [2010], I use the term “transitory earnings” as a label for income statement items that are generally viewed as non-recurring or unusual, including extraordinary items, income from asset sales, and so on. Li [2010] finds that excluding transitory earnings explains about half of the contract-GAAP differences for net income in terms of frequency.

² Income escalators, which are called “build-up” in Dichev and Skinner [2002], are systematic adjustments to net worth covenants that exclude a percentage of positive net income from the cumulative net income in covenant calculations.

In this study, I examine how performance measures are used in the three most common earnings-based financial covenants: Interest coverage (IC), fixed charges coverage (FCC), and debt to cash flow (DCF) covenants.³ First, I provide a detailed and complete picture of performance measures (the numerators of IC and FCC covenants, and the denominator of DCF covenants) used in these covenants. Second, I revisit the hypotheses related to conservative adjustments and transitory earnings in Li [2010] in the measurement of these covenants. Finally, I investigate how accounting accruals are used in these performance measures and what drives the cross-sectional variation.⁴

Investigating the use of transitory earnings, conservative adjustments, and accruals in performance measures in debt contracts is particularly important for the accounting literature. First, the different usefulness of transitory vs. permanent earnings justifies the separation of the former from the latter in income statement. Li [2010] documents that around 23% of contractual definitions of net income exclude extraordinary, unusual, or nonrecurring items. This frequency is somewhat too low to support the argument that transitory earnings are *generally* less useful than permanent earnings.

Second, understanding the extent to which performance measures in debt contracts are conservative can shed light on the current debate on whether conservative contractual adjustments can substitute conservatism in financial reporting (Guay and Verrecchia [2006], Schipper [2005], Beatty et al. [2008]). Beatty et al. [2008] document that the measurement of net worth covenants are conservative through the use of income escalators (about two thirds of the sample contracts) or the exclusion of intangible assets (about one half of the sample contracts). Conservative adjustments in performance measures, however, are arguably more

³ DCF covenants are based on both income statement and balance sheet. Since the denominators of DCF covenants are typically EBITDA, they are also called debt to EBITDA covenants. In this study, DCF covenants include all financial covenants measured with certain debt variables divided by certain performance measures (e.g., EBITDA, operating cash flows, and so on).

⁴ To limit the length of this paper, I do not examine the cross-sectional variation of the use of transitory earnings and conservative adjustments. I report all descriptive evidence in this paper to provide a complete picture of performance measures in earnings-based financial covenants.

important than those in balance sheet measures if debt contracting parties really demand more conservative accounting numbers than those in financial statements.⁵ While Li [2010] documents conservative adjustment is not a significant phenomenon in the contractual definitions of net income, it is unclear to what extent performance measures in financial covenants are conservative.⁶

Finally, although it is usually argued that accrual accounting is superior to cash accounting, it is unclear how accruals are used in the measurement of performance in debt contracts.⁷ Ball and Shivakumar [2006] argue that both working-capital and long-term accruals improve the debt contracting usefulness of earnings. The accrual process, however, is subject to estimator errors and managerial discretions, which may bring in transitory noise. Prior studies show that accruals are less persistent than cash flows (Sloan [1996]), and less reliable accruals lead to lower earnings persistence (Richardson et al. [2005]). Practitioners also debate on whether EBITDA is an appropriate measure of credit risk (e.g., Moody's [2000]). Therefore, it is an interesting empirical question to what extent accruals are included in the covenant measurement and what drives the cross-sectional variation.

Using a large sample of loan agreements from Nini et al. [2009], I document the following descriptive evidence. First, the definitions of performance measures almost always begin with GAAP net income, even if the names are certain cash flows (e.g., Operating Cash Flows, Free Cash Flows, and so on).⁸ Second, the majority of performance measures exclude transitory earnings (e.g., extraordinary, unusual, or non-recurring items), providing much stronger evidence than Li [2010] for the argument that transitory earnings are less useful than

⁵ The impact of conservatism on earnings is relatively larger than that on net assets.

⁶ It is likely that additional conservative adjustments are included in the definitions of performance measures like EBITDA.

⁷ Demerjian [2009] examines the use of EBIT versus EBITDA in financial covenants. His study, however, is not informative about how other accruals (e.g., working capital accruals) are used in debt contracts.

⁸ Since the IC, FCC, and DCF ratios are used to measure credit risk and a debt measure (e.g., interest expense, debt, debt service) is used in the denominator (IC and FCC ratios) or numerator (DCF ratio), the performance measure is typically calculated before interest and tax expenses.

permanent earnings for debt contracting. For example, 72% of the numerators of the IC covenants exclude extraordinary, unusual, or non-recurring items, compared to 23% of contracts that use the term “Net Income” excluding such items in Li [2010]. Third, consistent with Li [2010], conservative adjustment, in the sense of including certain negative earnings but not the corresponding positive earnings, are not a significant feature of the performance measures.

Fourth, long-term accruals (depreciation and amortization expenses) are generally excluded from the performance measures, suggesting that they are generally less useful than other components of earnings in measuring credit risk.⁹ After depreciation and amortization expenses are added back, 44% of contracts subtract capital expenditure in the measurement of FCC covenants, while subtraction of capital expenditure is infrequent in measuring IC or DCF covenants. Finally, working capital accruals are generally included in the performance measures, with other non-cash expense (non-cash expense other than depreciation and amortization expense) excluded in approximately 35% of contracts and non-cash income excluded in around 15% of contracts.¹⁰ Operating cash flows that are not recognized in income (e.g., prepayment to suppliers) are generally not included in the performance measures.¹¹ The evidence indicates that working capital accruals are generally useful, and more useful than long-term accruals, in the covenant measurement.

The primary cross-sectional findings are as follows. First, firms with higher agency costs of debt and lower reputational capital are more likely to exclude non-cash income or other non-cash expense in the covenant measurement. Second, firms with higher agency costs of debt are less likely to include long-term accruals in the covenant measurement, and firms with higher reputational capital are more likely to include long-term accruals in measuring IC

⁹ The IC, FCC, and DCF ratios are common measures of credit risk.

¹⁰ Throughout the paper, the term “other non-cash expense” means non-cash expense other than depreciation and amortization expense.

¹¹ One exception is that cash tax payment is subtracted from the performance measure in 19% of FCC covenants.

covenants. These two findings suggest concerns about the reliability of non-cash income or expense (including depreciation and amortization expense) are likely to be one primary reason underlying the use of performance measures in earnings-based financial covenants. Third, the likelihood of using “free cash flows” (adding back depreciation and amortization expense and subtracting capital expenditure) in the covenant measurement increases with the volatility of capital expenditure, consistent with the argument that the usefulness of free cash flows decreases with the variability of investment activities (Dechow [1994], Ball and Shivakumar [2006]). Finally, proxies for the volatility of working capital requirements generally have no explanatory power for the exclusion of non-cash income or other non-cash expense.¹²

This study makes several contributions. First, it contributes to the literature on the use of accounting information in debt contracts. I provide a detailed and complete picture of how performance measures are used in earnings-based financial covenants, and show concerns about the reliability of accounting numbers is likely to be one important economic reason underlying the use of accounting numbers in debt contracts (Leftwich [1983]).¹³ The descriptive evidence is fairly informative about the demand for performance measures in financial covenants, and is also useful for practitioners and empirical accounting and finance studies relying on covenant measurements. Second, my study contributes to the accounting literature on accruals. While creditors and shareholders claim on the same assets and profits, their use of accounting information could be fundamentally different due to the different cash flow rights and contracting horizons.¹⁴ This study complements the literature on the role of

¹² Given the rich cross-industry variation in the use of non-cash income and other non-cash expense, it is quite likely that the usefulness of non-cash income and other non-cash expense is a function of the nature of the firm's business. It is likely that my measures of the “smoothing benefits” of working capital accruals are not good enough to capture the cross-sectional variation.

¹³ While a large body of research examines the value relevance of accounting numbers, there is relatively little research on reliability (Richardson et al. [2005]). My evidence supports Leftwich's [1983] argument that restricting managerial opportunism is an important economic reason for negotiated accounting measurement rules in debt contracts.

¹⁴ Relative to shareholders, creditors claim on economic resources within a shorter horizon.

accruals in the capital markets by exploring the use of accruals in debt contracts and the cross-sectional variation.

Third, this study provides additional insights on the “debt covenant hypothesis” -- the idea that managers make accounting choices to reduce the likelihood their firms will violate accounting-based debt covenants. My findings indicate that the *ex post* debt contracting incentives for accruals manipulation are probably not so strong as one expects, because debt contracting parties anticipate this problem and contract on less manipulable accounting variables, especially for firms that are more likely to manipulate accounting numbers to circumvent covenant violations.

Finally, this study has some policy implications on the current debates on the fair value accounting. Based on FASB’s fair-value-based conceptual framework, changes in the value of assets and liabilities flow through income statement as *non-cash* income items. These non-cash income items are likely to be subject to measurement errors and managerial bias, which reduces contracting efficiency. My study shows that the reliability of these non-cash income items is an important concern when debt contracting parties choose performance measures. Consequently, solely from the perspective of debt contracting, it is unclear whether fair value accounting is superior to the accounting based on historical costs.

My study is related to Demerjian [2009], who investigates the use of EBIT vs. EBITDA in IC and FCC covenants using the Tearsheet data from Dealscan. Demerjian’s [2009] research questions and approach, however, are fundamentally different from mine. Demerjian uses the choice of EBIT vs. EBITDA in IC and FCC covenants as a setting to examine the economic role of covenant measurement in debt contracts. He finds IC covenants are more likely to be measured with EBIT relative to EBITDA when firms have larger depreciation and amortization expense. My study, however, focuses on how the relevance and reliability of accruals affect their uses in the covenant measurement, and I examine both

working capital and long-term accruals. Nevertheless, to be consistent with Demerjian [2009], I control for the magnitude of depreciation and amortization expense in all regressions of long-term accruals.

Section 2 provides theoretical backgrounds. Hypotheses are developed in Section 3. Section 4 describes the data and summary statistics. Sections 5 and 6 present descriptive and cross-sectional analyses. Section 7 provides additional analyses. Section 8 concludes.

2. Theoretical Background

Agency theory argues that debt covenants mitigate agency problems between debt holders and shareholders (Jensen and Meckling [1976], Myers [1977], Smith and Warner [1979]). Theoretically, debt covenants are mappings from the state space to the set of actions, including dividend payment, asset sales, transfer of control rights, and so on. As an important dimension of debt covenants, the choice of contracting variables directly affects contracting efficiency. Li [2010] argues that negotiated accounting measurement rules in debt contracts are essentially a process of selecting contracting variables from a menu of accounting numbers provided in financial statements. When contracts are incomplete, contracting parties choose the best signal of the underlying construct on which they intend to contract. The debt contracting usefulness of an accounting variable depends on its informativeness about the debt contracting construct.¹⁵

Accounting numbers generated from the financial reporting system are outcomes of the underlying economic transactions, measurement methods, and managerial discretion and opportunism, which also affect the contracting usefulness of these numbers. For example, Leuz [1996] argues that the use of transactions and events in the accrual process leads to a

¹⁵ Li [2010] argues that this is the only general prediction one can make about the optimal properties of debt contracting variables, given that multiple contracting constructs are used in debt contracts. Contracting constructs are what the contracting parties want to measure *ideally*. For example, one purpose of dividend covenant is to restrict dividends funded by reduced investment (Kalay [1982], Smith and Warner [1979]) and an ideal input variable for a dividend covenant is one that is the most reflective of current and future investment opportunities (Li [2010]).

better specification of the upper bound on dividends in an earnings-based dividend constraint than in a cash-based constraint. Li [2010] contends that due to the forward looking nature of debt contracting constructs, the more persistent part of earnings is more useful for debt contracting.

Managerial discretion and opportunism bring noise and/or bias into reported accounting numbers, which would reduce their abilities to measure the underlying debt contracting constructs. Theoretically, lower weights can be assigned to more noisy variables in the measurement of the contracting variable. In practice, however, the accounting measurement rules in debt contracts either include or exclude certain variables, instead of assigning different weights to various variables.¹⁶ Given this restriction, if the informativeness of an accounting variable about the contracting construct is sufficiently low (high), this variable should be excluded from (included in) the contracting variable (Li [2010]).¹⁷ Leftwich [1983] argues that accounting numbers that can be relatively easily manipulated are less useful for debt contracting and are more likely to be excluded from the contracting variables through negotiated accounting measurement rules.¹⁸

3. Hypothesis Development

Since the IC, FCC, and DCF ratios are common measures of credit risk, which depends on whether the borrower can generate sufficient cash to service the debt when the interest and principal payments are due, I assume the performance measures in these covenants are to capture the *future* cash generating ability for debt repayment.¹⁹ In the next three subsections, I theoretically examine whether transitory earnings, conservative

¹⁶ For example, the numerator of interest coverage ratio could be EBIT or EBITDA, but is rarely EBIT minus certain percentage of depreciation and amortization expense.

¹⁷ Excluding certain variable from the contracting variable does not mean that variable is totally uninformative about the contracting construct.

¹⁸ If accounting variables are generally noisy, contracting parties would probably stop using accounting-based covenants. Costello and Wittenberg-Moerman [2011] document that when a firm experiences material internal control weakness over financial reporting, lenders decrease their reliance on financial covenants and financial-ratio-based performance pricing provisions.

¹⁹ One can think of the contracting construct as future free cash flows available for debt service.

adjustments, and accruals are likely to affect the information contents of the performance measures with regard to this contracting construct through the underlying economic transactions, measurement methods, or managerial discretion and opportunism.

*3.1 Transitory Earnings*²⁰

I use GAAP earnings before interest and tax expenses (EBIT) as a benchmark for examining performance measures in the three covenants. Since the three covenants all involve comparing a performance measure with certain debt measure (e.g., interest expense, debt service, debt amount), it is straightforward that the performance measure should be calculated before interest and tax expenses.²¹ My hypothesis about transitory earnings follow directly from Li [2010]. Since the contracting construct in the three covenants are forward-looking and transitory earnings are less informative about the future performance, I predict that excluding transitory earnings is one primary feature of the performance measures in these covenants.

H1: Excluding transitory earnings is one primary feature of the performance measures in earnings-based financial covenants.

3.2 Conservative Adjustments

Following Li [2010], I focus on conservative adjustments in the form of excluding certain positive earnings but not the corresponding negative earnings (e.g., excluding gains but not losses from asset sales).²² This type of conservative adjustment is analogous to conditional conservatism in financial reporting. Following the information framework in Guay and Verrecchia [2006], I argue that conservative adjustments arise because certain

²⁰ The hypothesis developments for transitory earnings and conservative adjustment in section 3.1 and 3.2 are relatively brief because these two hypotheses follow directly from Li [2010]. The contribution of this paper is to test these two hypotheses in the measurement of earnings-based of financial covenants.

²¹ The use of EBIT as a benchmark is merely to simplify explanations. It by no means implies that EBIT is a theoretically "correct" measure.

²² I do not interpret simply using a lower performance measure as conservative adjustment. For example, one cannot claim that contracting on EBIT is more conservative than on EBITDA simply because EBIT is lower than EBITDA.

gains are less informative about the contracting construct than the corresponding losses.²³ One possible reason for gains to be less useful than losses is that gains are more likely to be manipulated (Leftwich [1983], Guay and Verrecchia [2006]). Li [2010], however, argues that restricting managerial manipulation by removing certain gains may “throw the baby out with the bath water”, and documents that conservative adjustment is not a significant feature of contractual definitions of net income. Moreover, if the conservatism principle in financial reporting already restricts managerial opportunism to some extent, it is unclear whether the reported gains are still so noisy that they should be excluded from the covenant measurement. My second hypothesis is similar to Hypothesis 2 in Li [2010], which is stated in the alternative form as follows.

H2: Performance measures in earnings-based financial covenants are conservative in the sense of including certain types of negative earnings but not the corresponding positive earnings.

3.3 Accounting Accruals

Richardson et al. [2005] broadly decompose accruals into three categories: changes in non-cash working capital, changes in net non-current operating assets, and changes in net financial assets. In this study, I only focus on working capital accruals and depreciation and amortization expense (long-term accruals) because they are the two most important categories of accruals.²⁴ In order to obtain additional insights beyond Li [2010], I do not examine certain accruals that are unusual or non-recurring (e.g., goodwill impairment).

3.2.1 Working Capital Accruals

²³ Ball [2001] argues that because of financial reporting costs and creditors' asymmetric demand for economic gains and losses, financial reporting is conservative. Creditors' asymmetric demand for economic gains and losses, however, cannot explain the conservative adjustments in debt contracts, because it is costless to use the gains information in financial statements.

²⁴ The findings for adjustments related to non-cash income and expense, however, are also informative about the use of other accruals.

Theoretically, working capital accruals are informative about future free cash flows for debt service by mitigating the matching and timing problems in operating cash flows (Dechow [1994], Ball and Shivakumar [2006]). Ball and Shivakumar [2006] argue that working capital accruals smooth the transitory variation in operating cash flows to increase the usefulness of accounting earnings for contracting (including debt contracting) purposes. Being informative about future free cash flows, however, does not necessarily imply working capital accruals should be included in the covenant measurement. The accrual process is inevitably subject to estimation errors, managerial discretion, and potential manipulation, which may induce noise and/or bias into earnings numbers. Sloan [1996] documents that the accrual components of earnings is less persistent than the cash flow component of earnings.²⁵ Richardson et al. [2005] provide a more comprehensive measure of accruals and show that this measure of “total accruals” is less persistent than cash flows. They also show that less reliable accruals lead to lower earnings persistence. Therefore, given the findings in Li [2010] that less persistent components of earnings are likely to be excluded from the contractual measurements, whether working capital accruals are included in the covenant measurement is an open empirical question.

The question of whether accruals should be included in the covenant measurement is conceptually similar to whether earnings or cash flows, when used as a *single* predicting variable, are more predictive of future cash flows available to creditors. Empirical evidence from capital market studies on the relative predictive ability of current earnings versus cash flows for future cash flows is mixed. Finger [1994] shows that earnings and cash flows have similar predictive ability for longer horizon, but cash flows are slightly superior to earnings for short horizons. Greenberg et al. [1986] document that the predictive ability of earnings is superior to cash flows. Barth, Cram, and Nelson [2001], however, find that cash flows are

²⁵ Sloan [1996] defines accruals as non-cash working capital accruals plus depreciation.

better than earnings in predicting future cash flows. In a debt valuation setting, Ozel [2010] utilizes data on estimates of credit losses and realizable value of loans at the economy-wide level to show that private debt holders focus primarily on operating earnings, not operating cash flows, to evaluate credit losses. Cassar et al. [2011] document that small firms using accrual accounting enjoy lower loan interest rate than those using cash accounting.

The use of working capital accruals in debt contracts is essentially a trade-off between relevance and reliability. One cannot predict whether in general working capital accruals are used in the measurement of earnings-based financial covenants. Therefore, I set up the null hypotheses as follows.

H3a: In general, working capital accruals are included in the measurement of earnings-based financial covenants.

Based on the arguments above, working capital accruals are less likely to be included in the covenant measurement when they are less reliable, and are more likely to be included when their “smoothing” benefits are higher. The costs of including working capital accruals are the noise and bias from measurement errors and managerial manipulation. If working capital accruals are too unreliable, they are likely to be excluded from the covenant measurement. For firms that are in steady state, the timing and matching problems in cash flows are less serious, and the improvement of earnings over cash flows as a performance measure is limited (Dechow [1994]). However, for firms that experience large changes in their working capital requirements, realized cash flows suffer from more serious timing and matching problems and are less able to reflect performance. Consequently, theoretically, *in absence of managerial manipulation*, the smoothing benefits of working capital accruals increases with the volatility of working capital requirements (Dechow [1994]).

H3b: Ceteris paribus, working capital accruals are more likely to be included in the measurement of earnings-based financial covenants if they are more reliable.

H3c: Ceteris paribus, working capital accruals are more likely to be included in the measurement of earnings-based financial covenants when the borrowing firm has more volatile working capital requirements.

3.2.1 Long-Term Accruals

For a regular firm, the future free cash flows available for debt service should be calculated after cash outlays required to maintain operating capacities.²⁶ Two natural candidates for predicting future cash outlays required to maintain operating capacities are the depreciation expense and capital expenditure of the current year.²⁷ Capital expenditure could be a poor measure for at least two reasons. First, current capital expenditure consists of both necessary and growth components.²⁸ Second, capital expenditure contains temporary variation while cash outlays required to maintain operating capacities tend to be more stable. Depreciation expense is conceptually the moving average of past capital expenditure, which smoothes the temporary variation in capital expenditure. For this reason, Ball and Shivakumar [2006] argue that long-term accruals increase the usefulness of earnings for valuation and contracting purposes.

The disadvantage of long-term accruals, however, is that depreciation and amortization schedules are fairly arbitrary. For example, Richardson et al. [2005] argue that considerable uncertainty is involved in the estimation of accruals related to property, plant and equipment, and intangible, and thus they are less reliable. If both capital expenditure and depreciation expense are too noisy measures of future cash outlays required to maintain operating capacities, firms can simply stop using either (e.g., firms can contract on EBITDA) and adjust covenant threshold values accordingly.

²⁶ The discussion focuses on depreciation of tangible long-term assets because it is more common than amortization of intangibles.

²⁷ One example of using the first measure is EBIT; one example of using the second measure is EBITDA minus capital expenditure.

²⁸ This problem applies to depreciation expense as well.

Under certain circumstances the future free cash flows available for debt service could be calculated before cash outlays for capital expenditure, for example, when future capital expenditure is prohibited. This was actually the reason that EBITDA was originally used in coverage ratios to analyze the financial risk associated with leveraged buyouts in 1980s. The justification for adding depreciation and amortization back to earnings in the LBO context was that capital expenditures would halt upon the LBO until the debt burden was reduced to normal levels. Therefore, the normal assumption that depreciation expense approximates the capital expenditures required to maintain the fixed assets did not hold (Smith [2007]).

Empirical evidence generally supports that long-term accruals are less useful than working capital accruals in measuring firm performance. In the stock valuation setting, Dechow [1994] documents that the association of cash from operations with stock returns is less sensitive to the magnitude of long-term operating accruals.²⁹ She argues that “working capital accruals such as accounts receivable and inventory have existed for centuries”, while “more recent long-term operating accruals (such as depreciation) are influenced by the political process and so the motivation for their inclusion in earnings is less clear (Watts [1977], Watts and Zimmerman [1979]).” In the debt valuation setting, Ozel [2010] documents that private debt holders consider working capital accruals to be more informative about credit losses than long-term accruals.

Based on the arguments above, I make two predictions about the forms and frequencies of how long-term accruals are used in the measurement of earnings-based financial covenants. First, I predict that in general long-term accruals are more likely to be excluded from the covenant measurement than working capital accruals. In other words, working capital accruals are generally more useful than long-term accruals in measuring credit risk. Second, I predict that the use of long-term accruals can only take the following

²⁹ Dechow [1994] defines long-term operating accruals as the difference between earnings and operating cash flows minus working capital accruals.

three forms: including long-term accruals (Choice 1, hereafter), excluding long-term accruals without subtracting capital expenditure (Choice 2, hereafter), and excluding long-term accruals combined with the subtraction of capital expenditure (Choice 3, hereafter). I make no predictions about the frequencies of these forms and leave the answer to the data.

H4a: In general, working capital accruals are more likely to be included in the covenant measurement than long-term accruals.

H4b: The use of long-term accruals in the covenant measurement only takes the following three forms: including long-term accruals, excluding long-term accruals without subtracting capital expenditure, and excluding long-term accruals combined with the subtraction of capital expenditure.

The arguments above also have the following cross-sectional implications. First, the use of Choice 1 increases with the reliability of long-term accruals. If long-term accruals are too subjective or arbitrary, the covenant measurement can switch to using capital expenditure (Choice 3) or simply removing long-term accruals (Choice 2). Second, the use of Choice 3 decreases with the volatility of capital expenditure (Dechow [1994], Ball and Shivakumar [2006]). Dechow [1994] argues that for firms that experience volatile investment activities, realized cash flows suffer from more serious timing and matching problems and are less able to reflect performance.

H4c: Ceteris paribus, the likelihood of including long-term accruals (Choice 1) in the performance measures increases with the reliability of long-term accruals.

H4d: Ceteris paribus, the likelihood of using “free cash flows” (excluding long-term accruals and subtracting capital expenditure, Choice 3) in the covenant measurement decreases with the variability of investments in fixed assets.

4. Data and Summary Statistics

I use the loan contracts from Nini, Smith, and Sufi [2009] (NSS, hereafter). NSS begin with a sample of loans from Dealscan database that are matched to COMPUSTAT database for the years 1996 through 2005. They then use text-search programs to scan SEC filings in Edgar for loan contracts and match the contracts to Dealscan based on the dates of the loan agreements and the names of the companies. Their final sample consists of 3,720 loan agreements for 1,939 borrowers. I delete documents that are incomplete or misclassified as loan contracts and contracts without definition sections.³⁰ Some contracts include the definition section in the appendix; NNS do not pull out the appendixes for some contracts. My final sample consists of 3,485 contracts for 1,826 borrowers.

Panels A and B of table 1 present the year and industry distribution for the sample. With the exception of the year 1996, the contracts are distributed relatively evenly across years. Panels C and D of table 1 summarize the main loan and borrower characteristics. The borrower characteristics are measured with annual data for the fiscal year prior to the agreement date. The average loan amount is 452 million, which represents 37.5% of book assets on average. IC, FCC, and DCF covenants are the most commonly used earnings-based financial covenants. DCF covenants are used in 57% of the contracts. 38% of the contracts contain IC covenants; 37% contain FCC covenants.

5. Descriptive Evidence

5.1 Data Coding Procedure

The measurement of accounting variables in debt contracts typically takes a chain structure. To pinpoint the exact definitions of the numerators of IC and FCC ratios and the denominators of DCF ratios, one needs to track down the chain of variables involved. For example, in the loan contract signed by Integra Lifesciences Holding Corporation and its creditors on Dec 22, 2005, the fixed charge coverage ratio is defined as:

³⁰ There are only several documents that are misclassified as loan contracts. The decrease in sample size relative to Nini, Smith, and Sufi [2009] and Li [2010] is primarily due to the deletion of contracts with missing definition sections.

“Consolidated Fixed Charge Coverage Ratio” means, for any period, the ratio of (a) Consolidated EBITDAR, minus Consolidated Capital Expenditures for such period (other than any thereof financed by Indebtedness), to (b) Consolidated Fixed Charges for such period.

I label EBITDAR in the numerator of the definition above as the “benchmark variable” and the adjustment (subtraction of unfunded capital expenditure) “adjustment variable.”³¹ Since EBITDAR is defined separately in the contract, to pinpoint the exact measurement of the benchmark variable, one needs to refer to its definition and the definitions of other variables used in that definition until the measurement is based on a GAAP number. Appendix A presents all definitions related to the definition of fixed charge coverage ratio in this example.

5.2 General Picture of the Measurement of IC, FCC, and DCF Covenants

I apply the coding procedure above to all definitions of the numerators of IC and FCC ratios and the denominators of DCF ratios. Panels A and B of table 2 report the forms and frequencies of the benchmark and adjustment variables. The EBITDA related measure (e.g., EBITDA, Adjusted EBITDA, and so on) is the most common benchmark variable (the frequencies in the IC, FCC, and DCF samples are 73%, 80%, and 93%, respectively), followed by the EBIT related measure (e.g., EBIT, Adjusted EBIT, and so on) in the IC (18%) and FCC (7%) samples, and by the cash flows related measure (e.g., Operating Cash Flows, Free Cash Flows, and so on) in the DCF sample (6%). These benchmark variables are all based on their names, not substances.

Interestingly, when traced down the chain of variables involved, almost all definitions of the performance measures begin with the GAAP net income, even when the

³¹ The use of the terms “benchmark variable” and “adjustment variable” is merely to simplify explanations. Benchmark variables are the *names* of accounting variables *explicitly* used to define the numerators of IC and FCC covenants and the denominators of DCF covenants, such as EBIT, EBITDA, and so on. Adjustment variables are variables added to or subtracted from the benchmark variables in defining the performance measures.

benchmark variables are certain cash flow measures, such as Operating Cash Flows, Cash Flows, Cash Flows from Operation, and so on. Since cash flow statements are available in the sample period, this observation suggests debt contracting parties generally view earnings as a performance measure “closer” than cash flows to the optimal performance measure.

Adjustment variables are relatively rare in the IC and DCF covenants, but are quite common in the FCC covenants (Panel B of table 2). Adjustment variables in the numerators of the FCC covenants are primarily related to rental expense, capital expenditure, cash taxes, and cash distribution to shareholders. To understand why adjustment variables are much more frequent in the FCC sample, I compare the denominators of IC and FCC ratios. The denominators of IC ratios are always interest expense, while those of FCC ratios are not standard. Panel C of table 2 reports the variables included in the denominators of FCC ratios and their frequencies. In addition to interest expense (100%) and debt principal payment (75%), which are regular components of debt service, the denominator also includes rental expense (48%), capital expenditure (21%), cash taxes (26%), and cash distribution to shareholders (30%). Capital expenditure, cash taxes, or cash distribution is not included in the denominator if it is already adjusted for in the numerator.³² It seems that the adjustment variables in FCC covenants primarily reflect what are included in “fixed charges.”³³

Panel B of table 2 indicates that, in order to know the use of transitory earnings, conservative adjustments, and accounting accruals in the measurement of IC, FCC, and

³² Typically, when a contract treats rental expense as fixed charges, rental expense is added back in the numerator and included in the denominator. The frequency of adding back rental expense in the numerators of FCC ratios (17%, Panel B of table 2) is much lower than the frequency of including rental expense in the denominators (48%, Panel C of table 2) because in some contracts rental expense is already added back in benchmark variables (e.g., EBITDAR, EBITR, Adjusted EBITDA, Adjusted EBIT, and so on). For example, in the FCC sample, 17% of benchmark variables are EBITDAR; 3% are EBITR.

³³ Taking both the numerator and denominator into consideration, 61% of contracts in the FCC sample treat capital expenditure as “fixed charges”; 47% include taxed paid in cash; 36% include cash distribution. Obviously, including fixed charges like capital expenditure in the denominator and subtracting it from the numerator have different mathematical implications.

DCF covenants, one only needs to examine the definitions of the benchmark variables (and the chain of variables involved in the definitions). To fully understand how EBITDA and EBIT (the two most common benchmark variables) are defined in debt contracts, I report in tables 3 and 4 the detailed adjustments for them in a random sample of 100 contracts that use the term EBITDA (table 3) or EBIT (table 4). The adjustments in tables 3 and 4 include those in the chain of variables used to define EBITDA or EBIT. The benchmark definition for EBITDA in table 3 is GAAP net income plus interest expense, income tax expense, and depreciation and amortization expense. The benchmark definition for EBIT in table 4 is GAAP net income plus interest expense and income tax expense.

The forms of the adjustments in tables 3 and 4 are similar to those in the contractual definitions of net income documented in table 2 of Li [2010], except that the definition of net income typically does not exclude non-cash expense or non-cash income (Adjustment 21 in table 3 and Adjustment 15 in table 4). Tables 3 and 4 are the pilot samples for coding the whole sample for adjustments related to transitory earnings, accounting accruals, and conservative adjustments. The only adjustments related to working capital accruals are the adjustments for non-cash expense or non-cash income (Adjustment 21 in table 3 and Adjustment 15 in table 4). Long-term accruals are always excluded in the definition of EBITDA. 4% of the definitions of EBIT exclude non-cash charges (including long-term accruals).³⁴ Conservative adjustments could occur in the primary adjustments related to transitory earnings (Adjustments 1-3 and 5-9 in table 3, and Adjustments 1-8 in table 4) or adjustments related to non-cash expense or income (Adjustment 21 in table 3 and Adjustment 15 in table 4).

5.2 Evidence on Hypotheses 1, 2, 3a, 4a and 4b

³⁴ This illustrates the importance of examining the *definitions* of the benchmark variables.

Based on the evidence in tables 3 and 4, I code the IC, FCC, and DCF samples for Adjustments 1-8 of table 4 and report the frequencies in Panel A of table 5 to provide evidence on Hypotheses 1 and 2. To compare with Li [2010], I also report the frequencies of adjustments in the definitions of “Net Income” for the sample of contracts that use the term net income at least once. Consistent with Hypothesis 1, the majority of contracts exclude transitory earnings in the measurement of IC, FCC, and DCF covenants, providing much stronger evidence than in Li [2010] that transitory earnings are less useful than permanent earnings for debt contracting. For example, 72-74% of contracts exclude some components or all of extraordinary, unusual, or non-recurring items in measuring IC, FCC, and DCF covenants, compared with 24% in the definitions of net income. 31-35% of contracts exclude income from asset sales from the measurement of IC, FCC, and DCF covenants, compared with 13% in the definitions of net income.

Table 5 is carefully constructed to separate out any one-sided adjustments to shed light on Hypothesis 2. Although the frequencies of excluding transitory earnings increase significantly from Li [2010] to the measurement of IC, FCC, and DCF covenants, the *relative* frequencies of conservative adjustments are either lower than or similar to that in Li [2010]. For example, 9-15% of adjustments related to extraordinary, unusual, or non-recurring items are conservative in the IC, FCC, and DCF samples, relative to 18% in the definitions of net income in Li [2010]. Moreover, around 4% adjustments related to extraordinary, unusual, or non-recurring items in the IC, FCC, and DCF samples, are aggressive in the sense of excluding certain losses but not the corresponding gains. Panel B of table 5 reports the frequencies of adjustments related to cash and non-cash items. The frequencies of excluding other non-cash expense is higher than twice of the frequencies of excluding non-cash income in the IC, FCC, and DCF samples, implying that the measurement is on average aggressive with regard to non-cash income items. Overall,

tables 3-5 indicate that conservative adjustment is not a significant phenomenon in the performance measures in earning-based financial covenants, consistent with Li [2010].

Panels B and C of table 5 provide evidence on the use of working capital and long-term accruals. Consistent with H3a, working capital accruals are generally included in the covenant measurement. The measurement almost always begins with the GAAP net income and sometimes add back other non-cash expense (34-37% in the three subsamples) or subtract non-cash income (14-15% in the three subsamples). These adjustments are coded very carefully to ensure that they include some components of working capital accruals. For example, I exclude the adjustments for “non-cash gains” from the adjustments for non-cash income because the term “gains” is likely to be related to items that are non-recurring in nature and is not related to working capital accruals.³⁵

Conceptually working capital accruals can be decomposed into four components: non-cash income minus non-cash expense plus non-income cash outflows minus non-income cash inflows.³⁶ Panel B of table 5 indicates non-income cash flows are always excluded from the covenant measurement to mitigate the transitory variation in operating cash flows, while non-cash income or expense is only excluded sometimes. The covenant measurement almost never uses a pure cash flows concept (e.g., operating cash flows or free cash flows). Overall, the evidence is consistent with Ball and Shivakumar’s [2006] argument that working capital accruals improve the contracting usefulness of earnings.

Panel C of table 5 indicates the majority of contracts exclude long-term accruals in the measurement of IC (80%), FCC (89%), and DCF (96%) covenants, consistent with Hypothesis 4a. The use of long-term accruals only take the three forms predicted in Hypothesis 4b. The frequencies of these three forms, however, vary across the three subsamples. Overall, Choice 2 is the most common, with the frequencies of 75%, 50%, and

³⁵ The frequency of excluding non-cash gains is generally very low (around 3%).

³⁶ These four components only refer to items that are included in working capital accruals. For example, non-cash expense refers to non-cash expense included in working capital accruals.

96% in the IC, FCC, and DCF samples.³⁷ The frequencies of Choice 1 are 20%, 11%, and 4% in the IC, FCC, and DCF samples, respectively. Choice 3 is rare in the IC (5%) and DCF samples (1%), while it is fairly common in the FCC sample (40%).

6. Cross-Sectional Analysis

6.1 Research Design

Since the descriptive evidence indicates that the covenant measurement only excludes part of working capital accruals through the exclusion of non-cash income or other non-cash expense, my cross-sectional investigation of working capital accruals reduces to examining the likelihood of excluding non-cash income or other non-cash expense. I run probit regressions using as dependent variables the dummies for excluding either other non-cash expense or non-cash income (*Ex_Non_Cash*), excluding other non-cash expense (*Plus_Non_Cash_Expense*), and excluding non-cash income (*Minus_Non_Cash_Income*). To investigate the cross-sectional variation of the use of long-term accruals, I run probit regressions using the dummies for Choice 1 (*Choice1*) and Choice 3 (*Choice3*) as the dependent variables. I control for firm size (*Log_Asset*), leverage ratio (*Leverage*), market-to-book ratio (*Market_to_Book*), and profitability (*Profitability*) in all regressions. I also control for the magnitude of depreciation and amortization expense scaled by assets (*Depreciation*) in regressions related to long-term accruals, given Demerjian's [2009] findings that the numerators of IC ratios are more likely to be measured with EBIT relative to EBITDA when firms have larger depreciation and amortization expense.

Since I examine three different covenants, one natural research design is to perform tests in each subsample. One potential problem with this design, however, is that covenant measurements could be designed *as a package* to control for agency problems. For

³⁷ If including capital expenditure in the denominator of FCC ratio is considered as an alternative form of subtracting capital expenditure in the numerator, the frequency of Choice 2 reduces to 32% and the frequency of Choice 3 increases to 59% in the FCC sample.

example, in contracts with both IC and FCC covenants, it is likely that the IC covenant is measured with a more earnings-based number, while the FCC covenant is measured with a more cash-flows-based number. To understand how serious this problem is, I report in Table 6 the correlations of the use of accruals across different covenants. Table 6 indicates that the exclusions of non-cash income and other non-cash expense are quite consistent across covenants, which justifies performing tests in each subsample.

The use of long-term accruals, however, are generally not highly correlated across covenants, and there could be certain substitutions across covenants (table 6). For example, the uses of Choice 1 in the IC and DCF covenants are negatively correlated (Panel B, table 6). I address this problem in two ways. First, I separately investigate the likelihood of Choice 1 in the IC and FCC samples, controlling for whether Choice 1 is used in other covenants (*Choice1_Other*), and separately examine the likelihood of Choice 3 in the FCC sample, controlling for whether Choice 3 is used in other covenants (*Choice3_Other*).³⁸ Second, I identify contracts that contains only one of the three covenants and examine the use of Choice 1 and Choice 3 in these contracts (single covenant sample, hereafter).³⁹ The single covenant sample includes 1,012 contracts, of which 380 contain IC covenants, 303 contain FCC covenants, and 329 contains DCF covenants.

6.1 Variable Measurement

Following Dechow [1994], I measure the volatility of working capital requirements with the mean absolute value of working capital accruals scaled by average sales (*MC_MAV*) and the firms' operating cycle (*Op_Cycle* and *Tr_Cycle*).⁴⁰ I calculate

³⁸ I do not test H4c in the DCF sample because Choice 1 is only used in 3.6% of contracts, resulting in low test powers. For similar reasons, I do not test H4d in the IC or FCC sample.

³⁹ In other words, each of these contracts contains only one "earnings-based" covenant, which could be a IC, FCC, or DCF covenant.

⁴⁰ Dechow [1994] predicts and documents that the smoothing benefits of aggregate accruals increase with the absolute magnitude of aggregate accruals. She also documents the smoothing benefits of aggregate accruals are less sensitive to the absolute magnitude of long-term operating accruals. In table 6, she measures the volatility of working capital requirements with the absolute change in working capital.

MC_MAV with annual data of 10 years before the agreement date for firms with at least five data points.⁴¹ The operating cycle measures the average time elapsing between the disbursement of cash to produce a product and the receipt of cash from the sale of the product. Firms with longer operating cycles are expected to have larger working capital requirements for a given level of operating activity (Dechow [1994]). Specifically, *Op_Cycle* and *Tr_Cycle* are calculated as

$$Op_Cycle = \frac{(AR_t + AR_{t-1})/2}{Sales_t/360} + \frac{(Inv_t + Inv_{t-1})/2}{COGS_t/360}$$

and

$$Tr_Cycle = Op_Cycle - \frac{(AP_t + AP_{t-1})/2}{Purchases_t/360}$$

where AR_t , Inv_t , $COGS_t$, AP_t , and $Purchases_t$ are accounts receivable, inventory, costs of goods sold, accounts payable, and purchases of inventory, respectively. *Op_Cycle* and *Tr_Cycle* are calculated with annual data of 10 years before the agreement date. To mitigate the effects of outliers, I only use firms with data of at least 5 years and winsorize *Op_Cycle* and *Tr_Cycle* at 1 and 99 percentiles. Panel D of table 1 indicates that the average operating cycle (*Op_Cycle*) is 122 days, and the average trading cycle (*Tr_Cycle*) is 55 days.

I measure the volatility of investments in fixed assets with the coefficient of variation of net capital expenditure (*Capex_CV*) and the standard deviation of net capital expenditure scaled by average total assets (*Capex_Std*). *Capex_CV* and *Capex_Std* are calculated with annual data within 10 years before the loan agreement date for firms with data of at least 5 years. Since accrual reliability is notoriously difficult to measure empirically, I examine the effects of variables that are theoretically associated with accruals reliability. Specifically, I investigate the effects of reputational capital and a set of firm and loan characteristics that are

⁴¹ Since the mean of working capital accruals is close to zero, the mean absolute value of working capital accruals is conceptually similar to the volatility of working capital accruals, which is likely to be negatively correlated with accrual reliability.

highly associated with the agency costs of debt, including loan maturity (*Maturity*), interest spread (*Interest*), covenant intensity (*Cov_Intensity*), loan security (*Secured*), and firm credit rating (*Credit_Rating*).⁴² I assume that firms with higher reputational capital and lower agency costs of debt are less likely to manipulate accruals to circumvent covenant violations and have higher accrual reliability. *Maturity*, *Interest*, *Cov_Intensity*, *Secured*, and *Credit_Rating* are all positively associated with credit risk and the agency costs of debt (Beatty et al. [2008]).⁴³ Since *Secured*, *Cov_Intensity*, and *Interest* are highly correlated, I include their first principal component (*Agency_Cost*) in the analysis to mitigate the potential multicollinearity problem.⁴⁴

Reputational considerations act to alleviate both moral hazard and information problems for firms (Diamond [1989, 1991], Dahiya et al. [2003], Sufi [2007]). Firms with lower reputational capital have more informational and moral hazard problems and are more likely to have lower accrual reliability. I measure reputational capital with the number of repeated relationships with the lead arranger(s) within five years before the loan agreement date (*Relationship*). Previous studies document lower interest rate, collateral requirement, and fewer covenants for relationship loans (Bharath et al. [2011], Lou [2011]), consistent with the reputation effects of banking relationship.

6.3 Empirical Results

6.3.1 Univariate Results

Figure 1 plots the frequencies of adjustments for accruals over time. The frequency of excluding other non-cash expense is stable over time in the IC and DCF sample (Figures 1.1 and 1.3), and increases from 26% in 1996 to 39% in 2005 in the FCC sample (Figure 1.2). The frequency of excluding non-cash income increases from 10% in 1996 to 24% in

⁴² Beatty et al. [2008] also use these firm and loan characteristics to measure the agency costs of debt.

⁴³ Higher numerical value of *Credit_Rating* means lower credit quality.

⁴⁴ Only the first principal component has eigenvalue greater than one. I exclude *Credit_Rating* from the principal analysis to maintain the sample size.

2005 in the IC sample (Figure 1.1), from 8% to 19% in the FCC sample (Figure 1.2), and from 13% to 26% in the DCF sample (Figure 1.3). The use of long-term accruals (Choice 1) decreases from 20% in 1996 to 12% in 2005 in the IC sample (Figure 1.1), from 18% to 6% in the FCC sample (Figure 1.2), and from 13% to 1% in the DCF sample (Figure 1.3). Accordingly, the use of Choice 2 increases in the IC and DCF sample (Figures 1.1 and 1.3), and the use of Choice 3 increases in the FCC sample (Figure 1.2). Overall, it appears that the performance measures have been moving toward cash flows over the period 1996-2005.

Figure 2 summarizes the use of accruals across industries. The industry classification follows Barth et al. [1999]. There are substantial cross-industry variations. Overall, other non-cash expense or non-cash income is the most likely to be excluded from the performance measures in the extractive and transportation industries. For example, 56% (26%) of contracts in the transportation industry exclude other non-cash expense (non-cash income) in the FCC sample (Figure 2.3). The extractive industry is also the most likely to exclude long-term accruals. The frequency of Choice 1 in the extractive industry is only 5% in the IC sample (Figure 2.2), and 2% in the FCC and DCF samples (Figures 2.4 and 2.6). The cross-industry variations suggest that the business characteristics and the related accounting measurement rules could affect the contracting usefulness of accruals.

The correlation matrix in Panel A of table 7 shows strong evidence that the likelihoods of excluding long-term accruals and non-cash income or other non-cash expense increase with the agency costs of debt. *Ex_Non_Cash* is positively correlated with *Maturity*, *Secured*, *Cov_Intensity*, *Interest*, *Credit_Rating*, and *Agency_Cost*, and negatively correlated with *Relationship* in all subsamples.⁴⁵ *Choice1* is negatively correlated with *Maturity*, *Secured*, *Cov_Intensity*, *Interest*, *Credit_Rating*, and

⁴⁵ The correlation between *Ex_Non_Cash* and *Relationship* is significant at 10% level in the FCC sample.

Agency_Cost in all subsamples. *Ex_Non_Cash* is negatively correlated with *Ty_Cycle*, consistent with Hypothesis 3c. *WC_MAV*, however, is positively associated with *Ex_Non_Cash*, inconsistent with Hypothesis 3c.⁴⁶ Consistent with Hypothesis 4d, *Choice3* is negatively correlated with *Capex_CV* and *Capex_Std*.⁴⁷

6.3.2 Multivariate Results

Table 8 reports the results of probit regressions for the likelihood of excluding non-cash income or other non-cash expense (*Ex_Non_Cash*) in the IC, FCC, and DCF samples. The reported numbers are average marginal effects. The marginal effects of *Maturity*, *Credit_Rating*, and *Agency_Cost* are all significantly positive in the three samples, consistent with Hypothesis 4c. The marginal effects of the measures of agency costs of debt are also economically significant. One inter-quartile increase in maturity would increase the likelihood by 12-14%, 7-10%, and 8-13% in the IC, FCC, and DCF samples, respectively. One notch improvement in credit rating would decrease the likelihood by approximately 3% in all samples. One inter-quartile increase in *Agency_Cost* would increase the likelihood by around 16%, 8-9%, and 11% in the IC, FCC, and DCF samples, respectively.

Consistent with firms with more reputational capital being less likely to exclude non-cash income or other non-cash expense, the marginal effects of *Relationship* are significantly negative in all regressions except Regressions 1-3 in the FCC sample. One more repeated relationship with the lead arranger(s) in the previous five years would lower the likelihood of excluding non-cash income or other non-cash expense by approximately 3-4%. In contrast, proxies for the volatility of working capital requirements (*WC_MAV*,

⁴⁶ *WC_MAV* is likely to capture poor accrual quality or firm risk, which predicts a positive relation between *WC_MAV* and *Ex_Non_Cash*. The use of *Op_Cycle* and *Tr_Cycle* helps to mitigate this measurement problem.

⁴⁷ The correlations of *Choice1* with *Capex_CV* and *Capex_Std*, however, are generally negative. This is likely to be due to the positive correlation between the volatility of capital expenditure and the agency costs of debt.

Op_Cycle, and *Tr_Cycle*) generally have no explanatory powers for the likelihood, inconsistent with Hypothesis 3c.⁴⁸

Table 9 separately investigates the likelihoods of adding back other non-cash expense (*Plus_Non_Cash_Expense*) and subtracting non-cash income (*Minus_Non_Cash_Income*) in the IC, FCC, and DCF samples. The results are generally consistent with those in table 8. The likelihoods increase with *Maturity*, *Credit_Rating*, and *Agency_Cost*, and decrease with *Relationship*. The marginal effects of *WC_MAV* are significantly positive in Regressions 4 and 6 in Panel A and Regressions 3 and 4 in Panel B, inconsistent with Hypothesis 3c. The marginal effects of *Op_Cycle* and *Tr_Cycle* are generally insignificant (untabulated).⁴⁹ Overall, tables 8 and 9 provide strong evidence that the agency costs of debt are an important driving force for the exclusion of non-cash income or other non-cash expense, while the smoothing benefits of working capital accruals appear to be an unimportant factor.⁵⁰

Table 10 reports the results of testing Hypothesis 4c in the IC, FCC, and single covenant samples. The marginal effects of *Maturity*, *Credit_Rating*, and *Agency_Cost* are all significantly negative except in Regressions 3 and 4 in Panel C, consistent with Hypothesis 4c. One inter-quartile increase in maturity would decrease the likelihood by 4-7%, 2%, and 2-3% in the IC, FCC, and single covenant samples, respectively. One notch improvement in credit rating would increase the likelihood by approximately 1-2%. One inter-quartile increase in *Agency_Cost* would increase the likelihood by around 14%, 8%, and 10% in the IC, FCC, and single covenant samples, respectively. The marginal effects of *Relationship* are only significantly positive in the IC sample (Panel A of table 10). One more repeated relationship with the lead arranger(s) in the previous five years would

⁴⁸ The marginal effects of *WC_MAV* are positive and significant at the 10% level in Regression 4 of Panels B and C, inconsistent with Hypothesis 3c.

⁴⁹ When *Tr_Cycle* is used as proxy for the volatility of working capital requirement in Regression 3 in Panel A of table 9, the marginal effect is significantly negative at the 5% level.

⁵⁰ It is also likely that *WC_MAV*, *Op_Cycle*, and *Tr_Cycle* are poor proxies for the smoothing benefits.

increase the likelihood of including long-term accruals in the measurement of IC covenants by approximately 1-2%. Overall, tables 10 indicates that the agency costs of debt are an important driving force for the inclusion of long-term accruals in the covenant measurement.

Table 11 presents the results of testing Hypothesis 4d. Since it is difficult to interpret using Choice 2 in the numerator and including capital expenditure in the denominator at the same time in the FCC covenant,⁵¹ I drop these observations (226 contracts in the FCC sample and 31 contracts in the single covenant sample). The main results, however, are robust to including these observations. The marginal effects of the measures of capital expenditure volatility (*Capex_CV* and *Capex_Std*) are all significantly negative except in Regression 1 of Panel B, consistent with Hypothesis 4d. The marginal effects of *Capex_CV* and *Capex_Std* are also economically significant in the FCC sample (Panel A). One inter-quartile increase in *Capex_CV* (*Capex_Std*) would decrease the likelihood of Choice 3 by 6-7% (12-16%). The marginal effects of *Capex_CV* and *Capex_Std*, however, are economically small in the single covenant sample (Panel B). One inter-quartile increase in *Capex_CV* (*Capex_Std*) would decrease the likelihood of Choice 3 by 2% (1-2%).⁵²

7. Additional Analyses

7.1 Effects of Credit Risk

The results in tables 8-10 are also consistent with the argument that cash flows are more useful than earnings in evaluating future debt repayment abilities for firms with higher credit risk and poorer financial health. In a content analysis of analysts' reports, Previts et al. [1994] report that analysts find cash flows more important in assessing firm

⁵¹ This choice also excludes long-term accruals and considers capital expenditure. Nevertheless, it is not a direct use of Choice 3.

⁵² The average frequency of Choice 3 is 11% in the single covenant sample, much lower than that in the FCC sample (48%).

values among highly leveraged firms. DeFond and Hung [2003] argue that “this is consistent with cash flows providing information about solvency and liquidity, and with operating cash flows being a traditional measure in evaluating credit and bankruptcy risks” (pp. 79). Consistent with this argument, DeFond and Hung [2003] document that analysts are more likely to provide cash flows forecasts *in addition to* earnings forecasts for firms with poor financial health (measured with Altman Z-score).

Findings in Previts et al. [1994] and DeFond and Hung [2003], however, do not support the argument that cash flows, when used *separately*, are a better predictor of credit risk than earnings for firms with higher credit risk. Indeed, if this is the case, one would observe the use of operating cash flows or free cash flows directly in the covenant measurement for highly risky firms, instead of a performance measure starting with GAAP net income but with non-cash expense or income excluded. Theoretically, it is hard to explain why non-income cash flows are almost always subtracted from cash flows in the covenant measurement while non-cash income or expense is only excluded sometimes, if lenders really demand a cash flow measure.⁵³

Moody’s [2000] proposes another explanation for the negative relation between credit risk and the use of long-term accruals, arguing that capital expenditure is discretionary to some extent for highly risky firms and credit risk could be evaluated using cash flows before capital expenditure (e.g., firm can contract on EBITDA).⁵⁴ In other words, since highly risky firms are unlikely to obtain refinancing or favorable outcomes in default renegotiations, it could be more cost-effective for them to curtail capital expenditure to pay principal and interest. Therefore, the regular assumption that the future

⁵³ In this argument, I describe the observed performance measures as operating cash flows minus non-income cash flows and plus non-cash income and minus non-cash expense sometimes.

⁵⁴ Moody's [2000] argues "EBITDA remains a legitimate tool for analyzing low-rated credits at the bottom of the (business) cycle. Its use is less appropriate, however, for higher-rated and investment grade credits particularly mid-way through or at the top of the cycle."

free cash flows available for debt service should be calculated after cash outlays required to maintain operating capacities does not hold for highly risky firms.

Moody's argument above predicts that the likelihood of Choice 2 for long-term accruals increases with credit risk, while Hypothesis 4c predicts the probability of Choice 1 decreases with the agency costs of debt. I rule out Moody's argument as an alternative explanation for the findings in table 10 by examining how the likelihood of Choice 2 relative to Choice 3 varies with credit risk (table 12). Moody's argument implies this likelihood increases with credit risk, while the story of accrual reliability makes no prediction on the link between this likelihood and the agency costs of debt. Table 12 indicates that, inconsistent with Moody's argument, the use of Choice 3 relative to Choice 2 increases with *Agency_Cost* in both the FCC and single covenant samples, and increases with *Credit_Rating* in the single covenant sample.⁵⁵ The marginal effects of the volatility of capital expenditure are generally negative, consistent with Hypothesis 4d. Therefore, my findings in table 10 are not due to fact that capital expenditure is discretionary for highly risky firms (Moody's [2000]).

7.2 Capital Expenditure Restrictions

The findings in table 10 are also consistent with the story that contracts for firms with lower credit quality are more likely to contain capital expenditure restrictions (Nini et al. [200]) and thus the future free cash flows for debt service could be measured before capital expenditure (Smith [2007]).⁵⁶ To explore this possibility, I partition the IC, FCC, and single covenant samples based on the existence of capital expenditure restrictions and rerun the tests in table 10. Untabulated results indicate the effects of the agency costs of

⁵⁵ I exclude contracts with capital expenditure included in the denominator of the FCC ratio. The results, however, are robust to including these contracts.

⁵⁶ See the analysis in Section 3.2.1.

debt are generally robust to the sample partition.⁵⁷ Therefore, the fact that capital expenditure restrictions increase with credit risk is unlikely to explain the main results in table 10.

8. Conclusions

This study investigates the performance measures used in the IC, FCC, and DCF covenants to shed light on the debt contracting demand for performance measures. The first contribution of this paper is to provide a detailed and complete picture of the performance measures in these covenants. The descriptive evidence provides stronger evidence than in Li [2010] for the argument that transitory earnings are less useful than permanent earnings for debt contracting, and that conservative adjustment, in the sense of including certain negative earnings but not the corresponding positive earnings, is not a significant phenomenon in performance measures in debt contracts. The descriptive evidence also indicates that working capital accruals are generally useful, and more useful than long-term accruals, in the covenant measurement.

Cross-sectionally, firms with higher agency costs of debt are more likely to exclude long-term accruals, non-cash income, and other non-cash expense from the performance measures, suggesting that accrual reliability is one primary concern in the covenant measurement. The likelihood of using “free cash flow” (adding back depreciation and amortization expense and subtracting capital expenditure) in the performance measure increases with the volatility of capital expenditure, consistent with the usefulness of free cash flows decreasing in the variability of investments in fixed assets. While some practitioners argued that EBITDA is misused in practice to measure credit risk (e.g., Moody’s [2000]), my study shows that the cross-sectional variation of the use of long-term accruals is consistent

⁵⁷ The effects of *Agency_Cost* are robust to the sample partition, while the effects of *Credit_Rating* become insignificant in some regressions because of the small sample size after sample partition.

with theoretical predictions. My study, however, provides no answers to the question of whether the frequency of contracting on EBITDA is too high.

This paper contributes to the literatures on debt contracting and accounting accruals. The findings are quite informative about the debt contracting demand for accounting numbers and have important policy implications. The evidence suggests that working capital accruals are generally useful for debt contracting, and the reliability of accounting numbers is one important consideration in the use of accounting numbers in debt contracts (Leftwich [1983]). The use of accounting numbers in debt contracts is different from that in security valuation in that one can assign smaller weights to more noisy variables in security valuation, whereas the assignment of different weights is quite rare in debt contracts. Consequently, if accounting numbers are too noisy or biased due to measurement errors or managerial opportunism, they are likely to be excluded from the contracting variables in debt contracts. This justifies Watts's [2006] concern that debt contracts would probably stop using accounting measures if the fair value measures create too much noise in accounting variables.

Given the rich cross-industry variation in the use of accruals in Figure 2, the usefulness of accruals for debt contracting is quite likely to be a function of business natures and accounting policies (e.g., revenue recognition policies). Future studies can explore how firms' business activities and accounting choices affect the covenant measurement, as well as how changes in accounting rules impact the covenant measurement. The latter would be a good revealed preference setting for policy evaluation. In addition, while conservative adjustments are not common in the performance measures, it is still interesting to understand why some performance measures are conservative by examining the cross-sectional variation.

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Appendix A

This appendix presents the definition of fix charge coverage ratio in the loan agreement signed by Integra Lifesciences Holding Corporation and its creditors on Dec 22, 2005.

“Consolidated Fixed Charge Coverage Ratio” means, for any period, the ratio of (a) Consolidated EBITDAR, minus Consolidated Capital Expenditures for such period (other than any thereof financed by Indebtedness), to (b) Consolidated Fixed Charges for such period. ”

“Consolidated EBITDAR” means, for any period, for any Person and its Subsidiaries determined on a consolidated basis, an amount equal to Consolidated EBITDA for such period, plus, to the extent deducted in calculating Consolidated Net Income for such period, Rental Expense for such period.

“Consolidated EBITDA” means, for any period, for any Person and its Subsidiaries determined on a consolidated basis, an amount equal to Consolidated Net Income for such period, plus (a) the following to the extent deducted in calculating such Consolidated Net Income: (i) Consolidated Interest Charges for such period; (ii) the provision for federal, state, local and foreign income taxes payable for such period; (iii) depreciation and amortization expense; and (iv) other expenses and all equity compensation charges reducing Consolidated Net Income which do not represent a cash item in such period or any future period and minus (b) the following to the extent included in calculating such Consolidated Net Income: (i) Federal, state, local and foreign income tax credits of the Borrower and its Subsidiaries for such period and (ii) all non-cash items increasing Consolidated Net Income for such period.

“Consolidated Net Income” means, for any period, for any Person and its Subsidiaries determined on a consolidated basis, the net income (excluding extraordinary gains but including extraordinary cash losses other than losses related to the Permitted Swap Termination and fees related to the Convertible Note Exchange) of such Person for that period.

“Consolidated Fixed Charges” means, for any period for any Person and its Subsidiaries on a consolidated basis, the sum of (a) Consolidated Cash Interest Charges for such period plus (b) Consolidated Scheduled Debt Payments for such period plus (c) Consolidated Cash Taxes for such period plus (d) Rental Expense for such period.

“Consolidated Capital Expenditures” means, for any period for any Person and its Subsidiaries determined on a consolidated basis, without duplication (a) all expenditures made directly or indirectly during such period for Capital Assets (whether paid in cash or other consideration or accrued as a liability and including, without limitation, all expenditures for maintenance and repairs which are required, in accordance with GAAP, to be capitalized on the books of such Person) and (b) solely to the extent not otherwise included in clause (a) of this definition, the aggregate principal amount of all Indebtedness (including, without limitation, obligations in respect of Capitalized Leases) assumed or incurred during such period in connection with any such expenditures for Capital Assets.

“Consolidated Interest Charges” means, for any period, for any Person and its Subsidiaries determined on a consolidated basis, the sum of (a) all interest, premium payments, debt discount, loan fees, charges and related expenses in connection with Indebtedness (including capitalized interest), in each case to the extent treated as interest in accordance with GAAP, and (b) the portion of rent expense with respect to such period under Capitalized Leases that is treated as interest in accordance with GAAP.

Appendix B Variable Definitions

Variable	Definition
<i>Agency_Cost</i>	The first principal component of <i>Interest</i> , <i>Cov_Intensity</i> , and <i>Secured</i> .
<i>Cov_Intensity</i>	The total number of financial covenants and general covenants.
<i>Credit_Rating</i>	The numerical value for S&P crediting rating, with AAA equal to 1, AA+ equal to 2, . . . , and D equal to 22. Moody's rating is converted to S&P rating through the conventional conversion table.
<i>Capex_CV</i>	The coefficient of variation of net capital expenditure, calculated with annual data within 10 years before the agreement date for contracts with at least 5 data points for calculation.
<i>Capex_Std</i>	The standard deviation of net capital expenditure scaled by average assets, calculated with annual data within 10 years before the agreement date for contracts with at least 5 data points for calculation.
<i>Depreciation</i>	Depreciation and amortization expense scaled by total assets.
<i>Choice1</i>	A dummy variable equal to one if long-term accruals is included in the covenant measurement, and zero otherwise.
<i>Choice1_Other</i>	A dummy variable equal to one if <i>Choice1</i> is equal to one in any other earnings-based financial covenant, and zero otherwise.
<i>Choice3_Other</i>	A dummy variable equal to one if <i>Choice3</i> is equal to one in any other earnings-based financial covenant, and zero otherwise.
<i>Choice3</i>	A dummy variable equal to one if "free cash flows" (adding back depreciation and amortization expense and subtracting capital expenditure) is used in the covenant measurement, and zero otherwise.
<i>Ex_Non_Cash</i>	A dummy variable equal to one if non-cash income or other non-cash expense is excluded from the performance measures and zero otherwise.
<i>Interest</i>	Amount weighted loan interest spread measured with basis points over LIBOR (London Interbank Offer Rate).
<i>Leverage</i>	The ratio of long-term debt to total assets.
<i>Log_Asset</i>	Natural log of total assets.

Variable	Definition
<i>Market_to_Book</i>	The market value of equity plus the book value of debt divided by total assets.
<i>Maturity</i>	Minimum loan maturity in months.
<i>Minus_Non_Cash_Income</i>	A dummy variable equal to one if non-cash income is subtracted from the performance measure, and zero otherwise.
<i>Op_Cycle</i>	The mean of $\frac{(AR_t+AR_{t-1})/2}{Sales_t/360} + \frac{(Inv_t+Inv_{t-1})/2}{COGS_t/360}$, where AR_t , Inv_t , and $COGS_t$ are accounting receivable, inventory, and costs of goods sold, respectively, calculated with annual data within 10 years before the agreement date for contracts with at least 5 data points for calculation.
<i>Profitability</i>	Income before extraordinary items divided by total assets.
<i>Plus_Non_Cash_Expense</i>	A dummy variable equal to one if other non-cash expense (non-cash expense other than depreciation and amortization expense) is added back in the performance measure, and zero otherwise.
<i>Relationship</i>	The number of repeated borrowing relationship with the lead arranger(s) within 5 years before the agreement date.
<i>Secured</i>	A dummy variable equal to one if the loan is secured and zero otherwise.
<i>Tr_Cycle</i>	The mean of $Op_Cycle - \frac{(AP_t+AP_{t-1})/2}{Purchases_t/360}$, where AP_t , and $Purchases_t$ are accounts payable and purchases of inventory, respectively, calculated with annual data within 10 years before the agreement date for contracts with at least 5 data points for calculation.
<i>WC_MAV</i>	The mean absolute value of working capital accruals scaled by average sales, calculated with annual data within 10 years before the agreement date for contracts with at least 5 data points for calculation.

Table 1 Year and Industry Distributions and Summary Statistics

This table presents the distribution of contracts and borrowers across years and industries, and summary statistics for loan characteristics and firm characteristics for the sample of 3,485 private loan agreements for 1,826 borrowers from Nini, Smith, and Sufi [2009], which are collected from the SEC's Edgar electronic filing system over the period 1996-2005. The industry classification follows Barth et al. [1999]. All borrower characteristics are measured for the fiscal year prior to the agreement date. A rating lower than BBB is considered to be speculative grade. The numerical value for credit rating is set to 1 if the S&P rating is AAA, through 22 if the rating is D. Variable definitions are in Appendix B.

Panel A Agreement Year Distribution				
Year	Contract		Borrower	
	Frequency	Percentage	Frequency	
1996	106	3.04	106	
1997	419	12.02	390	
1998	382	10.96	358	
1999	370	10.62	350	
2000	341	9.78	325	
2001	333	9.56	321	
2002	374	10.73	362	
2003	366	10.50	340	
2004	448	12.86	428	
2005	346	9.93	332	
Total	3,485	100		

Panel B Industry Distribution				
Industry	Contract		Borrower	
	Frequency	Percentage	Frequency	Percentage
Mining and Construction	24	0.69	14	0.76
Food	82	2.35	45	2.45
Textile, Printing, and Publishing	271	7.78	132	7.19
Chemicals	115	3.30	59	3.21
Pharmaceuticals	64	1.84	41	2.23
Extractive Industries	276	7.92	135	7.35
Durable Manufacturers	785	22.53	441	24.02
Computers	276	7.92	160	8.71
Transportation	280	8.03	151	8.22
Utilities	246	7.06	90	4.90
Retails	478	13.72	258	14.05
Services	501	14.38	270	14.71
Others	87	2.50	40	2.18
Total	3,485	100	1,826	100

(Table 1 Continued)

Panel C Loan Characteristics	Mean	Median	Std	N
Loan amount (\$ in millions)	452	200	975	3,485
Loan amount/assets	0.375	0.254	0.417	3,485
Amount-weighted maturity (month)	46.7	43.2	104.9	3,438
Minimum maturity (month)	39.8	36.0	21.3	3,438
Interest spread (basis points above LIBOR)	169.2	148.1	130.2	3,485
Covenant Intensity	6.880	6.000	3.216	3,485
Secured {0,1}	0.531	1.000	0.499	3,485
Performance pricing {0,1}	0.769	1.000	0.421	3,485
Number of lenders	9.4	7.0	9.1	3,485
Debt to cash flows covenant {0,1}	0.571	1.000	0.492	3,485
Interest coverage covenant {0,1}	0.383	0.000	0.486	3,485
Fixed charge coverage covenant {0,1}	0.374	0.000	0.485	3,485
Debt service coverage covenant {0,1}	0.046	0.000	0.210	3,485
Minimum cash flows covenant {0,1}	0.123	0.000	0.329	3,485
Capital expenditure restriction {0,1}	0.317	0.000	0.466	3,485

Panel D Borrower Characteristics	Mean	Median	Std	N
Total assets (\$ in millions)	3354	701	10374	3,485
Leverage (long-term debt/total assets)	0.254	0.233	0.210	3,485
Market-to-book	1.814	1.450	1.600	3,439
Return on Assets	0.025	0.037	0.121	3,485
Depreciation and amortization/assets	0.050	0.042	0.037	3,479
Operating Cycle (<i>Op_Cycle</i>)	121.973	105.023	88.669	2,810
Trading Cycle (<i>Tr_Cycle</i>)	54.582	57.027	132.393	2,805
<i>WC_MAV</i>	0.053	0.038	0.056	2,774
<i>Capex_CV</i>	0.638	0.572	0.349	2,983
<i>Capex_Std</i>	0.055	0.031	0.090	2,985
Firm has a credit rating {0,1}	0.597	1.000	0.491	3,485
Credit rating (1=AAA, 2=AA+, ..., 22=D)	11.137	11.000	3.223	2,080
Speculative grade {0,1}	0.559	1.000	0.497	2,080

Table 2 Benchmark and Adjustment Variables in IC, FCC, and DCF Covenants

This table reports the forms and frequencies of the "benchmark variables" (Panel A) and "adjustment variables" (Panel B) used in the measurement of the numerators of IC and FCC covenants and the denominators of DCF covenants, and the measurement of the denominators of FCC covenants (Panel C). Benchmark variables are the *names* of accounting variables *explicitly* used to define the numerators, such as EBIT, EBITDA, and so on. Adjustment variables are variables added to or subtracted from the benchmark variables in defining the performance measures. All variables are dummy variables.

Panel A Benchmark Variables for Performance Measures									
	IC Covenants			FCC Covenants			DCF Covenants		
	Mean	Std	N	Mean	Std	N	Mean	Std	N
EBITDA related ⁵⁸	0.733	0.442	1,335	0.804	0.397	1,303	0.934	0.248	1,991
EBITDA	0.646	0.481	1,335	0.590	0.492	1,303	0.776	0.417	1,991
EBIT related ⁵⁹	0.184	0.387	1,335	0.067	0.249	1,303	0.000	0.000	1,991
EBIT	0.174	0.379	1,335	0.038	0.192	1,303	0.000	0.000	1,991
Cash flow related ⁶⁰	0.061	0.239	1,335	0.077	0.266	1,303	0.061	0.239	1,991
Operating Cash Flow	0.041	0.206	1,335	0.039	0.194	1,303	0.035	0.184	1,991
Earnings related ⁶¹	0.017	0.130	1,335	0.051	0.219	1,303	0.005	0.071	1,991
Other ⁶²	0.005	0.072	1,335	0.002	0.048	1,303	0.000	0.000	1,991

Panel B Adjustment Variables for Performance Measures									
	IC Covenants			FCC Covenants			DCF Covenants		
	Mean	Std	N	Mean	Std	N	Mean	Std	N
Plus rental and lease expense	0.013	0.115	1,335	0.166	0.372	1,303	0.010	0.097	1,991
Minus capital expenditure	0.033	0.179	1,335	0.304	0.460	1,303	0.001	0.032	1,991
Minus unfunded capital expenditure	0.000	0.000	1,335	0.028	0.164	1,303	0.001	0.032	1,991
Minus cash capital expenditure	0.000	0.000	1,335	0.016	0.126	1,303	0.000	0.000	1,991
Minus maintenance capital expenditure	0.002	0.047	1,335	0.018	0.132	1,303	0.000	0.000	1,991
Minus cash dividend and/or repurchase	0.003	0.055	1,335	0.045	0.207	1,303	0.002	0.045	1,991
Minus cash tax paid	0.004	0.067	1,335	0.157	0.364	1,303	0.000	0.000	1,991
Other	0.014	0.118	1,335	0.078	0.269	1,303	0.003	0.055	1,991

⁵⁸ EBITDA (the most frequent), EBITDAR, Adjusted EBITDA, etc.

⁵⁹ EBIT (the most frequent), EBITR, Adjusted EBIT, etc.

⁶⁰ Operating Cash Flow (the most frequent), Cash Flow, Adjusted Cash Flow, etc.

⁶¹ Operating Income, Earnings Available for Fixed Charges, etc.

⁶² Benchmark variables that cannot be classified into the four groups above based on the name, e.g., Funds available for fixed charges.

Panel C Measurement of the Denominators of FCC Covenants			
	Mean	Std	N
(Cash) Interest expense	1.000	0.000	1,303
Debt principal payment	0.746	0.435	1,303
Rent/lease expense	0.478	0.500	1,303
Any capital expenditure (one of the following)	0.209	0.407	1,303
Capital expenditure	0.163	0.369	1,303
Unfunded capex	0.013	0.114	1,303
Cash capex	0.011	0.103	1,303
Maintenance capex	0.022	0.148	1,303
Cash dividend and/or repurchase	0.299	0.458	1,303
Tax related (one of the following)	0.325	0.469	1,303
Taxes paid	0.236	0.425	1,303
Taxes paid or payable	0.027	0.162	1,303
Tax expense	0.064	0.246	1,303
Other	0.010	0.300	1,303

Table 3 Forms and Frequencies of Contractual Adjustments to EBITDA

This table reports the forms and frequencies of contractual adjustments to definition of EBITDA in a random sample of 100 contracts that use EBITDA. The benchmark definition is the GAAP net income plus interest, tax, depreciation, and amortization expense. This table only reports adjustments that occur at least twice in the random sample of 100 contracts.

Panel A: Adjustments Related to Transitory Earnings		
	Adjustment	Frequency
1	Adjustment related to extraordinary, unusual, or non-recurring items	82
1.1	Exclude both gains and losses	53
1.2	Exclude gains but not losses	8
1.3	Exclude <i>non-cash</i> gains and losses	6
1.4	Exclude <i>non-cash</i> losses but not gains	6
1.5	Exclude gains and <i>non-cash</i> losses	4
1.6	Exclude losses but not gains	4
1.7	Exclude <i>non-cash</i> gains but not losses	1
2	Adjustment related to income from asset sale or disposition	38
2.1	Exclude both gains and losses	27
2.2	Exclude gains but not losses	9
2.3	Exclude <i>non-cash</i> gains and losses	1
2.4	Exclude <i>non-cash</i> losses but not gains	1
3	Adjustment related to asset write-up or write-down	23
3.1	Exclude write-up but not write-down	8
3.2	Exclude write-down but not write-up	8
3.3	Exclude both write-up and write-down	7
4	Adjustment related to restructuring charges	12
4.1	Exclude restructuring charges	6
4.2	Exclude <i>non-cash</i> restructuring charges	3
4.3	Exclude changes in restructuring reserves	2
4.4	Exclude <i>cash</i> restructuring charges	1
5	Adjustment related to insurance policy	9
5.1	Exclude net gains from insurance policy	7
5.2	Exclude proceeds from insurance policy	2
6	Adjustment related to accounting changes	8
6.1	Exclude effects of accounting changes	7
6.2	Add charges related to accounting changes	1
7	Adjustment related to income from discontinued operations	7
7.1	Exclude both gains and losses	5
7.2	Exclude gains but not losses	1
7.3	Exclude losses but not gains	1

	Adjustment	Frequency
8	Adjustment related to non-operating income	6
8.1	Exclude non-operating income	4
8.2	Exclude non-operating <i>non-cash</i> income	1
8.3	Exclude non-operating gains	1
9	Adjustment related to income from acquisition or sale of securities of the firm	5
9.1	Exclude gains but not losses	3
9.2	Exclude both gains and losses	2
10	Exclude restoration to income of any contingency reserves	5
11	Exclude costs related to merger, recapitalization, and reorganization	5
12	Exclude gains or losses from return surplus assets of pension plans	4
13	Exclude gains from foreign currency adjustment	3
14	Exclude banking or loan agreement costs	3
15	Exclude effects of FAS 142	3
16	Exclude gains or losses from hedging agreement	2
17	Exclude security issuance costs	2

Panel B: Other Adjustments

	Adjustment	Frequency
18	Adjustment related to earnings of subsidiaries prior to acquisition	31
18.1	Exclude earnings of subsidiaries prior to acquisition	22
18.2	Include earnings of subsidiaries prior to acquisition on a pro forma basis	9
19	Adjustment related to equity in earnings of unconsolidated affiliates	30
19.1	Change the equity method to the cost method	23
19.2	Exclude earnings from unconsolidated affiliates	7
20	Exclude the undistributed earnings of any subsidiary to the extent that the payment of dividend or similar distribution is not permitted	16
21	Adjustment related to <i>non-cash</i> income items	35
21.1	Exclude <i>non-cash</i> charges (other than depreciation and amortization expense) but not <i>non-cash</i> income	19
21.2	Exclude <i>non-cash</i> income and charges (other than depreciation and amortization expense)	12
21.3	Exclude <i>non-cash</i> charges (other than depreciation and amortization expense) and <i>non-cash</i> gains	3
21.4	Exclude <i>non-cash</i> gains but not losses	1
22	Exclude <i>non-cash</i> compensation expense	9
23	Exclude interest income	6
24	Exclude dividends earned or received	2

Table 4 Forms and Frequencies of Contractual Adjustments to EBIT

This table reports the forms and frequencies of contractual adjustments to definition of EBIT in a random sample of 100 contracts that use EBIT. The benchmark definition is the GAAP net income plus interest and tax expense. This table only reports adjustments that occur at least twice in the random sample of 100 contracts.

Panel A: Adjustments Related to Transitory Earnings		
	Adjustment	Frequency
1	Adjustment related to extraordinary, unusual, or non-recurring items	67
1.1	Exclude both gains and losses	44
1.2	Exclude gains but not losses	10
1.3	Exclude gains and <i>non-cash</i> losses	7
1.4	Exclude <i>non-cash</i> gains and losses	6
2	Adjustment related to income from asset sale or disposition	32
2.1	Exclude both gains and losses	23
2.2	Exclude gains but not losses	8
2.3	Exclude gains and <i>non-cash</i> losses	1
3	Adjustment related to asset write-up or write-down	9
3.1	Exclude write-up but not write-down	6
3.2	Exclude both write-up and write-down	2
3.3	Exclude write-down but not write-up	1
4	Adjustment related to income from discontinued operations	8
4.1	Exclude both gains and losses	6
4.2	Exclude gains and <i>non-cash</i> losses	2
5	Exclude non-operating income	7
6	Adjustment related to accounting changes	7
6.1	Exclude effects of accounting changes	6
6.2	Add charges related to accounting changes	1
7	Adjustment related to proceeds of life insurance policy	6
7.1	Exclude gains but not losses	4
7.2	Exclude both gains and losses	2
8	Adjustment related to income from acquisition or sale of securities of the firm	5
8.1	Exclude gains but not losses	3
8.2	Exclude both gains and losses	2
9	Exclude restructuring charges	3
10	Exclude amortization or write-off of deferred financing costs	3
11	Exclude restoration to income of any contingency reserves	3

Panel B: Other Adjustments

	Adjustment	Frequency
12	Adjustment related to earnings of subsidiaries prior to acquisition	25
12.1	Exclude earnings of subsidiaries prior to acquisition	17
12.2	Include earnings of subsidiaries prior to acquisition on a pro forma basis	8
13	Adjustment related to equity in earnings of unconsolidated affiliates	24
13.1	Change the equity method to the cost method	18
13.2	Exclude earnings from unconsolidated affiliates	5
13.3	Exclude positive earnings from unconsolidated affiliates	1
14	Exclude the undistributed earnings of any subsidiary to the extent that the payment of dividend or similar distribution is not permitted	14
15	Adjustment related to <i>non-cash</i> income items	9
15.1	Exclude any <i>non-cash</i> charges but not non-cash income ⁶³	4
15.2	Exclude any <i>non-cash</i> gains but not losses	3
15.3	Exclude any <i>non-cash</i> income and charges (other than depreciation and amortization expense)	2
16	Exclude interest income	7
17	Exclude <i>non-cash</i> compensation expense	8
18	Exclude dividends earned or received	2
19	Plus minority interest expense	2

⁶³ 4% of the definitions of EBIT add back non-cash charges, which include depreciation and amortization expense.

Table 5 Performance Measures in Different Subsamples

This table reports the features of performance measures in different subsamples. Panel A reports the frequencies of the eight main adjustments related to transitory earnings documented in table 4 (Adjustments 1-8). Gains (losses) under each adjustment include non-cash gains (losses). Panel B reports the main cash features in performance measures in different subsamples. Panel C reports the use of long-terms accruals in different subsamples. The whole sample includes 3,485 loan contracts from Nini et al. [2009]. The IC sample contains 1,335 contracts that use interest coverage covenants. The FCC sample contains 1,303 contracts that use fixed charges coverage covenants. The DCF sample contains 1,991 contracts that use debt to cash flows covenants. The Net Income sample contains 3,352 contracts that use the term "net income" at least once.

Adjustment		Frequency (%)			
		IC Sample	FCC Sample	DCF Sample	Net Income Sample
1	Adjustment related to extraordinary, unusual, or non-recurring items	71.8	74.4	74.0	24.0
1.1	Exclude gains only	6.8	11.2	8.1	4.4
1.2	Exclude losses only	2.8	2.7	3.1	0.1
2	Adjustment related to income from asset sale	35.5	33.5	31.4	12.8
2.1	Exclude gains only	5.7	6.6	6.0	3.5
2.2	Exclude losses only	0.8	0.5	0.5	0.1
3	Adjustment related to asset write-up or write-down	11.1	14.0	11.3	6.8
3.1	Exclude gains only	3.5	7.6	5.3	4.4
3.2	Exclude losses only	3.1	1.4	1.5	0.4
4	Adjustment related to income from discontinued operations	8.5	5.8	7.2	1.8
4.1	Exclude gains only	0.1	0.3	0.6	0.4
4.2	Exclude losses only	0.6	0.5	0.6	0.3
5	Exclude non-operating income	8.5	7.6	8.3	0.1
5.1	Exclude gains only	0.5	0.6	0.5	0.0
5.2	Exclude losses only	0.1	0.2	0.3	0.0
6	Adjustment related to accounting changes	8.7	8.1	7.2	4.3
6.1	Exclude gains only	0.1	0.4	0.2	0.2
6.2	Exclude losses only	0.9	0.7	0.4	0.0
7	Adjustment related to proceeds of insurance policy	2.8	6.0	4.6	3.3
7.1	Exclude gains only	0.1	0.5	0.3	0.0
7.2	Exclude losses only	0.0	0.0	0.0	0.0
8	Adjustment related to income from acquisition or sale of securities of the firm	4.7	6.7	4.8	3.1
8.1	Exclude gains only	2.2	3.7	3.0	2.2
8.2	Exclude losses only	0.2	0.5	0.1	0.0

Panel B: Adjustments Related to Cash and Non-Cash Items

Adjustment		Frequency (%)			
		IC Sample	FCC Sample	DCF Sample	Net Income Sample
1	Plus depreciation and amortization expense	80.2	89.2	96.4	0.0
2	Exclude non-cash income or other non-cash expense ⁶⁴	35.9	39.1	39.8	0.0
2.1	Plus other non-cash expense	33.7	36.5	36.8	0.0
2.2	Minus non-cash income	15.0	13.9	15.4	0.0
3	Minus any capital expenditure (one of the following)	5.1	40.3	0.9	0.0
3.1	Minus capital expenditure	4.9	35.1	0.8	0.0
3.2	Minus unfunded capital expenditure	0.0	3.0	0.1	0.0
3.3	Minus cash capital expenditure	0.0	1.6	0.0	0.0
3.4	Minus maintenance capital expenditure ⁶⁵	0.2	0.5	0.0	0.0
4	Minus cash dividend and/or repurchase	0.7	5.4	0.7	0.0
5	Minus cash tax paid	1.0	18.6	0.3	0.0

Panel C: The Use of Long-Term Accruals

Adjustment		Frequency (%)			
		IC Sample	FCC Sample	DCF Sample	Net Income Sample
Choice 1	Include D&A expense	19.8	10.8	3.6	100
1.1	Include D&A expense and subtract capex	0.0	0.0	0.0	0.0
1.2	Include D&A expense in the numerator and capex in the denominator (FCC covenants only)	n/a	0.0	n/a	n/a
Choice 2	Add back D&A expense without subtracting capital expenditure	75.3	49.7	95.6	0.0
2.1	Add back D&A expense without subtracting capex in the numerator or including capex in the denominator (FCC covenants only)	n/a	32.4	n/a	n/a
Choice 3	Add back D&A expense and subtract capital expenditure	4.9	39.4	0.9	0.0
3.1	Add back D&A expense and subtract capex in the numerator or include capex in the denominator (FCC covenants only)	n/a	56.8	n/a	n/a

⁶⁴ Other non-cash expense means non-cash expense other than depreciation and amortization expense.

⁶⁵ Maintenance capital expenditure is expensed under the current GAAP. It is not included in capital expenditure in Panel C.

Table 6 The Use of Accruals Across Covenants

This table reports the correlations of the use of accruals across covenants. Panel A reports the correlations between IC and FCC covenants for 289 contracts that use both IC and FCC covenants. Panel B reports the correlations between IC and DCF covenants for 939 contracts that use both IC and DCF covenants. Panel A reports the correlations between FCC and DCF covenants for 984 contracts that use both FCC and DCF covenants.

Panel A: Contracts with Both IC and FCC Covenants (N=289)	
	Pearson Correlation
Exclude other non-cash expense	0.887***
Exclude non-cash income	0.929***
Exclude non-cash income or other non-cash expense	0.893***
Long-term accruals: Choice 1	0.187***
Long-term accruals: Choice 2	0.224*** (0.118** if include denominator of FCC ratio)
Long-term accruals: Choice 3	0.155*** (0.096 if include denominator of FCC ratio)

Panel B: Contracts with Both IC and DCF Covenants (N=939)	
	Person Correlation
Exclude other non-cash expense	0.915***
Exclude non-cash income	0.937***
Exclude non-cash income or other non-cash expense	0.917***
Long-term accruals: Choice 1	-0.068**
Long-term accruals: Choice 2	-0.078**
Long-term accruals: Choice 3	-0.014

Panel C: Contracts with Both FCC and DCF Covenants (N=984)	
	Pearson Correlation
Exclude other non-cash expense	0.945***
Exclude non-cash income	0.933***
Exclude non-cash income or other non-cash expense	0.949***
Long-term accruals: Choice 1	0.014
Long-term accruals: Choice 2	-0.086*** (0.082*** if include denominator of FCC ratio)
Long-term accruals: Choice 3	0.013*** (0.024 if include denominator of FCC ratio)

Table 7 Correlation Matrixes

This table presents correlation matrixes for the multivariate analysis. The whole sample consists of 3,485 private loan agreements for 1,826 borrowers from Nini, Smith, and Sufi [2009], which are collected from the SEC's Edgar electronic filing system over the period 1996-2005. Panel A reports the correlations of *Ex_Non_Cash*, *Choice1*, and *Choice3* with other variables. Panel B reports the correlation matrix for variables in the whole sample. * and ** denote statistical significance at 1% and 5% levels, respectively. Variable definitions are in Appendix B.

Panel A Correlation Matrixes for the IC, FCC, and DCF samples						
	<i>Ex_Non_Cash</i>			<i>Choice1</i>		<i>Choice3</i>
	IC Sample	FCC Sample	DCF Sample	IC Sample	FCC Sample	FCC sample
<i>Maturity</i>	0.173**	0.161**	0.139**	-0.140**	-0.127**	-0.002
<i>Secured</i>	0.201**	0.112**	0.128**	-0.166**	-0.258**	0.164**
<i>Cov_Intensity</i>	0.182**	0.109**	0.131**	-0.152**	-0.131**	0.050
<i>Interest</i>	0.207**	0.113**	0.116**	-0.190**	-0.247**	0.148**
<i>Credit_Rating</i>	0.284**	0.230**	0.205**	-0.242**	-0.319**	0.118**
<i>Agency_Cost</i>	0.246**	0.149**	0.163**	-0.242**	-0.288**	0.165**
<i>Relationship</i>	-0.077**	-0.047	-0.051*	0.011	0.010	-0.060*
<i>Log_asset</i>	-0.049	0.056*	0.005	-0.116**	0.112**	-0.150**
<i>Market_to_Book</i>	-0.008	-0.025	-0.027	0.115**	0.039	-0.043
<i>Leverage</i>	0.191**	0.130**	0.127**	-0.234**	-0.095**	-0.068*
<i>Profitability</i>	-0.077**	-0.084**	-0.071**	0.146**	0.092**	0.015
<i>Depreciation</i>	0.059*	0.063*	0.045*	-0.054*	-0.023	-0.086**
<i>WC_MAV</i>	0.104**	0.103**	0.068**	-0.085**	-0.114**	0.027
<i>Op_Cycle</i>	-0.059	-0.019	-0.002	0.062*	0.010	0.131**
<i>Tr_Cycle</i>	-0.097**	-0.069*	-0.034	0.114**	0.031	0.167**
<i>Capex_CV</i>	0.201**	0.093**	0.070**	-0.083**	-0.075*	-0.072*
<i>Capex_Std</i>	0.114**	0.118**	0.090**	-0.063*	-0.004	-0.157**

(Table 7 Continued)

Panel B Correlation Matrix for the Whole Sample									
	<i>Maturity</i>	1	2	3	4	5	6	7	8
1. <i>Credit_Rating</i>	0.279**								
2. <i>Agency_Cost</i>	0.196**	0.713**							
3. <i>Relationship</i>	-0.007	-0.156**	-0.149**						
4. <i>Log_Asset</i>	-0.092**	-0.537**	-0.432**	0.314**					
5. <i>Market_to_Book</i>	-0.030	-0.164**	-0.095**	-0.030	-0.101**				
6. <i>Leverage</i>	0.127**	0.301**	0.200**	0.119**	0.171**	-0.149**			
7. <i>Profitability</i>	0.073**	-0.341**	-0.233**	0.045**	0.117**	0.132**	-0.135**		
8. <i>Depreciation</i>	-0.004	0.008	0.105**	-0.066**	-0.129**	0.001	0.064**	-0.269**	
9. <i>Op_Cycle</i>	-0.041*	-0.001	0.017	-0.025	-0.159**	0.061**	-0.143**	-0.038*	-0.181**
10. <i>Tr_Cycle</i>	-0.004	-0.025	0.005	-0.031	-0.159**	0.019	-0.119**	0.037	-0.265**
11. <i>Capex_CV</i>	0.315**	0.315**	0.264**	-0.047*	-0.272**	0.046*	0.062**	-0.067**	0.020
12. <i>Capex_Std_</i>	0.249**	0.249**	0.147**	-0.049**	-0.164**	0.017	0.125**	-0.052**	0.339**
13. <i>WC_MAV</i>	-0.009	0.273**	0.229**	-0.056**	-0.259**	0.029	0.030	-0.216**	0.057**
	9	10	11	12					
10. <i>Tr_Cycle</i>	0.447**								
11. <i>Capex_CV</i>	0.061**	-0.063**							
12. <i>Capex_Std</i>	-0.072**	-0.279**	0.545**						
13. <i>WC_MAV</i>	0.369**	-0.158**	0.361**	0.261**					

Table 8 The Probability of Excluding Non-Cash Income or Other Non-Cash Expense

This table presents the results of probit regressions for the likelihood of excluding non-cash income or other non-cash expense in the performance measures. The dependent variable *Ex_Non_Cash* equals to one if either non-cash income or other non-cash expense is excluded from the covenant measurement, and zero otherwise. All regressions include year and industry indicator variables. Standard errors are clustered for each borrower in all specifications. The reported numbers are average marginal effects and p-values for testing zero marginal effects. Intercepts are not reported. *Agency_Cost* is the first principal component of interest spread, covenant intensity, and loan security. Other variable definitions are in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The IC Sample						
	Dependent variable: <i>Ex_Non_Cash</i>					
	1	2	3	4	5	6
<i>Maturity</i>	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
<i>Credit_Rating</i>	0.031*** (0.007)	0.031*** (0.005)	0.031*** (0.004)			
<i>Agency_Cost</i>				0.088*** (0.000)	0.090*** (0.000)	0.089*** (0.000)
<i>Relationship</i>	-0.034** (0.017)	-0.033** (0.019)	-0.033** (0.018)	-0.040*** (0.004)	-0.038*** (0.004)	-0.037*** (0.006)
<i>Log_Asset</i>	-0.013 (0.599)	-0.014 (0.546)	-0.009 (0.697)	0.013 (0.398)	0.009 (0.534)	0.009 (0.544)
<i>Market_to_Book</i>	-0.020 (0.504)	-0.020 (0.504)	-0.021 (0.489)	-0.015 (0.501)	-0.013 (0.557)	-0.013 (0.558)
<i>Leverage</i>	0.036 (0.759)	0.045 (0.698)	0.047 (0.683)	0.122 (0.189)	0.132 (0.152)	0.131 (0.153)
<i>Profitability</i>	0.275 (0.469)	0.248 (0.499)	0.244 (0.505)	0.291 (0.278)	0.252 (0.331)	0.241 (0.350)
<i>WC_MAV</i>	0.195 (0.652)			0.428 (0.217)		
<i>Op_Cycle</i>		0.000 (0.588)			0.000 (0.634)	
<i>Tr_Cycle</i>			0.000 (0.152)			0.000 (0.949)
No. of Obs.	745	756	755	1,009	1,023	1,021
No. of Firms	429	434	433	624	630	628
R-square	0.131	0.132	0.135	0.126	0.125	0.125

Panel B: The FCC Sample						
	Dependent variable: <i>Ex_Non_Cash</i>					
	1	2	3	4	5	6
<i>Maturity</i>	0.004*** (0.005)	0.004*** (0.004)	0.004*** (0.004)	0.003*** (0.003)	0.003*** (0.003)	0.003*** (0.003)
<i>Credit_Rating</i>	0.028** (0.050)	0.031** (0.024)	0.028** (0.043)			
<i>Agency_Cost</i>				0.048** (0.024)	0.055*** (0.009)	0.056*** (0.008)
<i>Relationship</i>	-0.033 (0.164)	-0.031 (0.181)	-0.030 (0.194)	-0.043** (0.017)	-0.042** (0.018)	-0.042*** (0.019)
<i>Log_Asset</i>	0.013 (0.645)	-0.011 (0.693)	0.006 (0.839)	0.013 (0.398)	0.027 (0.111)	0.025 (0.136)
<i>Market_to_Book</i>	-0.002 (0.956)	0.005 (0.880)	0.001 (0.984)	0.008 (0.654)	0.014 (0.460)	0.013 (0.475)
<i>Leverage</i>	0.251** (0.037)	0.244** (0.042)	0.245** (0.043)	0.131 (0.162)	0.141 (0.134)	0.136 (0.148)
<i>Profitability</i>	-0.052 (0.822)	-0.086 (0.708)	-0.091 (0.693)	-0.120 (0.512)	-0.165 (0.370)	-0.165 (0.369)
<i>WC_MAV</i>	0.836 (0.135)			0.844* (0.074)		
<i>Op_Cycle</i>		-0.000 (0.425)			0.000 (0.519)	
<i>Tr_Cycle</i>			-0.001 (0.170)			-0.000 (0.920)
No. of Obs.	524	528	528	982	988	988
No. of Firms	314	315	315	624	627	627
R-square	0.140	0.137	0.140	0.079	0.077	0.077

Panel C: The DCF Sample						
	Dependent variable: <i>Ex_Non_Cash</i>					
	1	2	3	4	5	6
<i>Maturity</i>	0.005*** (0.000)	0.005*** (0.000)	0.005*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
<i>Credit_Rating</i>	0.028** (0.011)	0.030*** (0.006)	0.030*** (0.006)			
<i>Agency_Cost</i>				0.062*** (0.001)	0.065*** (0.000)	0.067*** (0.000)
<i>Relationship</i>	-0.028* (0.058)	-0.028* (0.062)	-0.028* (0.062)	-0.030** (0.017)	-0.030** (0.019)	-0.029** (0.020)
<i>Log_Asset</i>	-0.006 (0.775)	-0.008 (0.728)	-0.007 (0.753)	0.010 (0.476)	0.008 (0.536)	0.007 (0.589)
<i>Market_to_Book</i>	0.004 (0.864)	0.006 (0.793)	0.007 (0.777)	0.001 (0.970)	0.004 (0.774)	0.005 (0.747)
<i>Leverage</i>	0.053 (0.601)	0.064 (0.533)	0.060 (0.555)	0.098 (0.227)	0.114 (0.158)	0.104 (0.196)
<i>Profitability</i>	0.125 (0.575)	0.095 (0.670)	0.095 (0.667)	-0.057 (0.726)	-0.086 (0.595)	-0.093 (0.566)
<i>WC_MAV</i>	0.528 (0.247)			0.664* (0.090)		
<i>Op_Cycle</i>		0.000 (0.808)			0.000 (0.201)	
<i>Tr_Cycle</i>			0.000 (0.878)			0.000 (0.928)
No. of Obs.	864	872	872	1,455	1,466	1,466
No. of Firms	486	488	488	878	883	883
R-square	0.094	0.094	0.094	0.056	0.056	0.055

Table 9 The Likelihood of Adding other Non-Cash Expense and the Likelihood of Subtracting Non-Cash Income

This table presents the results of probit regressions for *separately* examining the likelihood of adding back other non-cash expense (Panel A) and the likelihood of subtracting non-cash income (Panel B) in the performance measures. All regressions include year and industry indicator variables. Standard errors are clustered for each borrower in all specifications. The reported numbers are average marginal effects and p-values for testing zero marginal effects. Intercepts are not reported. *Agency_Cost* is the first principal component of interest spread, covenant intensity, and loan security. Other variable definitions are in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The probability of Adding other Non-Cash Expense						
Dependent variable: <i>Plus_Non_Cash_Expense</i>						
	IC Sample		FCC Sample		DCF Sample	
	1	2	3	4	5	6
<i>Maturity</i>	0.004*** (0.000)	0.003*** (0.000)	0.004*** (0.008)	0.003*** (0.001)	0.004*** (0.000)	0.003*** (0.000)
<i>Credit_Rating</i>	0.028* (0.009)		0.024* (0.071)		0.020* (0.059)	
<i>Agency_Cost</i>		0.082*** (0.000)		0.035* (0.088)		0.046*** (0.007)
<i>Relationship</i>	-0.032** (0.022)	-0.038*** (0.006)	-0.029 (0.198)	-0.035** (0.048)	-0.025* (0.075)	-0.024** (0.050)
<i>Log_Asset</i>	-0.013 (0.599)	0.014 (0.336)	0.020 (0.479)	0.030* (0.063)	-0.006 (0.794)	0.010 (0.442)
<i>Market_to_Book</i>	-0.028 (0.335)	-0.019 (0.388)	-0.025 (0.417)	0.000 (0.990)	-0.016 (0.519)	-0.007 (0.623)
<i>Leverage</i>	0.014 (0.900)	0.091 (0.316)	0.221* (0.064)	0.106 (0.241)	0.076 (0.445)	0.095 (0.232)
<i>Profitability</i>	0.222 (0.559)	0.230 (0.382)	-0.170 (0.459)	-0.193 (0.275)	-0.051 (0.816)	-0.149 (0.350)
<i>WC_MAV</i>	0.277 (0.513)	0.451 (0.184)	0.827 (0.127)	0.810* (0.077)	0.520 (0.240)	0.669* (0.077)
No. of Obs.	745	1,009	524	982	864	1,455
No. of Firms	429	624	314	624	486	878
R-square	0.135	0.129	0.137	0.074	0.098	0.058

Panel B: The probability of Subtracting Non-Cash Income						
Dependent variable: <i>Minus_Non_Cash_Income</i>						
	IC Sample		FCC Sample		DCF Sample	
	1	2	3	4	5	6
<i>Maturity</i>	0.001 (0.118)	0.001** (0.036)	0.002* (0.067)	0.001 (0.249)	0.001* (0.067)	0.001* (0.099)
<i>Credit_Rating</i>	0.014* (0.007)		0.007 (0.274)		0.016** (0.028)	
<i>Agency_Cost</i>		0.047*** (0.001)		0.029** (0.017)		0.040*** (0.001)
<i>Relationship</i>	-0.027*** (0.005)	-0.029*** (0.000)	-0.022 (0.134)	-0.031** (0.012)	-0.031** (0.022)	-0.026*** (0.009)
<i>Log_Asset</i>	-0.019 (0.205)	0.000 (0.969)	-0.013 (0.421)	0.007 (0.507)	-0.009 (0.511)	0.006 (0.472)
<i>Market_to_Book</i>	0.004 (0.835)	0.000 (0.997)	0.008 (0.610)	0.008 (0.407)	0.010 (0.502)	0.005 (0.635)
<i>Leverage</i>	-0.009 (0.884)	0.016 (0.742)	-0.008 (0.896)	0.011 (0.817)	-0.058 (0.340)	-0.017 (0.725)
<i>Profitability</i>	0.234 (0.224)	0.244 (0.105)	0.042 (0.764)	0.053 (0.632)	0.125 (0.493)	0.088 (0.489)
<i>WC_MAV</i>	-0.080 (0.769)	0.240 (0.170)	0.487** (0.012)	0.525** (0.012)	0.087 (0.748)	0.219 (0.322)
No. of Obs.	745	1,009	524	982	864	1,455
No. of Firms	429	624	314	624	486	878
R-square	0.128	0.134	0.137	0.080	0.091	0.067

Table 10 The Probability of Including Long-Term Accruals in Covenant Measurement

This table presents the results of probit regressions for the likelihood of including long-term accruals in the performance measures (Choice 1) in the IC sample (Panel A), FCC sample (Panel B), and a sample of contracts with only one of IC, FCC, and DCF covenants (Panel C). All regressions include year and industry indicator variables. Standard errors are clustered for each borrower in all specifications. The reported numbers are average marginal effects and p-values for testing zero marginal effects. Intercepts are not reported. *Agency_Cost* is the first principal component of interest spread, covenant intensity, and loan security. Other variable definitions are in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The IC Sample				
	Dependent variable: <i>Choice1</i> (Including Long-Term Accruals)			
	1	2	3	4
<i>Maturity</i>	-0.002*** (0.003)	-0.002*** (0.002)	-0.001** (0.036)	-0.001** (0.032)
<i>Credit_Rating</i>	-0.016* (0.051)	-0.017** (0.045)		
<i>Agency_Cost</i>			-0.080*** (0.000)	-0.083*** (0.000)
<i>Relationship</i>	0.014** (0.032)	0.012* (0.070)	0.021** (0.016)	0.019** (0.030)
<i>Choice1_Other</i>	-0.051 (0.496)	-0.056 (0.454)	-0.048 (0.487)	-0.055 (0.420)
<i>Log_Asset</i>	-0.020 (0.257)	-0.018 (0.319)	-0.052*** (0.000)	-0.050*** (0.000)
<i>Market_to_Book</i>	0.030* (0.080)	0.027 (0.114)	0.030* (0.081)	0.027 (0.120)
<i>Leverage</i>	-0.077 (0.193)	-0.080 (0.184)	-0.263*** (0.001)	-0.260*** (0.001)
<i>Profitability</i>	0.005 (0.984)	0.054 (0.829)	0.080 (0.706)	0.105 (0.623)
<i>Depreciation</i>	0.044 (0.907)	0.165 (0.611)	-0.127 (0.763)	0.065 (0.859)
<i>Capex_CV</i>	-0.077 (0.251)		-0.087 (0.164)	
<i>Capex_Std</i>		-0.021 (0.935)		-0.104 (0.609)
No. of Obs.	792	793	1,072	1,073
No. of Firms	458	459	669	669
R-square	0.150	0.144	0.170	0.166

Panel B: The FCC Sample				
	Dependent variable: <i>Choice1</i> (Including Long-Term Accruals)			
	1	2	3	4
<i>Maturity</i>	-0.001*** (0.017)	-0.001** (0.016)	-0.001** (0.046)	-0.001** (0.049)
<i>Credit_Rating</i>	-0.011*** (0.001)	-0.012*** (0.001)		
<i>Agency_Cost</i>			-0.051*** (0.000)	-0.052*** (0.000)
<i>Relationship</i>	0.003 (0.604)	0.003 (0.595)	-0.001 (0.929)	-0.001 (0.928)
<i>Choice1_Other</i>	0.033 (0.501)	0.031 (0.522)	-0.010 (0.782)	-0.008 (0.835)
<i>Log_Asset</i>	0.007 (0.293)	0.007 (0.297)	0.011* (0.093)	0.011* (0.081)
<i>Market_to_Book</i>	-0.000 (0.951)	-0.001 (0.832)	-0.003 (0.569)	-0.003 (0.515)
<i>Leverage</i>	-0.082** (0.033)	-0.088** (0.029)	-0.065 (0.124)	-0.063 (0.133)
<i>Profitability</i>	0.113 (0.141)	0.113 (0.144)	0.097 (0.116)	0.095 (0.137)
<i>Depreciation</i>	0.014 (0.931)	-0.091 (0.516)	0.061 (0.757)	0.022 (0.919)
<i>Capex_CV</i>	-0.024 (0.229)		-0.005 (0.844)	
<i>Capex_Std</i>		-0.043 (0.662)		0.093 (0.332)
No. of Obs.	490	490	994	994
No. of Firms	296	296	635	635
R-square	0.367	0.363	0.282	0.284

Panel C: The Single Covenant Sample				
	Dependent variable: <i>Choice1</i> (Including Long-Term Accruals)			
	1	2	3	4
<i>Maturity</i>	-0.001*	-0.001*	-0.001	-0.001
	(0.097)	(0.101)	(0.430)	(0.433)
<i>Credit_Rating</i>	-0.020**	-0.022**		
	(0.036)	(0.030)		
<i>Agency_Cost</i>			-0.060***	-0.062***
			(0.001)	(0.001)
<i>Relationship</i>	0.014	0.013	0.011	0.011
	(0.151)	(0.193)	(0.225)	(0.222)
<i>Log_Asset</i>	-0.024	-0.021	-0.002	0.001
	(0.251)	(0.342)	(0.865)	(0.921)
<i>Market_to_Book</i>	0.039*	0.030	0.020	0.017
	(0.064)	(0.125)	(0.228)	(0.290)
<i>Leverage</i>	0.168	0.148	-0.054	-0.072
	(0.155)	(0.232)	(0.572)	(0.460)
<i>Profitability</i>	0.192	0.279	0.094	0.112
	(0.449)	(0.363)	(0.637)	(0.586)
<i>Depreciation</i>	-0.369	0.001	0.149	0.217
	(0.630)	(0.999)	(0.795)	(0.697)
<i>Capex_CV</i>	-0.153**		-0.056	
	(0.031)		(0.244)	
<i>Capex_Std</i>		-0.332		0.052
		(0.314)		(0.726)
No. of Obs.	566	566	886	867
No. of Firms	319	319	561	562
R-square	0.168	0.157	0.137	0.135

Table 11 The Likelihood of Choice 3 for Long-Term Accruals

This table presents the results of probit regressions for the likelihood of Choice 3 for long-term accruals in the FCC (Panel A) and single covenant sample (Panel B). Choice 3 is to add back depreciation and amortization expense and subtract capital expenditure. The single covenant sample is the sample of contracts with only one of IC, FCC, and DCF covenants. All regressions include year and industry indicator variables. Standard errors are clustered for each borrower in all specifications. The reported numbers are average marginal effects and p-values for testing zero marginal effects. Intercepts are not reported. *Agency_Cost* is the first principal component of interest spread, covenant intensity, and loan security. Other variable definitions are in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The FCC Sample				
	Dependent Variable: <i>Choice3</i>			
	1	2	3	4
<i>Maturity</i>	0.001 (0.565)	0.001 (0.507)	0.002* (0.086)	0.002* (0.091)
<i>Credit_Rating</i>	0.053*** (0.001)	0.054*** (0.000)		
<i>Agency_Cost</i>			0.162*** (0.000)	0.160*** (0.000)
<i>Relationship</i>	-0.004 (0.860)	-0.002 (0.946)	-0.004 (0.829)	-0.004 (0.855)
<i>Choice3_Other</i>	0.479** (0.041)	0.519** (0.048)	0.375* (0.098)	0.380 (0.115)
<i>Log_Asset</i>	-0.118*** (0.001)	-0.121*** (0.000)	-0.069*** (0.001)	-0.066*** (0.001)
<i>Market_to_Book</i>	-0.043 (0.303)	-0.060* (0.124)	-0.007 (0.721)	-0.005 (0.805)
<i>Leverage</i>	0.087 (0.626)	0.116 (0.482)	-0.081 (0.518)	-0.056 (0.644)
<i>Profitability</i>	0.215 (0.620)	0.368 (0.355)	0.196 (0.406)	0.298 (0.198)
<i>Depreciation</i>	-3.280*** (0.002)	-1.382 (0.179)	-2.119*** (0.003)	-0.522 (0.487)
<i>Capex_CV</i>	-0.200* (0.061)		-0.170** (0.022)	
<i>Capex_Std</i>		-3.732*** (0.000)		-2.690*** (0.000)
No. of Obs.	452	453	875	875
No. of Firms	277	277	567	567
R-square	0.297	0.334	0.216	0.239

Panel B: The Single Covenant Sample

	Dependent Variable: <i>Choice3</i>			
	1	2	3	4
<i>Maturity</i>	0.000 (0.505)	0.000 (0.415)	0.000 (0.168)	0.000 (0.127)
<i>Credit_Rating</i>	0.010*** (0.002)	0.009*** (0.001)		
<i>Agency_Cost</i>			0.048*** (0.000)	0.046*** (0.000)
<i>Relationship</i>	-0.005 (0.241)	-0.005 (0.264)	-0.007 (0.242)	-0.006 (0.247)
<i>Log_Asset</i>	-0.017*** (0.004)	-0.016*** (0.004)	-0.007 (0.169)	-0.006 (0.196)
<i>Market_to_Book</i>	-0.012* (0.126)	-0.011* (0.084)	-0.025** (0.020)	-0.023** (0.021)
<i>Leverage</i>	-0.085** (0.042)	-0.079** (0.042)	-0.082* (0.100)	-0.073 (0.127)
<i>Profitability</i>	0.018 (0.809)	0.044 (0.552)	0.016 (0.838)	0.032 (0.663)
<i>Depreciation</i>	-0.264 (0.366)	0.040 (0.887)	-0.280 (0.356)	0.066 (0.807)
<i>Capex_CV</i>	-0.020 (0.246)		-0.043* (0.094)	
<i>Capex_Std</i>		-0.303* (0.078)		-0.401** (0.022)
No. of Obs.	495	495	849	850
No. of Firms	293	294	542	543
R-square	0.321	0.329	0.291	0.293

Table 12 The Likelihood of Choice 3 versus Choice 2 for Long-Term Accruals

This table presents the results of probit regressions for the likelihood of Choice 3 *relative* to Choice 2 for long-term accruals in the FCC (Panel A) and single covenant sample (Panel B). Choice 2 is to add back depreciation and amortization expense without subtracting capital expenditure. Choice 3 is to add back depreciation and amortization expense and subtract capital expenditure. The single covenant sample is the sample of contracts with only one of IC, FCC, and DCF covenants. All regressions include year and industry indicator variables. Standard errors are clustered for each borrower in all specifications. The reported numbers are average marginal effects and p-values for testing zero marginal effects. Intercepts are not reported. *Agency_Cost* is the first principal component of interest spread, covenant intensity, and loan security. Other variable definitions are in Appendix B. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: The FCC Sample				
	Dependent Variable: <i>Choice3</i>			
	1	2	3	4
<i>Maturity</i>	-0.001 (0.439)	-0.001 (0.494)	-0.000 (0.785)	-0.000 (0.906)
<i>Credit_Rating</i>	0.016 (0.233)	0.016 (0.213)		
<i>Agency_Cost</i>			0.077*** (0.001)	0.073*** (0.001)
<i>Relationship</i>	-0.010 (0.654)	-0.008 (0.721)	-0.007 (0.729)	-0.006 (0.758)
<i>Choice3_Other</i>	0.356* (0.066)	0.361* (0.090)	0.271* (0.067)	0.285* (0.070)
<i>Log_Asset</i>	-0.095*** (0.001)	-0.094*** (0.001)	-0.045** (0.013)	-0.040** (0.026)
<i>Market_to_Book</i>	-0.047 (0.168)	-0.058* (0.074)	-0.022 (0.280)	-0.020 (0.307)
<i>Leverage</i>	0.015 (0.910)	0.042 (0.742)	-0.117 (0.258)	-0.100 (0.306)
<i>Profitability</i>	0.258 (0.425)	0.371 (0.190)	0.391** (0.048)	0.481** (0.011)
<i>Depreciation</i>	-2.246*** (0.002)	-0.727 (0.345)	-1.546*** (0.006)	-0.275 (0.629)
<i>Capex_CV</i>	-0.169* (0.080)		-0.156** (0.023)	
<i>Capex_Std</i>		-2.763*** (0.001)		-2.187*** (0.000)
No. of Obs.	498	498	923	923
No. of Firms	311	311	603	603
R-square	0.192	0.217	0.134	0.151

Panel B: The Single Covenant Sample

	Dependent Variable: <i>Choice3</i>			
	1	2	3	4
<i>Maturity</i>	0.000 (0.615)	0.000 (0.479)	0.001 (0.199)	0.001 (0.155)
<i>Credit_Rating</i>	0.011** (0.013)	0.011*** (0.006)		
<i>Agency_Cost</i>			0.056*** (0.000)	0.052*** (0.000)
<i>Relationship</i>	-0.006 (0.306)	-0.005 (0.359)	-0.008 (0.236)	-0.007 (0.256)
<i>Log_Asset</i>	-0.025*** (0.003)	-0.024*** (0.003)	-0.008 (0.203)	-0.006 (0.274)
<i>Market_to_Book</i>	-0.011 (0.318)	-0.010 (0.242)	-0.032** (0.019)	-0.029** (0.020)
<i>Leverage</i>	-0.107* (0.061)	-0.102* (0.060)	-0.128** (0.043)	-0.116* (0.055)
<i>Profitability</i>	0.040 (0.695)	0.070 (0.501)	0.007 (0.942)	0.028 (0.766)
<i>Depreciation</i>	-0.505 (0.191)	-0.090 (0.813)	-0.430 (0.283)	0.060 (0.865)
<i>Capex_CV</i>	-0.038 (0.108)		-0.066** (0.049)	
<i>Capex_Std</i>		-0.395* (0.071)		-0.537** (0.013)
No. of Obs.	407	408	695	696
No. of Firms	254	255	462	463
R-square	0.330	0.335	0.294	0.295

Figure 1 The Use of Accruals by Agreement Years

Figure 1.1 The IC Sample

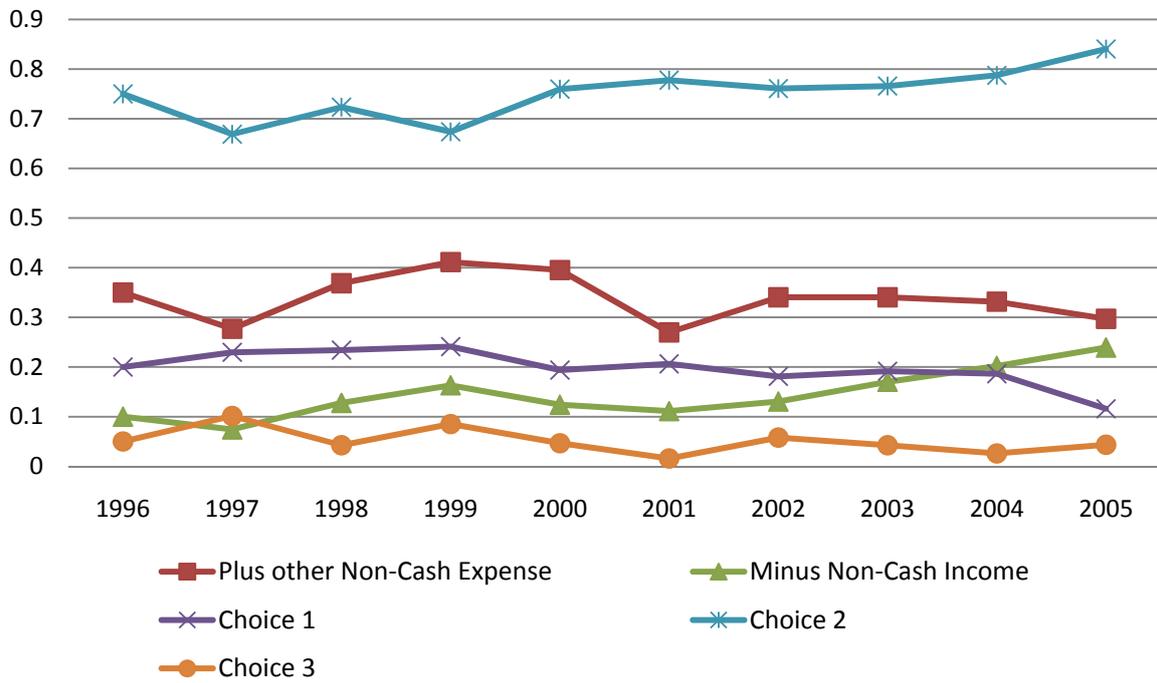


Figure 1.2 The FCC Sample

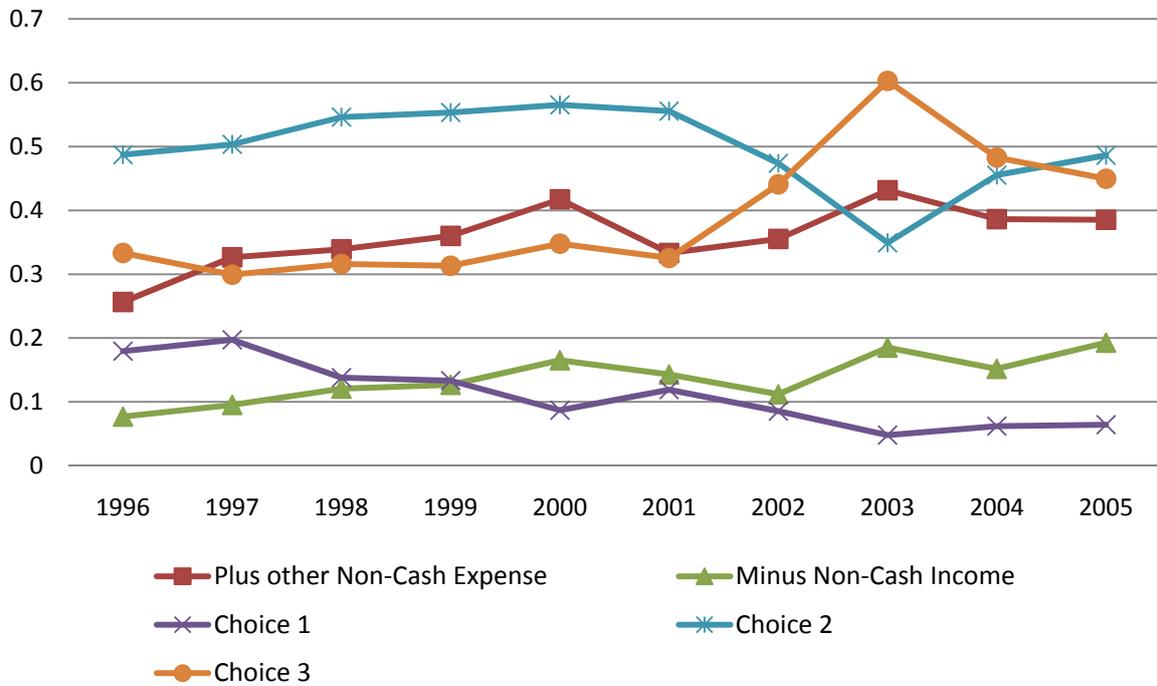


Figure 1.3 The DCF Sample

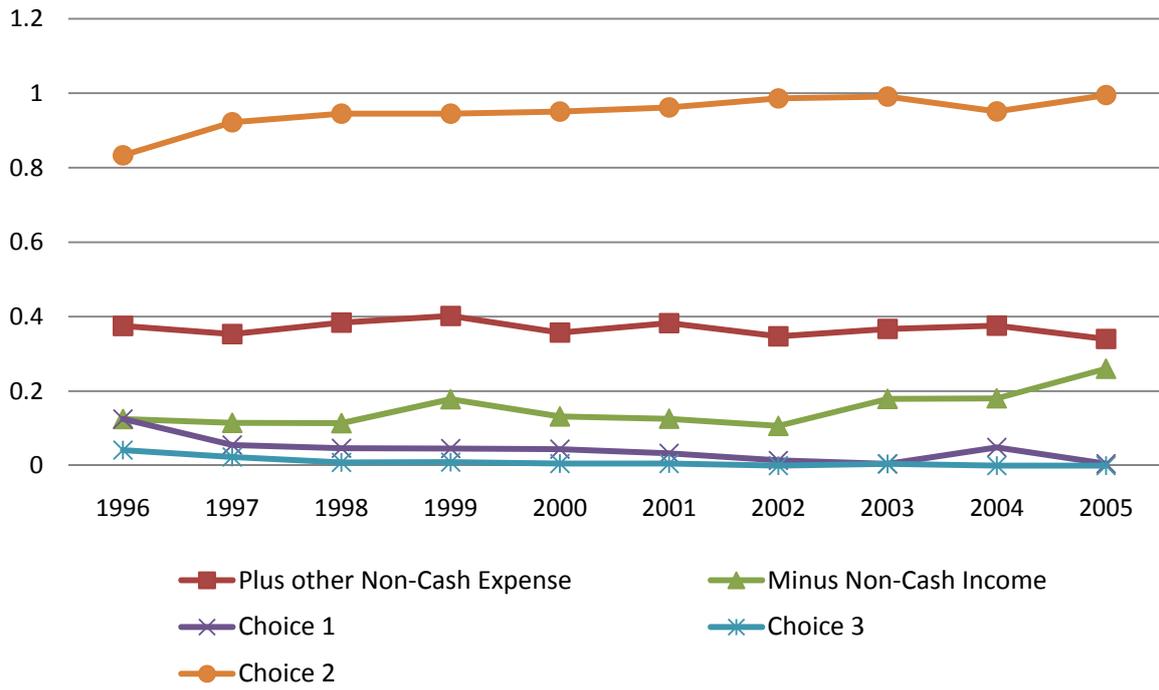


Figure 2 The Use of Accruals across Industries

Figure 2.1 The IC Sample - Working Capital Accruals

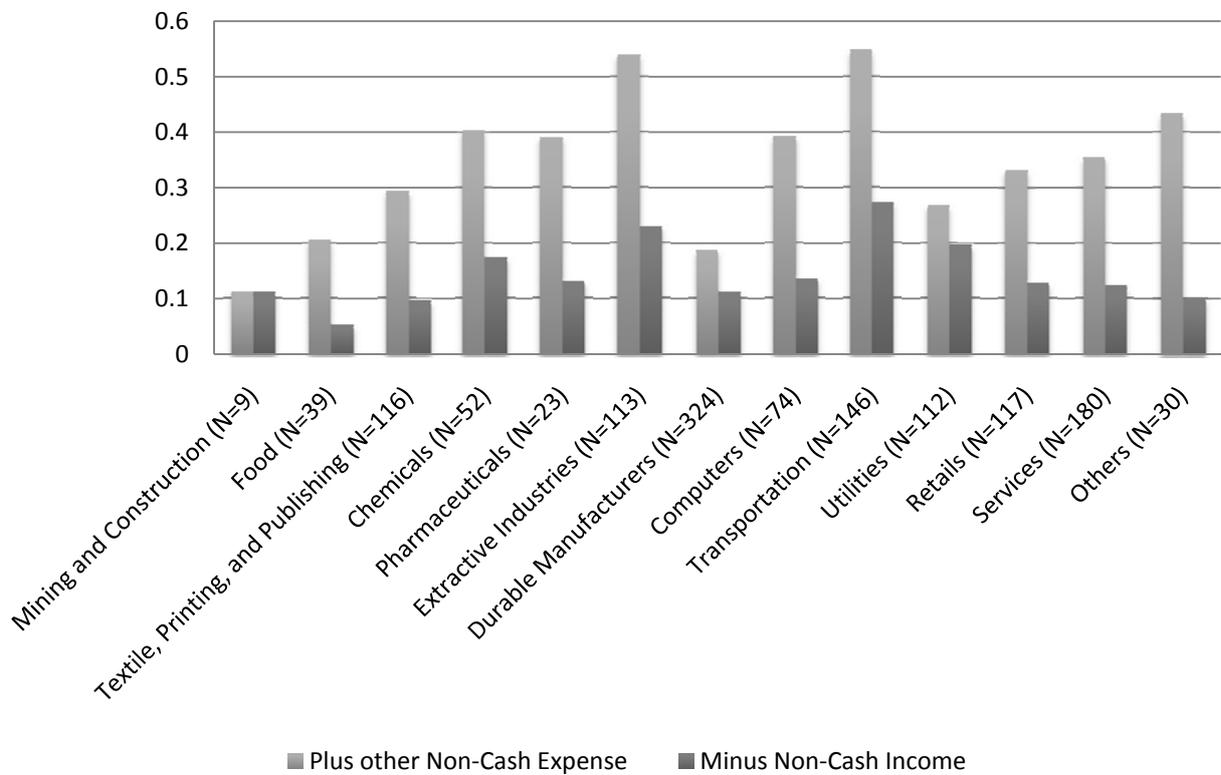


Figure 2.2 The IC Sample - Long-Term Accruals

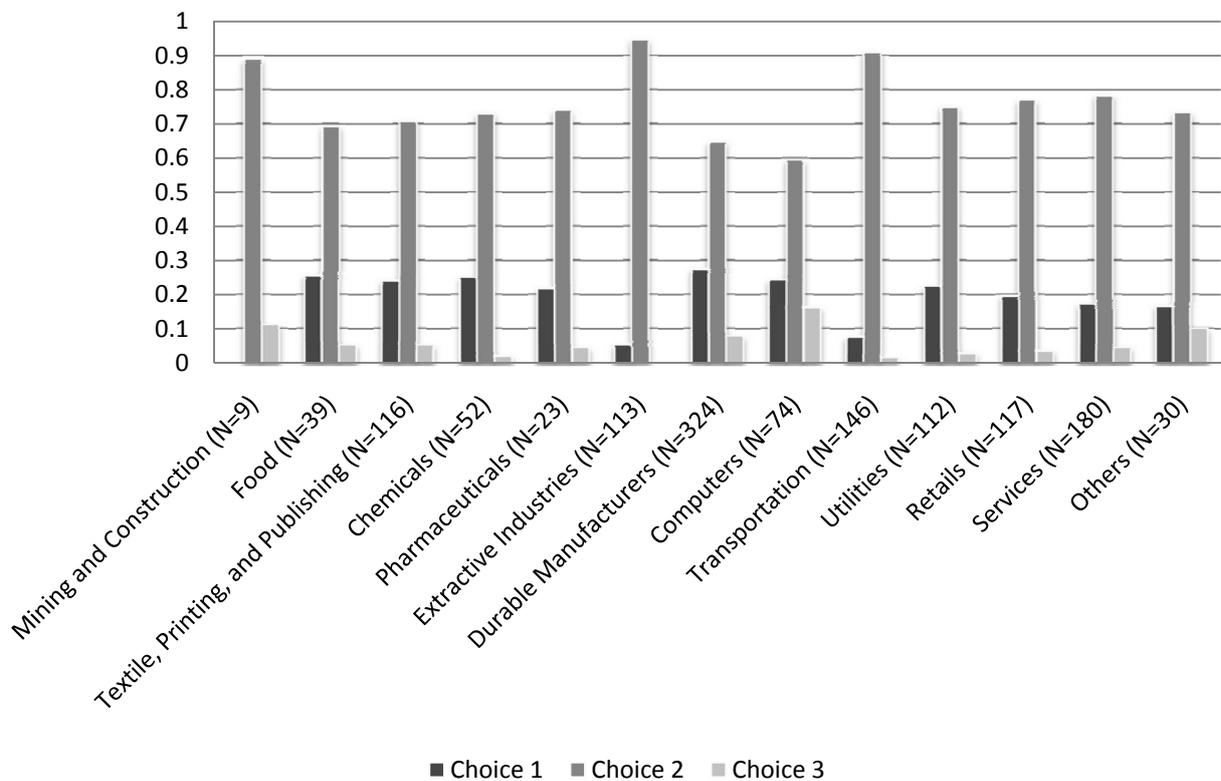


Figure 2.3 The FCC Sample - Working Capital Accruals

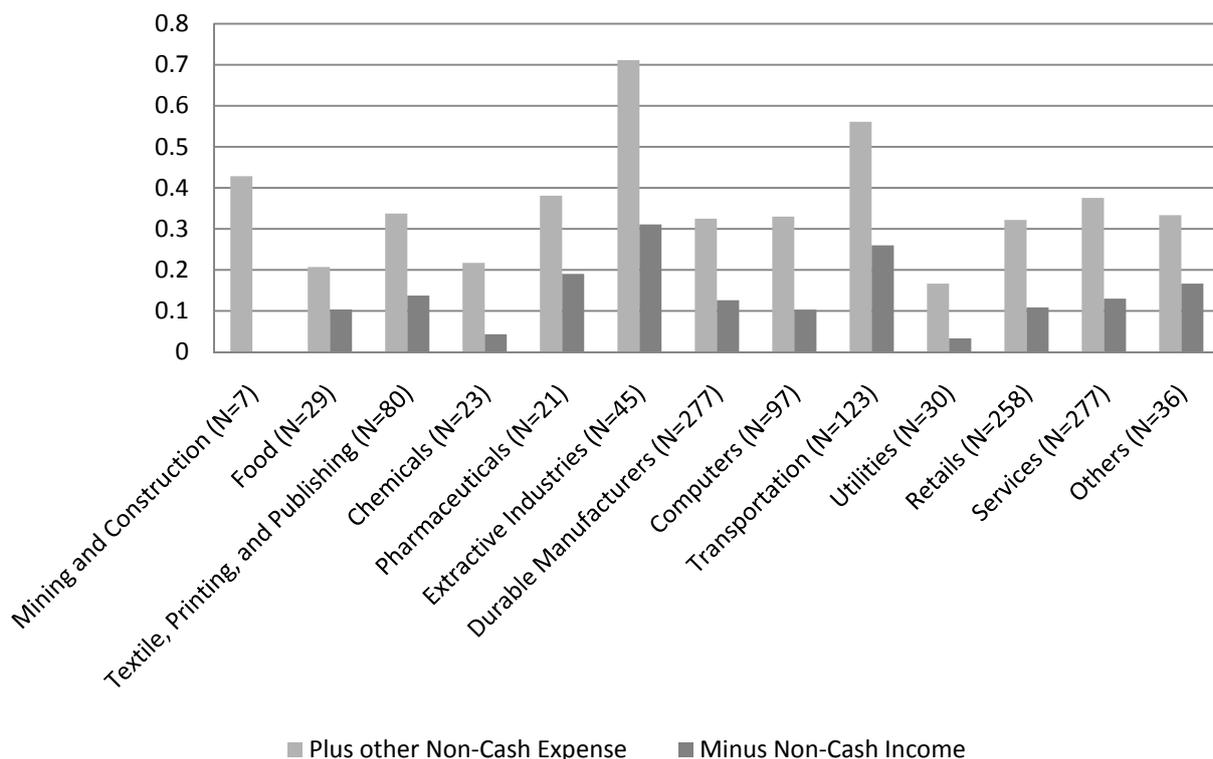


Figure 2.4 The FCC Sample - Long-Term Accruals

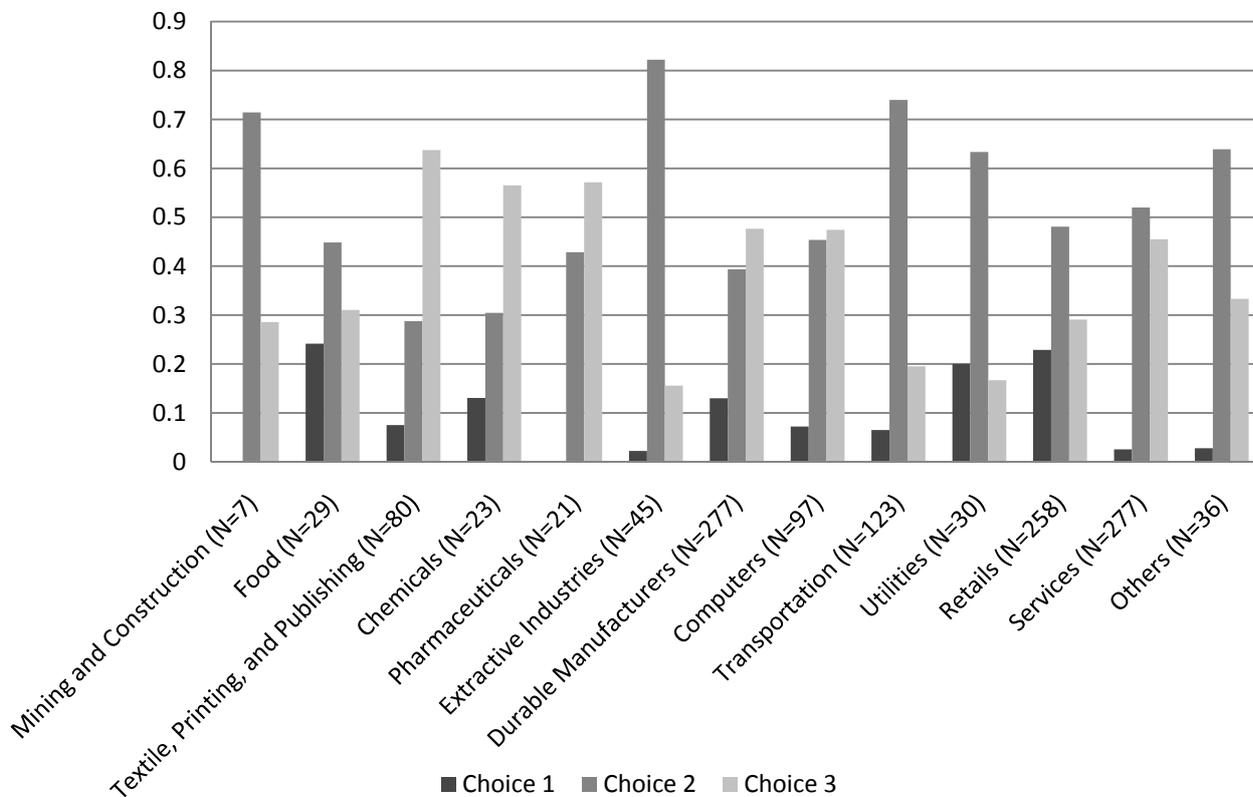


Figure 2.5 The DCF Sample - Working Capital Accruals

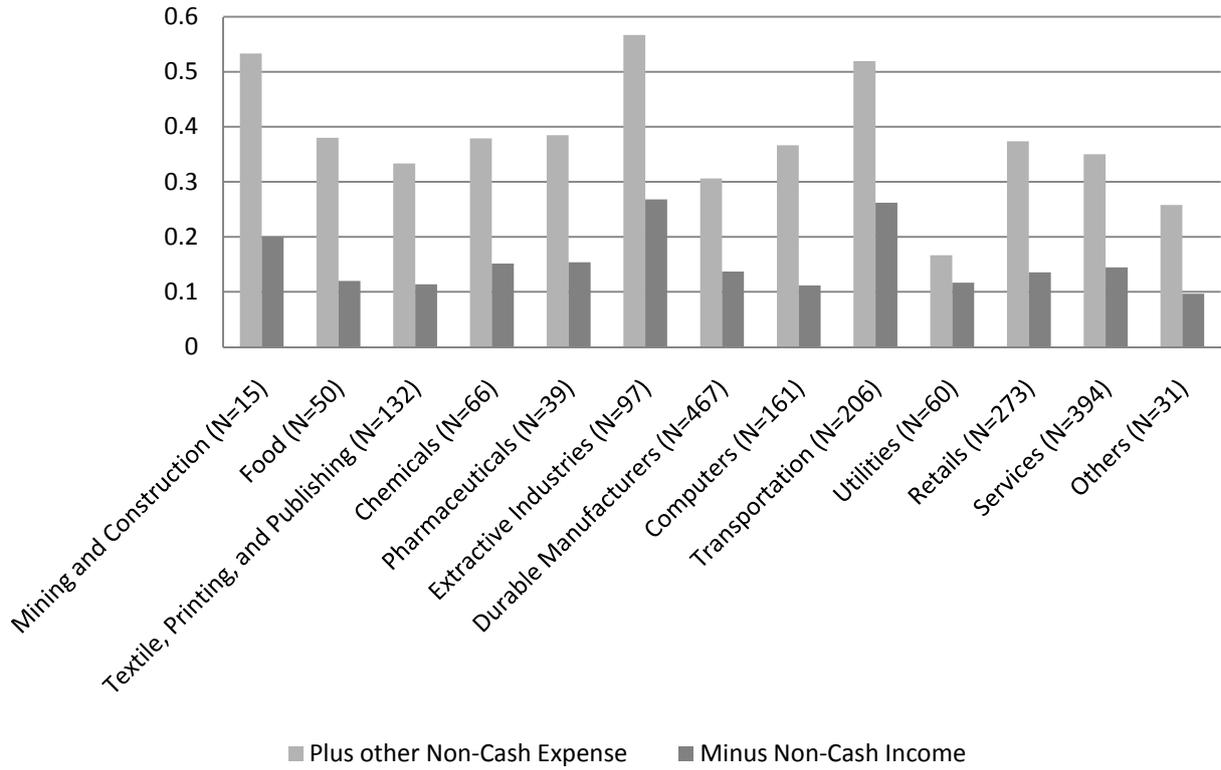


Figure 2.6 The DCF Sample - Long-Term Accruals

