Direct Evidence on the Informational Properties of Earnings in Loan Contracts

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Abstract: Using a sample of firms that disclose the realizations of earnings used for determining covenant compliance in loan contracts, we provide the first direct evidence on the informational properties of earnings used in the performance covenants included in debt contracts. We find that the earnings measure used in performance covenants does not exhibit asymmetric loss timeliness and has significantly greater cash flow predictive ability than GAAP measures of earnings. We suggest that these results reflect the idea that contracting parties design accounting rules for performance covenants to enhance their efficacy as "tripwires".

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1. Introduction

In this study we examine the informational properties of the earnings measures used in performance covenants, which are often included in private debt contracts. One of the key roles of accounting is to generate information about a firm's performance that is useful for writing debt contracts. Surprisingly, we know very little about the attributes of the actual earnings measures that are used in performance covenants, probably because realizations of this number are not easily obtainable.[1] In this study, we identify a sample of firms that disclose earnings realizations, as defined in the debt contract, and provide direct evidence on the properties of earnings measures used in performance covenants of bank debt contracts.

There is considerable debate surrounding the properties of accounting earnings that are desirable for writing debt contracts. Several studies argue that because lenders care more about downside risk, they prefer conservative earnings measures (e.g., Watts, 2003 A, B). They argue that conservative accounting facilitates timelier creditor intervention by reducing the verifiability threshold of losses that can trigger covenant violations, allowing lenders to mitigate their downside lending risk. Others (e.g., Leuz, 2001; Gigler et al., 2009) highlight that while lowering the verifiability threshold of losses facilitates timelier creditor intervention, it also increases the incidence of "false positives" caused by uninformative losses that are not indicative of future performance.

Other research suggests that the primary consideration in formulation of contractual accounting rules in debt contracts is the removal of transitory items that are not indicative of

[1] Some studies collect data on the definitions of contractual adjustments made to GAAP earnings to arrive at earnings measures used in debt contracts (Leftwich, 1983; Li, 2010, 2016). However, as we explain in Section 2, whether and how these adjustments collectively alter informational properties of GAAP earnings is nearly impossible to assess from definitions alone. Moreover, because these definitions are usually idiosyncratic and often contain items that are unavailable in the Compustat database or the 10-K filed with the SEC, it is infeasible to construct the time-series of contractual earnings realizations from definitions.

future performance (e.g., Li, 2010). The argument is that transitory items can dampen the ability of earnings to predict future cash flows, leading to unnecessary covenant violations that induce costly renegotiations and inefficient wealth transfers. Therefore, the argument suggests lenders will prefer earnings measures that exclude transitory items and predict future cash flows well.

In this study, we inform this debate by directly examining the extent of conservatism and cash flow predictive ability of earnings used in performance covenants of private debt contracts. We focus our attention on performance covenant earnings, because these covenants represent the main contractual mechanism through which borrowers' periodic earnings performance directly affects contractual outcomes (e.g., Christensen and Nikolaev, 2012).[2] To execute our tests, we identify a set of firms that disclose earnings realizations as defined under the accounting rules specified in the debt contract for use in performance covenants (hereafter, *PERF COV EARNINGS*). We identify our sample by conducting keyword searches of public filings made with the Securities and Exchange Commission (SEC) using the Lexis-Nexis and 10KWizard search engines.[3] After imposing necessary data requirements, this procedure yields a sample of 128 firms, corresponding to 1,721 observations.

For this sample of firms we compare the informational properties of *PERF COV EARNINGS* to that of two FASB GAAP based earnings measures: *NET INCOME* and *EBITDA*.[4]

[2] As Christensen and Nikolaev (2012) note, financial covenants can be classified into two types – capital covenants and performance covenants. Performance covenants are designed to measure periodic performance and rely on income statement information in conjunction with balance sheet data (e.g., interest coverage ratio or debt-to-EBITDA ratio). In contrast, capital covenants are typically based on balance sheet accounts (e.g., net worth, debt to equity) and are designed to measure the equity capital retained inside the borrower.

[3] The search terms used were as follows: ebitda w/2 (defined or adjusted or bank) w/20 (credit w/2 agreement). We supplemented this search with the phrases "credit agreement ebitda," "ebitda as defined," "bank defined cash flow," "trailing twelve months," "ebitda w/20 reconcil,*" and "covenant cushion." After doing the initial screening using key word searches, we manually read each filing to record the earnings number and to ensure that the disclosed earnings measure is indeed the one used for performance covenants. We provide an example in Appendix A.

[4] GAAP does not require firms to report EBITDA. When we use the abbreviation EBITDA, we are referring to the sum of the firm's Net Income, Depreciation & Amortization Expense, Interest Expense, and Tax Expense, as reported on the firm's income statement (per Compustat).

Our main focus is to examine whether *PERF COV EARNINGS* differ from *NET INCOME*; however, benchmarking *PERF COV EARNINGS* against *EBITDA* is also useful for exploring to what extent contractual adjustments beyond interest, taxes, and depreciation shape the properties of *PERF COV EARNINGS*.

Our initial descriptive analyses reveal marked differences in the magnitudes of *PERF COV EARNINGS* and *NET INCOME* and *EBITDA*. We find that *PERF COV EARNINGS* are greater than *NET INCOME* (*EBITDA*) for more than 99% (84%) of our observations. The magnitudes of the differences are also quite large: for the median firm, *NET INCOME* (*EBITDA)* is lower than *PERF COV EARNINGS* by about 87% (10%). Overall, the descriptive evidence suggests that, on average, the contractual adjustments made in debt contracts are economically large and income increasing.

In the next analysis, we use the Basu (1997) measure of asymmetric timely loss recognition to examine the extent of conditional conservatism in *PERF COV EARNINGS* and FASB GAAP earnings. We start the analysis by confirming that, consistent with prior research, *NET INCOME* exhibits asymmetric loss timeliness for our sample firms, while *EBITDA* does not. We find that *PERF COV EARNINGS* are not asymmetrically timely with respect to losses; instead, we find that *PERF COV EARNINGS* are asymmetrically timely with respect to gains.

We next compare the cash flow predictive ability of these three earnings measures by using the R-squared from regressions of one-year-ahead operating cash flows on each of the three different earnings measures. We find that the R-squared from the regression of *PERF COV EARNINGS* is both statistically and economically larger than the R-squared from corresponding regressions for GAAP based earnings measures. Specifically, the R-squared for *PERF COV EARNINGS* is about 77% (50%) greater than R-squared for *NET INCOME* (*EBITDA*). These

results suggest that *PERF COV EARNINGS* has significantly greater cash flow predictive ability than FASB GAAP-based earnings measures.

Because we have a small sample, we perform several analyses to test the generalizability of our results to the broader sample of firms with performance covenants in their private debt contracts, as captured by the Dealscan database. First, we find that our sample firms are similar to the sample of Dealscan firms on a variety of characteristics including the levels of conservatism and cash flow predictive ability of FASB GAAP earnings. We also provide evidence that our firms did not experience any change in these two earnings properties around the period when the decision to disclose was made. Moreover, fewer than 20% of our sample firms had new or amended contracts in the quarter prior to first disclosure, indicating most firms did not experience any changes in debt contract accounting rules prior to the disclosure decision. These findings suggests that the contracting environment shaping the design of debt contracts for our sample firms is broadly similar to that for the larger sample and the disclosure decision does not seem to have been triggered by any changes in the design of debt contracts.

Second, we compare the contractual definitions of *PERF COV EARNINGS* for our sample firms with the definitions for a matched sample of firms from the Dealscan database that do not disclose the realizations of *PERF COV EARNINGS*. We find that the number and nature of adjustments used to arrive at *PERF COV EARNINGS* for our sample firms are nearly identical to those for firms in the matched control sample. This suggests that the contractual definitions of *PERF COV EARNINGS* are not driving the disclosure decision, and provides assurance that the accounting rules used to calculate performance covenants in the debt contracts of our sample firms are similar to the accounting rules used to calculate performance covenants in the debt contracts of firms that choose not to disclose *PERF COV EARNINGS*.

Finally, to ensure our results are not unique to our small sample we use a machine-readable proxy for *PERF COV EARNINGS* to provide large sample evidence. Demerjian and Owens (2015) suggest that Compustat item "Operating Income Before Depreciation" (OIBDP) is a good proxy for *PERF COV EARNINGS.* We first confirm the validity of the proxy by showing the two measures are highly correlated (88% Spearman correlation) in our sample. We then provide evidence in our sample that OIBDP exhibits similar levels of asymmetric gain timeliness and cash flow predictive ability to actual *PERF COV EARNINGS*. Finally, we show that OIBDP exhibits asymmetric gain timeliness and significantly higher cash flow predictive ability than *NET INCOME* for the larger sample of borrowers in Dealscan database. Jointly, these results suggest that our findings are likely to generalize to the broader sample of borrowers.

Overall, our results indicate that the accounting rules used in performance covenants produce earnings realizations that are not conditionally conservative and are more predictive of future cash flows than GAAP measures. These results are consistent with the arguments in Leuz (2001) and Gigler et al. (2009) that contracting parties are concerned with the cost of "false alarms" and lend support to the conjecture in Skinner (2011) that the costs of monitoring and enforcing covenants are perhaps much higher than typically assumed.[5]

Our results illustrate the complex trade-offs lenders face when designing contractual accounting rules. Lenders desire measures that are informative of future cash flows, and they also desire measures that provide timely information with respect to losses and/or gains. While it is possible that cash flow predictive ability can be improved without sacrificing timeliness, it is

[5] While it is beyond the scope of our paper to investigate the specific nature of these costs, we note that in addition to hold-up and other agency costs, lenders are likely to be concerned with the effects of "false alarms" on both regulatory capital and regulatory oversight. For example, on pp 47 of the Comptrollers Handbook the OCC indicates that covenant violations are one of the elements that can trigger reclassifications of loans from Pass to substandard status and on page 62 they indicate that the banks tendency to waive covenants can be a sign of a structural weakness. See http://www.occ.gov/publications/publications-by-type/comptrollers-handbook/rcr.pdf.

also possible that improving the measure on one dimension diminishes its qualities on the other. Our analysis shows that in the setting of performance covenants these trade-offs result in a performance metric that is not conditionally conservative and a significantly better predictor of future cash flows than corresponding GAAP measures.

Our study extends existing research on the accounting measurement rules used in debt contracts (e.g., Leftwich, 1983; El Gazzar and Pastena, 1990; Li, 2010; and Li, 2016). This research primarily examines the definitions of measurement rules used in debt contracts, and finds that there are a variety of adjustments made to GAAP *NET INCOME* when defining contractual performance measures, but they do not provide much evidence on the magnitude of these adjustments. Our paper suggests that the contractual adjustments made to GAAP *NET INCOME* to derive *PERF COV EARNINGS* are economically large, on average income increasing, and result in systematic changes in the informational properties of GAAP *NET INCOME*.

Our paper is also related to studies that examine how the properties of accounting systems affect the nature of contractual arrangements between lenders and borrowers (e.g., Francis, LaFond, Olsson, and Schipper, 2005; Ball, Bushman, and Vasvari, 2008; Bharath, Sunder, and Sunder, 2008; Wittenberg-Moerman, 2008; Zhang, 2008; and Christensen and Nikolaev, 2012). These studies focus on the debt contracting value of accounting output produced using GAAP rules and abstract away from the contractual tailoring in the contract. The economically large differences in the informational properties of *PERF COV EARNINGS* and *NET INCOME* we document suggest that a significant portion of the informational demands of debt holders are addressed through contractual tailoring.

We also note that our results do not imply that conservative accounting is not desirable for elements of the debt contracts beyond performance covenants, nor do they imply conservatism in FASB GAAP is suboptimal in general. For example, as opposed to the performance covenants that we study, Beatty et al. (2008) show that contractual definitions of net worth underlying capital covenants include conservative adjustments. This suggests that the lender's demand for conservative accounting rules depends on the underlying covenants included in the contract. This is consistent with Christensen and Nikolaev (2012) who argue that capital covenants (as opposed to performance covenants) are designed to ensure that a minimum amount of equity capital is retained inside the firm and conservative accounting may facilitate this role by providing lower bound estimates of firms' liquidation value (Watts, 2003a,b). Kothari, Ramana, and Skinner (2010) argue that conservatism can also alleviate agency conflicts between managers and shareholders. Watts (2003a) also offers shareholder litigation, taxation, and regulators' incentives as additional explanations for conservatism. Thus, a multitude of research provides myriad explanations for the properties observed in FASB GAAP earnings, while our results specifically apply to earnings used in performance covenants in private debt contracts.

The rest of the paper is organized as follows. Section 2 describes the related empirical evidence and details the regulatory requirements that affect disclosure of contractual earnings. Section 3 describes the relevant theoretical research and develops our hypotheses. Section 4 describes our data and sample. Section 5 presents our main findings and Section 6 provides some additional tests. Section 7 concludes.

2. Background

2.1 Existing evidence on accounting measurement in debt contracts

The extant work on the accounting measurement rules used in debt contracts is primarily based on an analysis of the qualitative definitions of the contractual adjustments. Leftwich (1983) is the seminal paper in this field. He provides qualitative evidence on the definitions of net income used in debt contracts by examining the American Bar Association's *Commentaries on Indentures*, which contains information on the typical adjustments made by bondholders to FASB GAAP. Leftwich (1983) finds that contractual modifications are typically designed to disallow some increases in income that are allowable under FASB GAAP, and require some decreases in income that are not required by FASB GAAP. He concludes that the purpose of these conservative adjustments is to restrict management's ability to make accounting choices that benefit stockholders at the expense of lenders.

El-Gazzar and Pastena (1990) focus on private lending agreements made by banks and insurance lenders. They find that all contracts with insurance lenders tailor GAAP income compared to 21% of those with banks. They attribute this difference to the relatively high renegotiation costs for bank lenders relative to insurance lenders. They argue that because of high renegotiation costs, contracts with bank lenders exhibit less tailoring to provide borrowers with more flexibility to avoid violating covenants. In contrast, because insurance agreements bear lower renegotiation costs, lenders can restrict managerial actions by tailoring and then waive covenant violations if advantageous. They also find that contractual tailoring in private debt contracts puts contractual accounting closer to cash-flow basis accounting.

Using an approach similar to the above studies, Li (2010) examines the contractual definition of net income in syndicated loan contracts. He finds that the most common adjustments remove earnings items that appear transitory, while conservative adjustments that include certain types of negative earnings but exclude positive earnings are less common. This

finding is also confirmed in Demerjian (2011). Specifically, he investigates the definition of net income in private debt agreements and documents that removal of non-recurring earnings items constitutes the most common adjustment. Beatty et al. (2015) confirm this result in the calculation of adjusted EBITDA, finding that non-recurring items are often excluded from this measure when the firm has previously incurred non-recurring items, but they are not excluded when they are informative of future performance.

Collectively, these studies suggest that FASB GAAP does not sufficiently fulfill the informational needs of debt contracting parties, and the shortcomings are addressed through contractual tailoring. However, the conclusions that the authors draw regarding the specific nature of contractual adjustments are quite distinct. Leftwich (1983) draws the conclusion that the adjustments are being used to make net income more conservative, El-Gazaar and Pastena (1990) argue that the adjustments are being used to make net income closer to cash flows, but draw no conclusions on asymmetric timeliness, and Li (2010) and Demerjian (2011) suggest that adjustments are designed to omit transitory items and Beatty et al. (2015) indicate they omit transitory items that are not informative of future performance.

Our study moves this empirical literature forward on at least two fronts. First, most of the studies discussed above examine the contractual definitions of net income. While net income plays an important role in the capital covenants, most performance covenants are based on a form of "adjusted EBITDA", which is likely to be substantially different from the contractual definition of net income. This is particularly important, as performance covenants are more common than capital covenants, and are more likely to be violated than capital covenants.[6]

[6] Demerjian (2011) documents that while the use of capital covenants has declined from about 80% of deals in 1996 to 32% in 2007, the use of income statement based covenants has remain stable between 74% to 82% of deals.

Second, unlike prior work, we examine realizations of contractual earnings instead of definitions. This approach allows us to study the aggregate effect of a diverse set of adjustments on the informational properties of the final earnings measure, which is difficult to reliably do using definitions because for many of the adjustments it is difficult to assess the informational properties, magnitudes, and recurrence from the names alone.[7]

Moreover, even if one could assess the nature and properties of contractual adjustments from the names, several conceptual difficulties remain when trying to assess the aggregate effect of these adjustments on the cash flow predictive ability and asymmetric timeliness of the final earnings number. For example, although Li (2010, 2016) finds that contractual earnings tend to exclude transitory earnings items, it is not clear if removal of such items would help or hinder cash flow predictive abilities of the number. This is because many transitory earnings items represent one-time capitalizations of changes in expected future cash flows (e.g., asset impairments; effect of discontinued operations; restructuring charges), which might make them useful for predicting future cash flows (e.g., Kim and Kross, 2005; Fairfield et al., 2009).

Similarly, Li (2016) finds that in addition to conservative adjustments, definitions of performance covenants earnings also tend to include some non-conservative adjustments that allow for exclusion of non-cash expenses but not non-cash income. Without data on the relative magnitudes and frequency of the two types of adjustments, it is difficult to assess how and to what extent the adjustments alter the asymmetric timeliness of FASB GAAP net income. Finally, without data on the magnitude of adjustments, one cannot assess if the adjustments are large

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Christensen and Nikoalev (2012) find that performance covenants are associated with frequent renegotiations but capital covenants are not.

[7] For example, Pharmerica Corporation is allowed to exclude costs from what seems like a non-recurring item labeled "Integration, merger and acquisition related costs and other charges," but in fact these charges recurred in magnitudes of $29.8 million, $26.7 million, $5.2 million, $14.6 million, and $15.3 million each year from 2007 to 2011 compared to *NET INCOME* of $24.1 million, $5 million, $42.2 million, $19.2 million, and $23 million in the same years.

enough to result in economically significant changes in the statistical properties of FASB GAAP net income.

2.2 Regulations regarding disclosures of Covenant Calculations

The key innovation in our study is that we examine the earnings realizations as calculated under the rules governing the debt contract (i.e. Adjusted EBITDA), thus it is useful to understand why some firms (and not all firms) disclose these realizations. In December 2003, the SEC provided public companies guidance on the preparation of the Management Discussion and Analysis section of the 10-K financial report.[8] One of the key elements of this regulation is related to the disclosures firms make regarding their liquidity. The SEC indicates that if a company has entered into a debt contract, and the contract includes covenants that limit a firm's ability to raise debt, they are required to discuss the covenants in their filing. Specifically the MD&A rules indicate that:

> *If these (debt related) covenants limit, or are reasonably likely to limit, a company's ability to undertake financing to a material extent, the company is required to discuss the covenants in question and the consequences of the limitation to the company's financial condition and operating performance.*[9]

As part of these disclosures, firms often voluntarily choose to provide discussion of both the thresholds of the debt limiting covenants that are included in their financial contracts, as well as the realization of the metrics included in these covenants. As firms started disclosing contractual EBITDA, the SEC provided additional guidance on the disclosure of earnings realizations as calculated under the contract.[10] More specifically, the SEC notes:

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[8] See section 1 part D and Section 4 Part D for the general and specific rules at the following website: https://www.sec.gov/rules/interp/33-8350.htm

[9] See Section 4 Part D at https://www.sec.gov/rules/interp/33-8350.htm

[10] See the SEC's interpretation of the rules and regulations related to disclosure of non-GAAP measures at https://www.sec.gov/divisions/corpfin/guidance/nongaapinterp.htm. In addition to the MD&A requirements, Regulation G (Reg-G) also governs disclosure of non-GAAP measures. Reg-G, however, does not affect our sample selection because it does not require firms to disclose contractual earnings; rather, if a firm decides to publicly

"*if management believes that the credit agreement is a material agreement, that the covenant is a material term of the credit agreement and that information about the covenant is material to an investor's understanding of the company's financial condition and/or liquidity, then the company may be required to disclose the measure as calculated by the debt covenant as part of its MD&A*."

These disclosure requirements have important implications for our study. First, our sample is likely to contain firms with more leverage for which the credit agreement and the covenant terms are more likely to be material. Second, firms making these disclosures typically have some form of Debt/EBITDA type of covenant, where the covenant limits the firm's ability to raise debt. Third, many firms satisfy the disclosure requirement without necessarily disclosing the contractual earnings numbers. For example, many firms satisfy the requirement by disclosing the performance covenant ratio (e.g., debt-to-Adjusted EBITDA ratio) and not the earnings number underlying the ratio.[11]

In Appendix A, we provide an example of the disclosures made by one of our sample firms, Xerium Technologies. Xerium has two performance covenants in their contract (fixed charge and interest coverage). Both covenants limit the firm's ability to raise debt, as additional debt increases interest and fixed charges. Consistent with Leftwich (1983), net income serves as the starting point for performance covenant calculations. Consistent with Li (2010) and Demerjian (2011), adjustments are made to net income to eliminate "below the line items" like cumulative effects of accounting changes and extraordinary items. There is also an adjustment for pensions, and investments in unconsolidated subs.

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disclose contractual earnings, then Reg G requires the firm to also provide a reconciliation of the contractual earnings measure with the most directly comparable GAAP financial measure.

[11] For example, The Barnes Group, a firm in our sample, disclosed the realizations of the Debt to EBITDA ratio, as defined under their debt agreement between 2003 and 2005, and then expanded their disclosure, by disclosing both the numerator and denominator over the period 2006 through 2016. Many of the firms in our sample are similar, in the sense that once they start disclosing the data underlying the numerator and denominator, they continue to do this for many years into the future.

Consistent with the observations in Demerjian and Owens (2015), the two performance covenants (fixed charge and interest coverage) are not based on net income, but instead are based on adjusted EBITDA.[12] The contract includes 13 additional adjustments to move from contractual net income to adjusted EBITDA. In their public filings, Xerium discloses the calculation of adjusted EBITDA as calculated under the contractual rules. As the exhibit in the Appendix A suggests, in some periods the adjustments that are made are quite substantial.

The inclusion of 13 adjustments to calculate Adjusted EBITDA as defined in Xerium's contract is not particularly unusual. Li (2016) examines a random sample of 100 contracts and finds that definitions of performance covenant earnings include an average of approximately 6.5 adjustments compared to a mean of one adjustment to the definition of net income reported in Li (2010).[13] Given that bulk of the contractual tailoring involves adjustments other than those made to the contractual definitions of net income, it is difficult to draw conclusions about the informational properties of performance covenant earnings from the above studies.

3. Theory and hypotheses development

In this section, we first describe the existing theoretical work on the desirable informational properties of accounting numbers for writing tripwire covenants (Section 3.1). We then build upon this theoretical work to develop our hypotheses regarding conservatism and cash flow predictive ability of the earnings measures included in performance covenants (Section 3.2).

3.1 Existing theoretical work on desirable informational properties for tripwire covenants

[12] In the supplemental analysis section of our paper we compare actual realizations of *PERF COV EARNINGS* to the Compustat measure OIBDP, which Demerjian and Owens (2015) suggest is the best Compustat proxy for adjusted EBITDA used in debt contracts. For Xerium, in the Appendix A we also attempt to reconcile OIBDP and *PERF COV EARNINGS*. We find that there are significant differences between the two measures for some firms, but that the correlation between the two measures is high.

[13] We calculated these averages by summing all adjustments (including adding back interest taxes and deprecation) and dividing by the number of contracts.

Tripwire covenants that transfer control rights to lenders following poor performance emerge endogenously as part of the optimal contract between lenders and borrowers in the presence of agency problems. Several studies show that in a world of incomplete contracting the provision of such covenants mitigates the adverse effects of agency frictions between firms and capital providers and facilitates securing of financing ex ante (e.g., Zender, 1991; Aghion and Bolton, 1992; Dewatripont and Tirole, 1994).[14] More relevant to our research question, the generic insight from these models is that covenants should be written on accounting signals that accurately reflect the state of the nature. As discussed in Christensen et al. (2016), however, the key limitation of these models is that they consider accounting output as an exogenously generated noisy signal of the true state of nature and do not explicitly model the trade-offs associated with accounting systems with different informational properties.

Several recent studies address this issue by explicitly incorporating into the models accounting systems with different informational properties. For example, Gigler et al. (2009), Caskey and Hughes (2012), and Li (2013) examine the efficiency effects of modifying the extent of differential verifiability threshold for gain versus loss recognition. In these studies, asymmetrically decreasing the verifiability threshold for loss recognition facilitates timelier creditor intervention by decreasing the incidence of false negative errors; however, it also increases the incidence of false positive errors triggered by noisy losses that are not indicative of the true state of the nature. Therefore, in these models, whether conditionally conservative accounting benefits or hurts debt contracting efficiency depends on the relative costs of the two errors, which in turn depends on the specifics of the agency problem considered in these models. For example, Gigler et al. (2009) examine a setting in which the role of the accounting based

[14] For a comprehensive survey of the related work, see Christensen, Nikolaev, Wittenberg-Moerman (2016).

debt covenant is to allocate control rights between shareholders and lenders over the decision to liquidate or continue a project that has already been financed by the lenders. They find that in this setting the costs of inefficient liquidation of a good project (i.e., costs of false positives) dominate the costs of continuation of a bad project (costs of false negatives), making more liberal accounting desirable from a debt contracting perspective.[15] Alternatively, Caskey and Hughes (2012) modify the Gigler et al. (2009) model by allowing for the possibility of asset substitution, which can increase the relative costs of false negative signals. They find that conservative accounting becomes optimal when asset substitution problem is sufficiently severe. Similarly, Li (2013) introduces renegotiation costs to identify situations where conservative accounting is desirable. Overall, the above studies highlight that whether and to what extent conservatism is desirable for writing performance covenants is theoretically ambiguous and ultimately an empirical question.

The above theoretical studies directly examine the desirable statistical properties of the earnings output for writing tripwire covenants and abstract away from the nature of accounting principles or rules that would be required to generate the earnings output with the desired properties. Gao (2013) highlights the difficulties associated with making inferences about the underlying accounting principles by examining the statistical properties of the earnings output. We therefore note that while our evidence directly sheds light on the desirable statistical properties of earnings measure for writing performance covenants, any inferences regarding the underlying accounting rules that generate this measure should be drawn with caution.

It is important to note that lenders have mechanisms other than accounting measurement rules to affect the allocation of control rights. For example, lenders can choose to make covenant

[15] This result is consistent with the arguments in Leuz (2001) and Lambert (2010) highlighting the inefficiencies that may result from untimely recognition of economic gains.

thresholds tight or loose. By adjusting measurement rules, one can fine-tune which specific types of transactions and events can trigger covenant violations. Increasing (decreasing) the covenant threshold, however, causes an *across the board* tightening (loosening) of the covenant, without necessarily altering the *nature* of transactions/events that can trigger covenant violations.[16] For example, consider a borrower with goodwill on its balance sheet and a bank loan with a 3-year maturity. Suppose that goodwill impairments for this borrower indicate decline in long-run prospects (over horizons greater than 3 years) but have no implications for the cash flow generating ability over the next three years. If false alarms are costly, it would be optimal to alter the measurement rules to exclude goodwill impairments. Note that this problem cannot be as efficiently resolved by simply varying the covenant threshold alone. Loosening the covenant by increasing the threshold would decrease the likelihood that goodwill impairments trigger violations; but, it would also decrease the likelihood of other potentially credit relevant losses triggering the violations, reducing the efficiency of the debt contract.

As this simple example illustrates, covenant thresholds and the extent of asymmetric loss/gain timeliness do not represent equivalent ways (from an efficiency perspective) of tightening/loosening the contract. Both affect the efficiency of the contracts in different ways and the contracting parties would be expected to choose a combination of measurement rules and covenant threshold that maximizes the efficiency of debt contracts. Our study provides insights on the optimal set of measurement rules chosen by contracting parties for writing performance covenants. Future research could also examine how, for a given set of measurement rules, contracting parties vary covenant thresholds to maximize debt contracting efficiency.

3.2 Hypotheses

[16] See, also, Leuz (1998) for a discussion of this point in the context of dividend restrictions.

While the theoretical work directly examines the optimal properties of earnings for writing debt covenants, in practice it is not possible to derive a complete set of rules for each measure used in the contract. Thus, contracting parties start with GAAP rules that are designed to meet the informational demands of a variety of stakeholders (Kothari et al (2010). They then specify a multitude of contractual adjustments to arrive at a set of final measures (Leftwich (1983)). Our hypotheses are therefore based on the observation that the debt contracting parties will specify a set of contractual adjustments to GAAP Net Income to obtain a performance metric that exhibits informational properties that are as close as possible to the ones that maximize debt-contracting efficiency.

Our first hypothesis relates to the desirability of the extent of conservatism for writing performance covenants. While it has been widely documented that GAAP *NET INCOME* is based on conservative accounting rules, as discussed in the previous section, the desirability of conservative earnings measures for writing performance covenants is theoretically ambiguous. If, as predicted by Gigler et al. (2009), debt-contracting parties are concerned with "false alarms", then we may observe contractual adjustments in performance covenant earnings that attempt to reverse the conditional conservatism inherent in GAAP net income. On the other hand, if concerns over timely information regarding losses dominate, then contractual adjustments may not be designed to reverse the conservatism in GAAP number, and may even be designed to increase the conservatism in GAAP accounting rules. We, therefore, do not make any directional prediction about whether *PERF COV EARNINGS* are more, similarly, or less conservative than NE*T INCOME* and consider it to be an empirical question.

Our second hypothesis relates to the cash flow predictive ability of *PERF COV EARNINGS*. We examine cash flow predictive ability because future cash flows directly capture

the ability of borrowers to make principal and interest payments to lenders. As discussed earlier, theory on incomplete contracting (e.g., Dewatripont and Tirole, 1994) shows that the role of tripwire covenants is to facilitate timely creditor invention in borrowers' operations when the borrower performance is expected to deteriorate. An earnings metric that is predictive of future cash flows would facilitate such timely intervention by creditors, making cash flow predictive ability a desirable attribute of the earnings measure underlying performance covenants.

We hypothesize that *PERF COV EARNINGS* will exhibit greater cash flow predictive ability than *NET INCOME* for two reasons. First, because a common set of accounting standards are unlikely to perfectly capture the economic fundamentals of all firms, debt contracting parties may make idiosyncratic contractual adjustments to GAAP rules that result in a performance metric with superior ability to predict future performance. Second, because GAAP accounting rules balance complex trade-offs between the diverse informational demands imposed by a variety of stakeholders, *NET INCOME* is unlikely to be optimized to predict aspects of firm performance most relevant for lenders. For example, while lenders are likely to care more about the firms' cash flows over the life of the loan, shareholders may prefer a performance metric that better predicts cash flows over longer horizons. This possibility provides additional scope for contractual adjustments to improve upon the cash flow predictive ability of GAAP earnings. To the extent contractual adjustments are designed to address the above two deficiencies of GAAP, we expect *PERF COV EARNINGS* to exhibit greater cash flow predictive ability than *NET INCOME*.

4. Data and Sample

Our sample is comprised of firms that disclose contractual earnings (*PERF COV EARNINGS*) in form 10-K, form 10-Q, or form 8K filed with the Securities and Exchange

Commission (SEC) in at least one quarter. To identify our sample firms, we execute numerous searches of SEC filings using the Lexis Nexis and 10KWizard search engines. The primary search formula was the following: ebitda w/2 (defined or adjusted or bank) w/20 (credit w/2 agreement). Results from this search are supplemented with searches for the phrases "credit agreement ebitda," "ebitda as defined," "bank defined cash flow," "trailing twelve months," "ebitda w/20 reconcil,*" and "covenant cushion." We limit our search to firms that have publicly traded shares on one of the three major US exchanges (NYSE, NASDAQ, or AMEX). Next, we manually filter false positive results from the search by reading the content returned by the searches. We only retain observations in which we can confirm that the disclosed earnings are, in fact, used in the firm's debt contract.

Our search procedure yields 233 firms that disclose *PERF COV EARNINGS* in at least one filing.[17] We are unable to match 83 of the identified firms to Compustat, which results in 150 usable firms. Most of the firms in our sample disclose *PERF COV EARNINGS* as the rolling sum of the earnings for the last four quarters. That is, at the end of the first quarter, the firm will report earnings as defined in the contract that represent earnings summed over the first quarter and the prior three quarters. In cases where the firm did not disclose *PERF COV EARNINGS* as an annual number, we calculate annual numbers using four quarterly observations. Thus the 150 firms correspond to 2,200 quarterly observations of annual earnings. The first observation in our sample is in the fourth quarter of 1993, while the last observation is in the fourth quarter of 2013.

As can be seen in Table 1, there is some sample attrition after requiring Compustat data to calculate *NET INCOME* (Compustat data item NIQ) and *EBITDA* (Compustat data items NI +

[17] We drop one firm from the initial sample because it operates in the asset acceptance industry and has contractual adjustments that are extremely large. When we leave this firm in the dataset, it is flagged as on outlier in all of our regressions.

DPQ + XINTQ + TXTQ). We also require *CASH FLOW* one year in the future (Compustat data item OANCFY). Each of the quarterly Compustat variables is annualized on a rolling four-quarter basis in order to be comparable with earnings based on Contractual GAAP as reported by the firms in our sample. We also require total assets (Compustat data item ATQ) at the end of the fiscal period for use as a scaling variable. Finally, we truncate the variables of interest at the 1st and 99th percentiles of their distributions. These criteria result in 128 firms corresponding to 1,721 observations. In some of our tests, we impose more restrictive data requirements, and the effects of these requirements are also outlined in Table 1. Of note, when we estimate regressions following Basu (1997), we require market returns from CRSP, and we scale our earnings variables by the market value of equity from Compustat.[18] The largest sample available for these tests has 1,152 observations, corresponding to 98 firms.

Table 2 Panel A presents the distribution of our sample across 17 industries defined in Barth et al (2005). For comparison, we also provide the industry distribution for a broader sample of firms in Dealscan database that have a performance covenant in their loan contract. The table reveals no obvious differences in the industry concentration between our sample and the Dealscan sample, suggesting that the disclosure of performance covenant earnings is not driven by industry. In Table 2, Panels B and C, we also compare several other firm characteristics for our main sample as well as for the smaller sample used for asymmetric timeliness tests. In general, our sample firms appear to be slightly larger, to be slightly less profitable, to have more leverage, and to have lower book-to-market ratios than Dealscan firms, but none of the differences are extreme. Both samples also exhibit a similar distribution of stock returns. In a subsequent analysis, we also compare the cash flow predictive ability and

[18] Computed as common shares outstanding at the end of the quarter multiplied by the price per common share at the end of the quarter (CSHOQ*PRCCQ).

asymmetric loss timeliness of the *NET INCOME* of our sample firms with that of the Dealscan sample and find them to be very similar.

Table 3 provides more formal evidence on the differences between our sample firms and the broader sample of Dealscan firms by presenting probit model estimates of the decision to disclose contractual earnings. The covariates in the Probit model include: (i) firm size measured as the natural logarithm of book value of total assets (*SIZE*); (ii) book leverage measured as total debt scaled by total assets (*LEV*); (iii) book-to-market ratio measured as book value of equity scaled by market value of equity (*BM*); (iv) annual stock return (*RET*); (v) net income scaled by assets (*ROA*); (vi) analyst forecast dispersion (*STDEVU*); (vii) analyst following (*QTRNUMEST*); (viii) lagged cash flow predictive ability of GAAP net income (*RSQ5)* measured as the adjusted r-square from firm-specific regressions of one year ahead operating cash flows on net income using five quarters of data, with the last quarter ending one year before end of quarter *t*; (ix) annual sales growth (*DSALE*); (x) an indicator variable for whether or not the firm had negative net income (*LOSS*); and (xi) industry fixed effects using the industry classification from Barth et al. (2005).[19] The disclosure model is estimated on a sample of 31,107 firm-quarter observations representing all firms in the Dealscan database during our sample period that have a performance covenant in their loan contract and sufficient data to calculate the variables in the selection model.

Not surprisingly, estimates of the disclosure model show that the strongest predictor of the disclosure decision is leverage (Z-stat=5.35). As discussed earlier, credit agreement and covenant terms are more likely to be assessed to be material for firms with higher leverage, resulting in a requirement to disclose covenant calculations as per the MD&A disclosure rules.

[19] We select these variables based on the research on the decision to disclose pro-forma earnings (e.g., Bradshaw and Sloan, 2002;, Bhattacharya et al., 2003; Lougee and Marquardt, 2004)

The only other variables with some predictive ability are *RSQ5* (Z-stat=-1.77) and *LOSS* (Z-stat=-1.99). *RSQ5* has a negative coefficient, suggesting that firms whose *NET INCOME* numbers are relatively good at predicting future cash flows are less likely to disclose contractual earnings, and *LOSS* has a negative coefficient, indicating firms with negative GAAP earnings are less likely disclose contractual earnings. The results for *LOSS* variable and insignificant coefficient on *ROA* are inconsistent with the argument that firms choose to disclose contractual earnings opportunistically when GAAP earnings are poor.

5. Results

In this section, we present evidence on the degree of conservatism and cash flow predictive ability of *PERF COV EARNINGS*. We benchmark these two properties for *PERF COV EARNINGS* against GAAP *NET INCOME* and *EBITDA*. While our main focus is to examine how *PERF COV EARNINGS* differ from earnings under FASB GAAP (*NET INCOME)*, we are also benchmarking against *EBITDA* to investigate the effect of adjustments other than adding back interest, taxes, depreciation, and amortization. We first present descriptive evidence on the distribution of contractual earnings in Subsection 5.1 and we then present the conservatism analysis in Subsection 5.2 and the cash flow predictive ability analysis in Subsection 5.3. We conclude by providing a discussion of the results in Subsection 5.4.

5.1 Descriptive Evidence

Fig. 1 plots the distribution of *PERF COV EARNINGS*, *NET INCOME,* and *EBITDA*, each scaled by total assets. We find that relative to the distribution of *PERF COV EARNINGS*, the distribution of *NET INCOME* is shifted considerably to the left. Furthermore, unlike the distributions of *NET INCOME* and *EBITDA,* which have long left tails, the distribution of *PERF COV EARNINGS* does not have a significant left tail, does not assume negative values, and has a

significantly higher peak.[20] Overall, Fig. 1 suggests that *PERF COV EARNINGS* are tailored such that they assume higher values than *NET INCOME* and *EBITDA*.

In Figures 2 and 3, we directly compare *NET INCOME* to *PERF COV EARNINGS*. Figure 2, Panel A shows the ratio of *NET INCOME* to *PERF COV EARNINGS*, while Panel B shows the difference between *NET INCOME* and *PERF COV EARNINGS* (the difference is scaled by total assets). Figure 3 provides a similar comparison between *PERF COV EARNINGS* and *EBITDA*. All four panels suggest that contractual adjustments made for calculating *PERF COV EARNINGS* are mostly income increasing. Figure 3 highlights that, in addition to depreciation, amortization, interest, and taxes, *PERF COV EARNINGS* differ from *NET INCOME* because there are additional income-increasing adjustments in loan contracts.

In Table 4, Panel A we tabulate descriptive statistics for the ratios. The mean (median) value for the ratio of *NET INCOME* to *PERF COV EARNINGS* is -0.038 (0.129), and the mean (median) value for the ratio of *EBITDA* to *PERF COV EARNINGS* is 0.757 (0.899). This indicates that for the median firm, *NET INCOME* (*EBITDA*) is 87.1% (10.1%) lower than *PERF COV EARNINGS*. The 75th percentile for the ratio of *EBITDA* to *PERF COV EARNINGS* is 0.978, indicating that contractual earnings used in performance contracts are greater than *EBITDA* for over 75% of the observations.

The significant differences in the distribution of *PERF COV EARNINGS* and GAAP-based earnings also reflect in the relatively low correlation coefficients. Table 5, Panel A indicates that the (Spearman) correlation coefficient between *PERF COV EARNINGS* and *NET INCOME* is 0.50, and between *PERF COV EARNINGS* and *EBITDA* it is 0.74. Overall, the univariate analysis provides evidence of economically large contractual tailoring which suggests

[20] *PERF COV EARNINGS* does take on negative values for five observations corresponding to three firms (about 0.29 percent of the sample) before we truncate at the 1st and 99th percentiles.

that a significant portion of the informational demands of debt contracting parties is left unmet by FASB GAAP accounting rules. In the following analyses, we explore how this contractual tailoring alters the informational properties of GAAP based earnings.

5.2 Conservatism Tests

In this subsection, we provide evidence on the extent of conditional conservatism in performance covenant earnings using Basu (1997) regressions. Specifically, we estimate various versions of the following regression specification:

$$EARNINGS_t = \beta_0 + \beta_1 RETURN_t + \beta_2 D_t + \beta_3 RETURN_t D_t + \epsilon_t, \quad (1)$$

in which $EARNINGS_t$ represents *NET INCOME*$_t$, *EBITDA*$_t$, or *PERF COV EARNINGS*$_t$ and $RETURN_t$ represents the stock return for the four quarters ending at t, and D_t is an indicator variable for negative stock returns. Following prior research (e.g., Basu, 1997; Nikolaev, 2010), we scale the earnings numbers by market value of equity at the beginning of the period. The coefficient of interest, β_3, measures the asymmetric timeliness of loss recognition. We compute standard errors by clustering at the firm level because of the rolling nature of firm-year observations.

Table 6 presents the results of this analysis. In Column (1), we first model the relationship between net income and returns to replicate the widely documented conservatism in *NET INCOME*.[21] Consistent with prior studies, the coefficient β_3 on the interaction term *RETURN*D* is positive and significant, suggesting that net income exhibits conservatism.[22] This

[21] Recall that we use net income (Compustat item NI) in this test because we are making comparisons to a number defined by GAAP, while prior research (e.g., Nikolaev, 2010) often uses earnings before extraordinary items (Compustat item IB). We find that there is no significant difference statistically or economically between the coefficient estimates we report and those that we obtain when using earnings before extraordinary items as the dependent variable.

[22] Note that the insignificant coefficient on the main effect of *RETURN* is similar to prior research (Nikolaev, 2010), and is not of primary concern in our analysis.

finding mitigates concerns that our inferences from the subsequent analyses on this sample are affected by sample selection issues or by low power due to a small sample size. We later report several additional analyses in Section 6 to further show that self-selection issues do not drive our inferences.

In Column (2), we change the dependent variable to *EBITDA*. In this model, the coefficient β_3 is not significantly different from zero, suggesting that *EBITDA* is not conservative and that the conservatism in net income is primarily caused by the items excluded from *EBITDA* (i.e., depreciation, amortization, interest expense, and taxes).

In the third column, we use *PERF COV EARNINGS* as the dependent variable. The coefficient β_3 is negative and significantly different from zero (coefficient=-0.318 and t-statistics=3.20). This suggests that the contractual earnings used in performance covenants are not conservative, but exhibit timelier recognition of gains relative to losses. Moreover, we find that the sum of coefficients on *RETURN* and *RETURN*D* is statistically insignificant, suggesting that there is no reliable relation between performance covenant earnings and returns when there are economic losses. It is important to note that lack of a correlation between earnings and negative returns does not mean that earnings do not capture losses. Instead, it suggests that earnings capture economic losses after investors have already impounded the information in price.[23] Our findings in Column (3) therefore simply suggest that measurement rules underlying performance covenant earnings exclude items in GAAP earnings that accelerate the recognition of expected future losses to time periods when investors become aware of these expected losses.

[23] For example, expected decline in future sales from a product might lead to negative stock returns and an asset write-down (related to manufacturing equipment) in GAAP earnings today. However, these losses would manifest in an earnings measure that excludes asset write-downs only in the future when the firm actually experiences declining sales.

In addition, while we find no evidence of a contemporaneous relation between performance covenant earnings and economic losses for our sample, in a subsequent analysis (section 6) we find evidence of such a relation on the larger sample when we do the analysis using OIBDP as a proxy for performance covenant earnings. Specifically, we find that OIBDP exhibits asymmetric gain timeliness, but the coefficient on the interaction term is not large enough to eliminate the relation between OIBDP and negative stock returns. This difference in findings could arise because of differences in sample composition or because OIBDP is not a perfect proxy for *PERF COV EARNINGS*, but we do not attempt to disentangle the cause because the coefficient is not of primary concern in our study. Accordingly, we caution that our findings should not be interpreted as suggesting there is no contemporaneous relation between earnings and negative stock returns in the broad cross-section of firms.

5.3 Cash Flow Predictive Ability Tests

We next examine the possibility that earnings used in debt contracts are tailored to achieve an earnings metric that better reflects borrowers' ability to generate future cash flows. We model the cash flow predictive ability of different earnings measures using the following specification:

$$CASH\ FLOW_{t+4} = \gamma_0 + \gamma_1 EARNINGS_t + \epsilon_{t+4}, \quad (2)$$

in which $CASH\ FLOW_{t+4}$ is the rolling annual operating cash flow for the four-quarter period ending at $t+4$ and $EARNINGS_t$ is the rolling annual earnings measure for the four-quarter period ending at t. Both *CASHFLOW* and *EARNINGS* are scaled by total assets at the end of the period. We are primarily interested in the adjusted R-squared of this regression, which captures the ability of the earnings measure to predict cash flows one year in the future.

Table 7 presents the results of this analysis. Estimates in the first two columns show that the coefficient estimates on *NET INCOME* and *EBITDA* are 0.353 and 0.347 respectively, and both estimates are significantly different from zero at less than 1% level. These estimates suggest that *NET INCOME* and *EBITDA* map into future cash flow similarly: a $1 innovation in *NET INCOME* (*EBITDA*) at time *t* on average results in a $0.35 ($0.35) increase in operating cash flow at *t*+4. The adjusted R-square in the first column is 0.206, while the adjusted R-square in the second column is 0.243. In the third column, we examine the variable of interest, *PERF COV EARNINGS*. The point estimate of γ_1 in the third column is 0.664 (t-statistics=11.72), indicating that the earnings employed in performance-based covenants map into future cash flows at approximately twice the rate as the GAAP-based earnings measures examined in the first two columns. More importantly, the R-square is 0.364, which is the highest of the three columns, and is about 77% greater than that of the first column in which *NET INCOME* was used as the earnings variable. In the last row of the table we compare the difference in R-square of the *PERF COV EARNINGS* model with the R-square in the *NET INCOME* model and the *EBITDA* model using the Vuong's (1989) test. As can be seen, the Z-statistic is greater than five in both cases, and highly statistically significant. These findings show that *PERF COV EARNINGS* have significantly greater cash flow predictive ability than FASB GAAP earnings.

5.4 Discussion of Results

The above analyses reveal marked differences between the informational properties of earnings used in performance covenants and the properties of FASB GAAP earnings. The findings suggest that the contractual adjustments made to *NET INCOME* result in an earnings metric that exhibits asymmetric gain timeliness and has significantly greater cash flow predictive ability than *NET INCOME*.

Our findings regarding asymmetric gain timeliness are consistent with the arguments in Leuz et al. (2001), Gigler et al. (2009), and Lambert (2010), who suggest that whether conditional conservatism benefits debt contracting parties depends on the relative costs of the two decision errors affected by reducing the verifiability threshold of losses relative to gains. While reducing the verifiability threshold for loss recognition facilitates timelier creditor intervention by reducing the incidence of "false negatives", it also increases the incidence of "false positives" triggered by noisy losses that are not indicative of borrowers' future prospects. As discussed in Section 3, Gigler et al. (2009) show that when the role of accounting information is to facilitate monitoring of a positive NPV project that has already been financed, expected costs of false positives dominate the benefits of timelier intervention, thus rendering liberal accounting beneficial for writing debt contracts. Our findings suggest that when it comes to performance covenants, debt contracting parties view the benefits of timelier intervention to be dominated by the costs of "false positives" that result from the use of a conditionally conservative earnings measure. These results also lend support to the conjecture in Skinner (2011) who notes that the costs of monitoring and enforcing covenants are perhaps much higher than typically assumed.

Consistent with the arguments in Li (2010), our findings also suggest that earnings items that are not predictive of future cash flows are relatively less useful for periodic performance measurement in debt contracts and, thus, are excluded from performance covenants. This result also supports Christensen and Nikolaev (2012), who argue that, unlike capital covenants that rarely get violated, the role of performance covenants is to serve as tripwires and allocate decision rights to lenders when borrower performance starts deteriorating. They argue that

performance covenants, therefore, are more likely to be based on earnings metric that is forward looking and better indicates borrowers' future prospects.[24]

6. Additional Tests

6.1 How generalizable are our inferences?

In this section, we conduct a variety of analyses to show that our inferences are generalizable to the broader sample of borrowers with performance covenants in their debt contracts.

6.1.1 Comparison of definitions of contractual earnings for disclosers and non-disclosers

We first compare the contractual definitions of performance covenant earnings for our sample firms with those of a matched sample of control firms that do not disclose the realization of contractual earnings. Presence of similar types of contractual adjustments to net income in the definitions for both set of firms would indicate that their informational properties are also likely to be similar. We match each of our sample firms to a control firm based on size, industry, and the year the contract became effective. We then manually search for the debt contract for each of our sample firms and each of our control firms. We were successful in identifying contracts for 90 firms in our sample and 79 control firms. We then use a taxonomy similar to the one in Li (2016) to identify the key types of adjustments in the definitions. Specifically, we create indicator variables for the presence of following 7 types of exclusions from GAAP Net Income in the contractual definitions: (i) taxes, (ii) interest, (iii) depreciation and amortization, (iv) extraordinary items, (v) discontinued operations, (vi) non-cash adjustments, including write

[24] We note that many contractual adjustments are likely to simultaneously affect both the asymmetric timeliness and the cash flow predictive ability of earnings used in performance covenants. As such, our findings should be used cautiously in making inferences about the desirability of any one particular statistical property in isolation. That is, we cannot separate whether adjustments are made to improve cash flow predictive ability and asymmetric timeliness is altered as a byproduct, or vice versa, and researchers should appropriately consider this caveat when drawing inferences.

downs and impairments, and (vii) nonrecurring items, including asset sales. We use a computer program that relies on key word searches to identify the presence of each type of adjustment. We identify these key words by carefully reading the contractual definitions for 50 random debt contracts. We also spot-checked the computer program by hand searching a subsample, and found that the computer program was nearly 100% accurate.

Table 8 presents the results. The evidence indicates that disclosers and non-disclosers exhibit a nearly identical distribution of all 7 kinds of contractual adjustments with the disclosing firms exhibiting an average of 5.68 adjustments compared an average of 5.71 adjustments for the control firms. The differences in the propensity to make adjustments are not statistically significant across the two samples for all 7 categories of adjustments. The above analysis demonstrates that, as assessed by the definitions, the contractual tailoring done to derive the definition of performance covenant earnings for our sample firms is very similar to the tailoring done in the contracts of non-disclosing firms.

6.1.2 Large sample evidence using OIBDP as a proxy for performance covenant earnings

In this analysis we directly provide large sample evidence on the informational properties of performance covenant earnings by using Compustat item "operating income before depreciation" (OIBDP) as our proxy for performance covenants earnings. This analysis is based on Demerjian and Owen (2015) who suggest that OIBDP is a good proxy for the earnings measure used in performance covenants.

We first examine how closely OIBDP approximates the informational properties of performance covenant earnings. First, in unreported results, we find that OIBDP and *PERF COV EARNINGS* are highly correlated (88% Spearman correlation). Second, in the two columns of Table 9, Panel A we compare the asymmetric loss timeliness of PERF COV EARNINGS to

the asymmetric loss timeliness of OIBDP, and find that using OIBDP as the earnings measure yields coefficient estimates that are very similar to the coefficient estimates when we use *PERF COV EARNINGS*, suggesting OIBDP is a good proxy for *PERF COV EARNINGS* in asymmetric timely loss recognition tests. Moving to the third column of Panel A, we repeat the test using all firms in Dealscan with performance covenants in their debt contracts. Consistent with our small sample results, OIBDP exhibits asymmetric gain timeliness for the larger sample of Dealscan firms.

Third, in the first two columns of Table 9, Panel B, we compare the cash flow predictive ability of *PERF COV EARNINGS* to OIBDP, and find that the adjusted R-square values are very similar, suggesting OIBDP is a good proxy for *PERF COV EARNINGNS* in the cash flow predictive ability tests. Moving to the third column of Panel B, we repeat the tests using all firms in Dealscan with performance covenants in their debt contracts. We find that the adjusted R-square statistic for all Dealscan firms is very similar to our small sample of firms. [25] These analyses provide compelling evidence that our inferences are likely to generalize to the broader sample of borrowers captured by the Dealscan database.

6.1.3 Other tests to address selection issues

We conduct four additional analyses to further address concerns about the generalizability of our findings. First, we attempt to explicitly adjust for any self-selection biases using multiple imputation analysis. Multiple imputation is a method developed in statistical literature (e.g., Rubin, 1987; Little and Rubin, 2002; McKnight et al., 2007) to mitigate selection biases resulting from missing data by generating simulated values for the missing variable. The simulated values are generated using an imputation model that utilizes information from

[25] In unreported tests, we find that the adjusted R-square value for OIBDP is statistically and economically larger than the adjusted R-square value when *NET INCOME* or *EBITDA* is used as the independent variable.

observable variables to generate simulated values for the missing variables. Details of this analysis are available in the Appendix B of the paper. We find that adjusting for selection biases using the multiple imputation method makes little difference to our inferences.

Second, we compare the properties of GAAP net income of our sample firms to that of the broader sample of firms that have a performance covenant in their debt. If the properties of GAAP net income for our sample our systematically different from the properties for the larger sample then it could be that our sample firms need to make systematically different contractual adjustments to arrive at the desirable performance covenants earnings. In this scenario, differences in the properties of GAAP net income and performance covenant earnings that we document for our sample may not generalize to the broader sample. Table 10, Panel A presents the results for asymmetric timeliness and Panel B presents the results for cash flow predictive ability. Panel A shows that the asymmetric timeliness coefficient of our sample firms is 0.337, compared to 0.391 for Dealscan firms and the difference is not significantly different from zero. Similarly, in Panel B the R-squared for *NET INCOME* in regressions of future cash flows is 0.20 for our sample firms compared to 0.15 for the Dealscan firms.[26] The results indicate that the FASB GAAP earnings of Dealscan firms exhibit levels of conservatism and cash flow predictive ability that are similar to that of our sample firms, mitigating concerns about the generalizability of our findings.

Third, we further investigate self-selection concerns by examining whether the decision to disclose contractual earnings for our sample firms was triggered by changes in informational properties of GAAP earnings. In almost all cases, our sample firms have GAAP earnings data in quarters before they start disclosing *PERF COV EARNINGS*. Results from these tests are

[26] We are unable to provide statistical tests of difference in r-square for this analysis because the Vuong (1989) test is designed for non-nested models.

presented in Table 11. In Panel A, we compare asymmetric timeliness of our sample firms during the pre-disclosure period to asymmetric timeliness during the post-disclosure period. The pre-disclosure period includes all years for which data on required variables is available in Compustat and CRSP databases. Of primary interest is the coefficient on the interaction term, *RETURN*D*. We find that the difference in asymmetric loss timeliness of *NET INCOME* and *EBITDA* is not statistically significant for our sample firms in the pre-disclosure period compared to the disclosure period. In Panel B, we find the cash flow predictive ability of *NET INCOME* for our sample firms in the pre-disclosure period (R-square=0.196) to be nearly identical to that in the disclosure period (R-square=0.206). The results are also similar for *EBITDA* with R-square of 0.208 in the pre-disclosure period compared to R-square of 0.243 in the disclosure period. These findings suggest that the firms' decision to disclose *PERF COV EARNINGS* was unlikely to have been triggered by any changes in informational properties of GAAP earnings.

Finally we examine if the decision to disclose *PERF COV EARNINGS* was triggered by signing of new contracts or by making amendments to existing contracts. To test this, we examine the contract initiation dates for each firm in our sample, specifically focusing on the contract that was effective when the first voluntary disclosure of *PERF COV EARNINGS* was made. We are able to identify the effective contract dates for 118 of our 128 firms. Of these 118 firms, only 24 (about 20%) signed contracts (or amendments to contracts) that became effective in the 90 days leading up to the first voluntary disclosure. More than 25% of our sample had over 500 days between the contract date and the first voluntary disclosure. The mean number of days between most recent contract and first voluntary disclosure is about one year. Thus, it does not appear that firms are choosing to disclose because of changes to the terms of the debt contract.

6.2. Comparing performance covenant earnings to pro-forma I/B/E/S earnings

In our final set of analyses we exploit our data to compare the informational properties of performance covenant earnings to the properties of pro forma non-GAAP earnings measures that firms disclose and emphasize to analysts. Such an analysis would shed light on how the informational demands of analysts/equity investors might differ from those of debt contracting parties for periodic performance measurement in earnings based financial covenants. We use the earnings measure used by IBES in reporting to analysts as a proxy for the pro forma earnings measure firms typically use to report to analysts. Several prior studies in the pro-forma literature use IBES earnings as a proxy for pro-forma earnings (e.g., Bradshaw and Sloan, 2002; Doyle et al., 2003).[27] Results in Table 12 show that although IBES earnings exhibit asymmetric loss timeliness, the magnitude of the asymmetry is lower than that of *NET INCOME*. We also find that IBES earnings are a significantly better predictor of future cash flows compared to *NET INCOME*, but this predictive ability is not as good as that of performance covenant earnings.

Overall the above analyses show that similar to performance covenant earnings, adjustments made to derive pro forma earnings tend to increase cash flow predictive ability and undo asymmetric loss timeliness in GAAP net income. The properties of pro forma earnings are therefore closer to that of performance covenant earnings, but significant differences remain: specifically, pro forma earnings continue to exhibit asymmetric loss timeliness and have lower

[27] In untabulated analyses we confirm that IBES earnings are indeed a good proxy for the actual pro forma earnings measures. We obtain a large hand-collected dataset of the actual pro forma earnings measures released by firms in earnings press releases that has been used in prior research (Bhattacharya et al., 2003). The overlap of this pro-forma dataset with our sample is limited to 2 firms, so we cannot directly compare the properties of this data to contractual earnings in our sample, but we use this dataset to check how closely can IBES earnings approximate the properties of actual pro forma earnings. We find that pro-forma earnings are 97% correlated with IBES actual earnings. We also find that disclosed pro-forma earnings exhibit asymmetric loss timeliness, and that the pro-forma asymmetric loss timeliness is not statistically different from the asymmetric loss timeliness of IBES actual earnings. Finally we find that the cash flow predictive ability of pro-forma earnings is similar to IBES actual earnings. Thus, from this analysis we conclude that pro-forma earnings, as voluntarily disclosed, are very much similar to IBES actual earnings.

cash flow predictive ability than performance covenant earnings. These findings illustrate that there are significant differences in the desirable properties of the earnings measure for disclosure to analysts and for periodic performance measurement in earnings based covenants in debt contracts.

7. Conclusion

Which properties of accounting earnings are desirable for writing debt contracts remains a subject of considerable debate. Several studies argue that because lenders care more about downside risk, conservative accounting numbers facilitate writing of debt contracts by allowing for a timely transfer of control to banks when borrower performance starts deteriorating. Others argue that earnings numbers that are less affected by transitory items and that are more predictive of future cash flows are better for writing debt contracts. Gigler et al. (2009) even argue that asymmetric timely recognition of bad news in contractual performance measures can reduce the efficiency of debt contracts. We inform this debate by providing the first direct evidence on the informational properties of contractual earnings actually employed in debt contracts. Under the assumption that observed contractual accounting rules reflect optimal arrangements, this evidence sheds light on the desirable informational properties of accounting numbers for debt contracting.

We find marked differences in the informational properties of earnings underlying performance covenants and FASB GAAP earnings. We find that performance covenant earnings are significantly better at predicting future cash flows and are significantly less conservative than GAAP earnings. Our findings about conservatism appear consistent with the arguments in Leuz (2001), Gigler et al. (2009), and Lambert (2010) and suggest that when it comes to performance covenant earnings, benefits of timelier creditor intervention facilitated by conditionally

conservative earnings are dominated by the increased costs of false alarms triggered by noisy losses that are not indicative of future performance. We leave it for future researchers to investigate the specific nature of these costs. Our results also lend support to the arguments in Li (2010), who suggests that earnings items that are not predictive of future performance are relatively less useful for periodic performance measurement in debt contracts.

Our findings stand in contrast to prior work that attempts to indirectly infer the desirable informational properties for debt contracting purposes by examining the properties of FASB GAAP earnings. A maintained assumption in this literature is that the design of FASB GAAP is significantly influenced by the demands of debt contracting parties, and thus one can infer the properties of earnings used in debt contracts by examining the properties of FASB GAAP earnings. The differences we observe in the properties of earnings used in performance covenants as defined in bank contracts and FASB GAAP earnings, highlights the limitations of making inferences about desirable properties of accounting numbers for debt contracts using FASB GAAP.

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Appendix A

Example of contractual definitions of Net Income as compared to Adjusted Ebitda.

The information below presents the contractual definition of Consolidated Net Income and Adjusted EBITDA from Xerium Technologies credit agreement dated May 18, 2005. The credit agreement can be found here:
https://www.sec.gov/Archives/edgar/data/1287151/000119312505130023/dex101.htm

"**Consolidated Net Income**" means, with respect to any Person for any period, the aggregate of the net income (loss) of such Person and its Subsidiaries for such period determined on a consolidated basis in accordance with GAAP; provided, however, that the following, without duplication, shall be excluded in determining Consolidated Net Income: (i) any net after-tax extraordinary or non-recurring gains, losses or expenses (less all fees and expenses relating thereto), (ii) the cumulative effect of changes in accounting principles, (iii) [intentionally omitted] and (iv) any gains resulting from the returned surplus assets of any Pension Plan or Canadian Registered Pension Plan; and provided, further that, without duplication, (x) the net income for such period of any Person that is not a Subsidiary of such Person or that is accounted for by the equity method of accounting shall be included only to the extent of the amount of dividends or distributions or other payments paid in cash (or to the extent converted into cash) to such Person or a wholly-owned Subsidiary thereof in respect of such period (and if such net income is a loss it will be included only to the extent such loss has been funded with cash by such Person or a wholly-owned Subsidiary thereof in respect of such period), and (y) the net income (loss) for such period of any Subsidiary shall be excluded to the extent that the declaration or payment of dividends or similar distributions by such Subsidiary of its net income is not at the date of determination permitted without any prior governmental approval (which has not been obtained and which is not expected by Xerium to be obtained in the Ordinary Course) or, directly or indirectly, by the operation of the terms of its charter or any agreement, instrument, judgment, decree, order, statute, rule or governmental regulation applicable to that Subsidiary or its stockholders (other than any loan agreement or similar agreement which restricts the payment of dividends or similar distributions upon the occurrence of or during the existence or continuance of a default or event of default), unless such restrictions with respect to the payment of dividends or in similar distributions have been legally waived and except that this clause (y) shall not apply to any Subsidiary that is also a Guarantor in the calculation of Xerium's Leverage Ratio.

"**Adjusted EBITDA**" means, with respect to any Person for any period, the total of (A) the Consolidated Net Income of such Person and its Subsidiaries for such period, plus (B), without duplication, to the extent that any of the following were deducted in computing such Consolidated Net Income for such period: (i) provision for taxes based on income or profits, (ii) Consolidated Interest Expense, (iii) Consolidated Depreciation and Amortization Expense, (iv) reserves for inventory in connection with plant closures, (v) Consolidated Restructuring Costs, (vi) any non-cash gains or losses resulting from marking-to-market Hedging Obligations, (vii) any expense or loss associated with (A) any proposed or completed equity or debt financing on or prior to the Closing Date and (B) the early retirement, extinguishment or refinancing of debt including bonuses paid with respect to the completion of any of the foregoing, (viii) any fees,

expenses or charges deducted in computing Consolidated Net Income which have been determined by management of Xerium, which determination is reasonably acceptable to the Administrative Agent, to be non-recurring by virtue of changes in Xerium's method of operations pursuant to its cost reduction programs, (ix) Consolidated Transaction Costs, (x) non-cash charges resulting from the application of purchase accounting, (xi) non-cash compensation charges, including any such charges arising from stock options, restricted stock grants or other equity-incentive programs or from the forgiveness of loans made to employees in connection with the purchase of equity and related tax gross-up payments made in cash in connection with the IPO or on or prior to the Closing Date, (xii) non cash expenses resulting from the granting of stock options, restricted stock or restricted stock unit awards under equity compensation programs solely with respect to Common Stock, and (xiii) expenses incurred as a result of the repurchase, redemption or retention by Xerium of Common Stock earned under equity compensation programs solely in order to make withholding tax payments. Notwithstanding the foregoing, taxes paid and provision for taxes based on the income or profits of, and the Consolidated Depreciation and Amortization Expense of, a Subsidiary of such Person shall be added to Consolidated Net Income of such Person to compute Adjusted EBITDA only to the extent (and in the same proportion) that the Consolidated Net Income of such Subsidiary was included in calculating Consolidated Net Income of such Person.

Extracted Portion of Xerium Technologies' Adjusted EBITDA Disclosure included in their financial statements

Xerium Technologies discloses the following discussion in their 9/30/2009 10Q (pp53) and related 8K which is a press release discussing the earnings announcement:

"EBITDA is defined as net income (loss) before interest expense, income tax provision (benefit) and depreciation (including non-cash impairment charges) and amortization. Adjusted EBITDA is defined in our credit facility and is EBITDA plus (i) restructuring or related impairment costs (not to exceed $5.0 million in the aggregate for 2008 and in each year thereafter, (ii) reserves for inventory in connection with plant closings, (iii) stock-based and other non-cash compensation charges……(omitted for parsimony).

Adjusted EBITDA, as defined in the credit facility and calculated below, may not be comparable to similarly titled measurements used by other companies."

Xerium Technologies, Inc.
Reconciliation of Trailing Twelve Month Bank Adjusted EBITDA

	Q2 2006	Q3 2006	Q4 2006	Q1 2007	Q2 2007	Q3 2007	Q4 2007	Q1 2008	Q2 2008	Q3 2008	Q4 2008	Q1 2009	Q2 2009	Q3 2009
Net income (loss)	$ 13,105	$ 2,240	$ 3,508	$ 3,041	$ 7,678	$ 7,076	$(168,007)	$ (4,709)	$ 14,118	$ 21,536	$ (4,349)	$ (9,448)	$ 1,601	$ (7,381)
Income tax provision (benefit)	3,686	1,963	2,510	1,401	4,604	3,208	(11,558)	3,639	1,911	794	(2,443)	3,892	2,697	3,424
Interest expense, net	8,386	14,484	10,930	12,187	11,155	13,995	15,789	25,221	766	16,230	16,287	15,957	15,570	16,425
Depreciation and amortization	11,313	11,619	11,480	10,999	11,230	11,465	11,846	12,003	11,956	11,738	10,231	9,788	10,130	10,851
EBITDA	**36,490**	**30,306**	**28,428**	**27,628**	**34,667**	**35,744**	**(151,930)**	**36,154**	**28,751**	**50,298**	**19,726**	**20,189**	**29,998**	**23,319**
Unrealized foreign exchange gain on revaluation of debt	1,465	(322)	(571)	19	(20)	519	3,680	(1,985)						
Amendment/termination costs			116					800	5,198	483	285			
Change in fair value of interest rate swaps									13,704	450	(468)	(398)	(397)	(859)
Changes in value of other derivatives						(451)	(3,503)	(2,126)						
Restructuring expenses	176	1,274	969	4,133	1,220	805	1,186	532	2,651	1,817		114	1,026	87
Inventory write-offs under restructuring programs				14	80	(21)	75			199	256	103	142	104
Growth program costs				617	1,587	1,255	1,197	1,764						
Non-cash compensation and related expenses	779	389	561	535	660	578	(24)	471	(197)	500	1,235	161	885	778
Non-cash impairment charges			2,095				185,689		67	405	3,517			1,667
Non-recurring expenses resulting from cost reduction programs	1,030	561	5,009	(102)	34		150							
Adjusted EBITDA for the quarter	$ 39,940	$ 32,208	$ 36,607	$ 32,844	$ 38,228	$ 38,429	$ 36,520	$ 35,610	$ 50,174	$ 54,152	$ 24,551	$ 20,169	$ 31,654	$ 25,096
Adjusted EBITDA for the last twelve months (LTM)				$141,599	$139,887	$146,108	$ 146,021	$148,787	$160,733	$176,456	$164,487	$149,046	$130,526	$101,470

The exhibit can be accessed here: https://www.sec.gov/Archives/edgar/data/1287151/000119312509225946/dex993.htm.

Comparisons of Adjusted EBITDA Reconciliations with Compustat Data

Xerium Technologies
(https://www.sec.gov/Archives/edgar/data/1287151/000119312509225946/dex993.htm)

Xerium Technologies, Inc.	**Q3 2008**	**Compustat**	**Notes**
Net income (loss)	21,536	21,536	
Income tax provision (benefit)	794	794	
Interest expense, net	16,230	16,963	"Interest and Related Expenses"
Depreciation and amortization	11,738	11,738	
EBITDA	**50,298**	**51,031**	Computed
Unrealized foreign exchange gain on revaluation of debt	-		
Amendment/termination costs	483		Not on Compustat
Change in fair value of interest rate swaps	450		Not on Compustat
Changes in value of other derivatives	-		
Restructuring expenses	1,817	3,612	"Restructuring Cost Pretax"
Inventory write-offs under restructuring programs	199		
Growth program costs	-		
Non-cash compensation and related expenses	500	500	"Stock Compensation Expense"
Non-cash impairment charges	405		
Non-recurring expenses resulting from cost reduction programs	-		
Adjusted EBITDA*	**54,152**	**13,232**	"Operating Income Before Depr

*The discrepency between Adjusted EBITDA and OIBDPQ is primarily because compustat classifies 36,356 as "special items"

Appendix B: Multiple Imputation Analysis

Multiple imputation is a method developed in statistical literature to mitigate biases caused by missing data on some variables (e.g., Rubin, 1987; Little and Rubin, 2002; McKnight et al., 2007). Multiple imputation is a Monte Carlo technique in which missing values are replaced with m simulated values. Each of the m simulated datasets is then analyzed separately by the method appropriate for the investigation at hand, and the parameter estimates are then combined appropriately to produce the final set of results. Rubin (1987) (see also Schafer (1999) for a more concise description) describes the rules and techniques that could be used for combining parameter estimates from the simulated datasets for making appropriate inferences.

The ability of the multiple imputation analysis to mitigate biases depends crucially on the quality of imputation model used for generating the simulated values. The imputation model utilizes information from observable variables to generate simulated values for the missing variables. The imputation model allows for generating complete simulated datasets that preserve important features of the joint distribution among observable variables (means, variances, covariances). To effectively mitigate selection biases it is important to include (in addition to the variables directly used in the analysis) in the imputation model auxiliary variables that are expected to determine or are correlated with the incidence of missingness (Collins, Schafer, and Kam, 2001). Therefore, in addition to the variables that are directly required for analysis in cash flow regressions and asymmetric loss timeliness tests, we include in our imputation models all of the variables that we use in the disclosure choice model described in Section 4.

Our coefficient estimates for the conditional conservatism tests for this analysis are based on combination rules specified in Rubin (1987) for combining coefficient estimates on covariates obtained from multiple simulated datasets. In the cash flow predictive ability analysis the

parameter of interest is the R-squared from the regressions. Harel (2009) describes the appropriate procedures that could be used to combine estimates of R-squareds and adjusted R-squareds from simulated datasets. Specifically, Harel's method is to first estimate the model and calculate the R^2 and/or adjusted R^2 in each of the imputed datasets. Each model R^2 is then transformed into a correlation (r) by taking its square-root. Fisher's r to z transformation is then used to transform each of the r values into a z value. The average z across the imputations can then be calculated. Finally, the mean of the z values is transformed back into an R^2. We use the "MI" procedure in the STATA software to conduct the multiple imputation analysis. We use a regression based multiple imputation model. Finally, we use five imputations for our analysis based on prior work that suggests that five imputations may be sufficient to obtain valid inferences (Schafer and Olsen, 1998; Van Buuren et al., 1999).

We find that adjusting for self-selection bias using the multiple imputation method makes little difference to our inferences. Table B1 presents the analysis for asymmetric loss timeliness tests. It can be seen that *PERF COV EARNINGS* continues to exhibit asymmetric gain timeliness (Coefficient on *RETURN*D*=-0.364; t-stat=6.35). Estimates in Table B2 show that *PERF COV EARNINGS* continues to exhibit significantly greater cash flow predictive ability than both *NET INCOME* and *EBITDA*. Specifically, the r-square in the *PERF COV EARNNIGS* model is 0.418, which is more than double the value in the *NET INCOME* model, and about 45 percent larger than the value in the *EBITDA* model.

Appendix B - Table B1
Asymmetric Timely Loss Recognition Analysis Using Multiple Imputations

	NET INCOME $_t$	*EBITDA*	*PERF COV EARNINGS* $_t$
INTERCEPT	0.042***	0.141***	0.083***
	(20.63)	(38.68)	(9.64)
RETURN	0.002	0.127***	0.239***
	(0.51)	(14.01)	(13.46)
D	0.010***	0.028***	0.039**
	(3.27)	(6.55)	(2.32)
*RETURN * D*	0.252***	0.095***	-0.364***
	(17.08)	(5.29)	(-6.35)
N	34,493	34,493	34,493
ADJRSQ	0.068	0.094	0.134
Test of: *RETURN + RETURN*D*	0.254***	0.222***	-0.125***
	(18.55)	(14.79)	(-2.79)

Notes: This table presents the asymmetric timeliness analysis using a multiple imputation method in which we replace missing values of *PERF COV EARNINGS* using a regression based imputation model. The estimates were generated using the "mi" procedure in STATA software using 5 imputations. Additional details about the implementation of the multiple imputation procedure including the description of the variables used in the imputation model are available in Appendix B.

Appendix B - Table B2
Cash Flow Prediction Analysis Using multiple Imputations

	EARNINGS VARIABLE		
	NET INCOME $_t$	*EBITDA* $_t$	*PERF COV EARNINGS* $_t$
INTERCEPT	0.097***	0.058***	-0.012
	(223.94)	(99.95)	(-0.17)
EARNINGS VARIABLE	0.376***	0.424***	0.841***
	(79.46)	(113.20)	(17.75)
N	32,538	32,538	32,534
ADJRSQ	0.162	0.283	0.418

Notes: This table presents the cash prediction analysis using a multiple imputation method in which we replace missing values of *PERF COV EARNINGS* using a regression based imputation model. The estimates were generated using the "mi" procedure in STATA software using 5 imputations. Additional details about the implementation of the multiple imputation procedure including the description of the variables used in the imputation model are available in Appendix B.

Table 1
Sample Selection

Criteria	N Firms	N Obs
Observations identified with annualized *PERF COV EARNINGS* disclosed in at least one quarter	150	2,200
Drop observations missing annualized values of *NET INCOME* $_t$ (NIQ), *EBITDA* $_t$ (NI + DPQ + XINTQ + TXTQ or *TOTAL ASSETS* $_t$ (ATQ)	135	1,892
Drop observations missing annualized values of *CASH FLOW* $_{t+1}$ (OANCFY)	130	1,811
Truncate *PERF COV EARNINGS* $_t$, *EBITDA* $_t$, *NET INCOME* $_t$, and *CASH FLOW* $_{t+1}$ at the 1st and 99th percentiles	128	1,721
Subsample with Market Returns for Asymmetric Timeliness Tests		
Require *RETURN* $_t$ *and MARKET VALUE OF EQUITY* $_{t+1}$	98	1,152

Notes: The initial sample was selected by searching 10-K and 10-Q filings of publicly traded firms using the Lexis Nexis search engine for keywords related to bank earnings. The primary search formula was the following: ebitda w/2 (defined or adjusted or bank) w/20 (credit w/2 agreement). This search was supplemented with searches for the phrases "credit agreement ebitda," "ebitda as defined," "bank defined cash flow," "trailing twelve months," and "covenant cushion" "ebitda w/20 reconcil.*" The search resulted in 150 firms that matched with Compustat and reported annualized *PERF COV EARNINGS* in at least one quarter. In the table, Compustat data pnemonics are provided in all caps inside parentheses. Compustat variables are annualized using quarterly data in rolling four-quarter windows to be consistent with the majority of disclosed *PERF COV EARNINGS* numbers, which are frequently reported as annualized values using rolling four-quarter windows. *TOTAL ASSETS* is the Compustat data item ATQ observed in the fourth quarter of each rolling four-quarter window.

Table 2
Industry Composition and other firm characteristics

Panel A: Overall Industry Distribution

Industries from Barth et al. (2005)	Sample Firms	% of Sample Firms	Dealscan Firms	% of Dealscan Firms
BUILDING MATERIALS	6	5%	90	2%
CHEMICALS	3	2	104	3
COMPUTERS	9	7	417	11
ELECTRICAL EQUIPMENT	4	3	121	3
EXTRACTIVE	5	4	238	6
FOOD	2	2	102	3
INSTRUMENTS	3	2	160	4
MACHINERY	8	6	138	4
METAL	3	2	121	3
MISC. MANUFACTURING	2	2	39	1
MISC. RETAIL	7	5	253	7
OTHER	25	20	868	23
PHARMA	1	1	81	2
RESTAURANTS	6	5	81	2
SERVICES	25	20	446	12
TEXTILES	8	6	234	6
TRANSPORTATION EQUIPMENT	6	5	81	2
WHOLESALE	5	4	167	4
TOTAL	128	100%	3,741	100%

Notes: The table shows the distribution of firms across industries as defined in Barth et al. (2005).

Table 2 (continued)
Industry Composition and other firm characteristics

Panel B: Firm Characteristics – Main Sample

	N		Mean		StdDev		Median	
Variable	**Sample**	**Dealscan**	**Sample**	**Dealscan**	**Sample**	**Dealscan**	**Sample**	**Dealscan**
NET INCOME $_t$	1,721	77,930	0.006*	0.021	0.069	0.097	0.015	0.035
EBITDA $_t$	1,721	77,930	0.104*	0.110	0.077	0.107	0.106	0.115
CASH FLOW $_{t+1}$	1,721	77,930	0.079*	0.098	0.054	0.081	0.074	0.090
LOG ASSETS $_t$	1,721	77,930	7.485*	6.871	1.386	1.677	7.379	6.854
LOG MVE $_t$	1,246	73,206	6.584*	6.453	1.639	1.945	6.767	6.603
LEVERAGE $_t$	1,702	77,181	0.515*	0.307	0.251	0.222	0.503	0.279
BOOK to MARKET $_t$	1,223	72,008	0.407*	0.647	1.233	0.685	0.440	0.519

Notes: Notes: The panel compares basic descriptive statistics of sample firms and Dealscan firms. * represents statistical difference between the two samples at the 5% level or better.

Panel C: Firm Characteristics– Asymmetric Timeliness Sample

	N		Mean		StdDev		Median	
Variable	**Sample**	**Dealscan**	**Sample**	**Dealscan**	**Sample**	**Dealscan**	**Sample**	**Dealscan**
NET INCOME $_t$	1,152	73,403	-0.024*	-0.003	0.332	0.240	0.054	0.049
EBITDA $_t$	1,152	73,403	0.258*	0.168	0.364	0.304	0.197	0.143
RETURN $_t$	1,152	73,403	0.155	0.138	0.539	0.523	0.091	0.080
D (*RETURN* $_t < 0$)	1,152	73,403	0.415	0.420	0.493	0.494	0.000	0.000
LOG ASSETS $_t$	1,152	73,403	7.242*	6.842	1.288	1.666	7.278	6.836
LOG MVE $_t$	1,152	73,353	6.635	6.546	1.580	1.849	6.786	6.656
LEVERAGE $_t$	1,134	72,938	0.433*	0.284	0.213	0.204	0.407	0.261
BOOK to MARKET $_t$	1,141	72,929	0.510*	0.641	0.925	0.642	0.462	0.516

Notes: The panel compares basic descriptive statistics of sample firms and Dealscan firms. * represents statistical difference between the two samples at the 5% level or better.

Table 3
Disclosure Model

INTERCEPT	-3.160***
	(-6.48)
SIZE	0.032
	(0.54)
LEV	1.450***
	(5.35)
BM	0.119
	(1.30)
RET	-0.004
	(-0.08)
ROA	-22.134
	(-0.33)
STDEVU	0.075
	(0.18)
QTRNUMEST	0.004
	(0.30)
RSQ5	-0.080*
	(-1.77)
DSALE	-0.189
	(-1.16)
LOSS	-0.250**
	(-1.99)
INDUSTRY EFFECTS	YES
N	31,107
PSEUDO RSQ	0.095

Notes: The dependent variable is an indicator that takes the value of 1 if the firm disclosed *PERF COV EARNINGS*, and zero otherwise. The model is a probit. The sample is comprised of all firms in the Dealscan database that have at least one performance covenant, and have sufficient Compustat data to compute the explanatory variables. The explanatory variables include: (i) firm size measured as the natural logarithm of book value of total assets (*SIZE*); (ii) book leverage measured as total debt scaled by total assets (*LEV*); (iii) book-to-market ratio measured as book value of equity scaled by market value of equity (*BM*); (iv) annual stock return (*RET*); (v) net income scaled by assets (*ROA*); (vi) analyst forecast dispersion (*STDEVU*); (vii) analyst following (*QTRNUMEST*); (viii) lagged cash flow predictive ability of GAAP net income (*RSQ5*) measured as the adjusted r-square from firm-specific regressions of one year ahead operating cash flows on net income using five quarters of data, with the last quarter ending one year before end of quarter t; (ix) annual sales growth (*DSALE*); (x) an indicator variable for whether or not the firm had negative net income (*LOSS*); and (xi) industry fixed effects using the industry classification from Barth et al. (2005) ***, **, * represent statistical significance at the 1%, 5%, and 10% levels. Standard errors are clustered by firm.

Table 4
Simple Statistics

Panel A: Main Sample

Variable	N	Mean	Std	Min	P25	P50	P75	Max
NET INCOME to *PERF COV EARNING*	1,721	-0.038	0.672	- 6.884	- 0.164	0.129	0.325	1.450
EBITDA to *PERF COV EARNINGS*	1,721	0.757	0.610	- 5.604	0.704	0.899	0.978	3.368
NET INCOME $_t$	1,721	0.006	0.069	-0.394	-0.018	0.015	0.048	0.169
EBITDA $_t$	1,721	0.104	0.077	-0.303	0.072	0.106	0.146	0.374
PERF COV EARNINGS $_t$	1,721	0.132	0.049	0.027	0.099	0.125	0.160	0.389
CASH FLOW $_{t+1}$	1,721	0.079	0.054	-0.047	0.041	0.074	0.112	0.278

Notes: The sample selection procedure is provided in Table 1. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter t. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + DPQ + TXTQ) ending in quarter t. $PERF\ COV\ EARNINGS_t$ is the annual earnings required by the bank lending agreement ending in quarter t. $OPERATING\ CASH\ FLOW_{t+1}$ is cash flow from operations (*OANCF*) one year in the future. $NET\ INCOME_t$, $EBITDA_t$, $PERF\ COV\ EARNINGS_t$, and $OPERATING\ CASH\ FLOW_{t+1}$ are scaled by assets at the end of the period. *EBITDA* to *PERF COV EARNINGS* is the ratio of $EBITDA_t$ to $PERF\ COV\ EARNINGS_t$. *NET INCOME* to $PERF\ COV\ EARNINGS_t$ is the ratio of $NET\ INCOME_t$ to $PERF\ COV\ EARNINGS_t$.

Panel B: Subsample for Asymmetric Timeliness Tests

Variable	N	Mean	Std	Min	P25	P50	P75	Max
NET INCOME $_t$	1,152	-0.024	0.332	-3.442	0.006	0.054	0.082	0.410
EBITDA $_t$	1,152	0.258	0.364	-1.606	0.131	0.197	0.308	3.954
PERF COV EARNINGS $_t$	1,152	0.329	0.352	0.040	0.162	0.230	0.349	4.148
RETURN $_t$	1,152	0.155	0.539	-0.859	-0.178	0.091	0.427	3.343
D (*RETURN* $_t < 0$)	1,152	0.415	0.493	0.000	0.000	0.000	1.000	1.000

Notes: The sample selection procedure is described in Table 1. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter t. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + DPQ + TXTQ) ending in quarter t. $PERF\ COV\ EARNINGS_t$ is annual earnings required by the bank lending agreement ending in quarter t. $NET\ INCOME_t$, $EBITDA_t$, and $PERF\ COV\ EARNINGS_t$ are scaled by market value of equity at the beginning of the period. $RETURN_t$ is the annual market return corresponding to the four fiscal quarters ending in quarter t.

Table 5
Spearman Correlations

Panel A: Main Sample

	1	2	3
1 *NET INCOME* $_t$			
2 *EBITDA* $_t$	0.80*		
3 *PERF COV EARNINGS* $_t$	0.50*	0.74*	
4 *CASH FLOW* $_{t+1}$	0.57*	0.61*	0.63*

Notes: The sample selection procedure is provided in Table 1 (N=1,721). Variable descriptions are provided in Table 3, Panel A.

Panel B: Subsample for Asymmetric Timeliness Tests

	1	2	3	4
1 *NET INCOME* $_t$				
2 *EBITDA* $_t$	0.42*			
3 *PERF COV EARNINGS* $_t$	0.07*	0.75*		
4 *CASH FLOW* $_{t+1}$	0.35*	0.33*	0.29*	
5 *D* (*RETURN* $_t < 0$)	-0.31*	-0.24*	-0.18*	-0.85*

Notes: The sample selection procedure is described in Table 1 (N=1,152). Variable descriptions are provided in Table 3, Panel B.

Table 6
Asymmetric Timely Loss Recognition Estimated Using Different Definitions of Earnings

	NET INCOME $_t$	*EBITDA*	*PERF COV EARNINGS* $_t$
INTERCEPT	0.018	0.221***	0.246***
	(0.87)	(6.67)	(7.61)
RETURN	0.002	0.184***	0.229***
	(0.07)	(3.61)	(4.80)
D	-0.005	0.024	0.022
	(-0.18)	(0.73)	(0.83)
*RETURN * D*	0.337***	0.013	-0.318***
	(3.21)	(0.12)	(-3.20)
N	1,152	1,152	1,152
ADJRSQ	0.044	0.063	0.059
	0.339***	0.197*	-0.089
Test of: *RETURN + RETURN*D*	(3.70)	(1.95)	(-1.09)

Notes: The dependent variable is noted in the column heading. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + DPQ + TXTQ) ending in quarter *t*. $PERF\ COV\ EARNINGS_t$ is annual earnings required by the bank lending agreement ending in quarter *t*. $NET\ INCOME_t$, $EBITDA_t$, and $PERF\ COV\ EARNINGS_t$ are scaled by market value of equity at the beginning of the period. *RETURN* is the annual market return, corresponding to the four fiscal quarters ending in quarter *t*. *D* is a dummy that represents negative *RETURN*. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Table 7
Regressions of *OPERATING CASH FLOW*$_{t+1}$ on Different Definitions of Earnings

	EARNINGS VARIABLE		
	NET INCOME $_t$	*EBITDA* $_t$	*PERF COV EARNINGS* $_t$
INTERCEPT	0.077***	0.043***	-0.009
	(21.82)	(8.82)	(-1.22)
EARNINGS VARIABLE	0.353***	0.347***	0.664***
	(7.47)	(7.83)	(11.72)
N	1,721	1,721	1,721
ADJRSQ	0.206	0.243	0.364
ADJRSQ Difference vs. *PERF COV EARNINGS* column	0.158	0.121	
Vuong Z	5.813***	5.309***	

Notes: The dependent variable is *OPERATING CASH FLOW*$_{t+1}$. The independent variable is noted in the column heading. *NET INCOME*$_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. *EBITDA*$_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (OIBDPQ + SPIQ + XIQ + DOQ) ending in quarter *t*. *PERF COV EARNINGS*$_t$ is annual earnings required by the bank lending agreement ending in quarter *t*. *NET INCOME*$_t$, *EBITDA*$_t$, *PERF COV EARNINGS*$_t$, and *OPERATING CASH FLOW*$_{t+1}$ are scaled by assets at the end of the period. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors in the regressions are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Table 8
Comparing contractual definitions for disclosers and non-disclosers

	MEAN		STD DEV	
	Sample	Control	Sample	Control
TAX	1.00	1.00	0.00	0.00
INTEREST	1.00	1.00	0.00	0.00
DEPRECIATION	0.98	1.00	0.15	0.00
EXTRAORDINARY ITEMS	0.90	0.92	0.30	0.27
DISCONTINUED OPERATIONS	0.23	0.16	0.43	0.37
NONCASH ITEMS	0.91	0.96	0.29	0.19
NONRECURRING ITEMS	0.66	0.66	0.48	0.48
NUMBER OF ADJUSTMENTS	5.68	5.71	0.99	0.82

Notes: This table describes the nature of adjustments to *PERF COV EARNINGS* for our sample firms and for a matched sample of firms that have a performance covenant in their loan contract but do not disclose the realizations of the performance covenant earnings number. Matching is based on size, industry, and the year the loan contract becomes effective. We were able to identify the contracts and associated *PERF COV EARNINGS* definitions for 90 sample firms and 79 control firms. The contractual definition of *PERF COV EARNINGS* is examined in each contract for evidence of adjustments for 1) taxes, 2) interest, 3) depreciation and amortization, 4) extraordinary items, 5) discontinued operations, 6) noncash items, and 7) nonrecurring items. If evidence for a particular adjustment is found, the variable is assigned a value of one, and a value of zero otherwise. The last row represents the sum of the six indicator variables for each contract.

Table 9
Large sample evidence using the Compustat variable OIBDP as a proxy for *PERF COV EARNINGS*

Panel A: Asymmetric Timely Loss Recognition

	PERF COV EARNINGS $_t$	*OIBDP* $_t$	*OIBDP* $_t$
	Disclosure Sample	*Disclosure Sample*	*Dealscan Sample*
INTERCEPT	0.246***	0.240***	0.167***
	(7.61)	(7.77)	(60.18)
RETURN	0.229***	0.199***	0.148***
	(4.80)	(4.53)	(27.68)
D	0.022	0.021	0.018***
	(0.83)	(0.73)	(5.86)
*RETURN * D*	-0.318***	-0.254***	-0.068***
	(-3.20)	(-2.80)	(-6.06)
N	1,152	1,141	72,750
ADJRSQ	0.059	0.053	0.085

Notes: The dependent variable is noted in the column heading. *PERF COV EARNINGS*$_t$ is annual earnings required by the bank lending agreement ending in quarter *t*. OIBDP$_t$ is the Compustat variable operating income before depreciation. *PERF COV EARNINGS*$_t$ and OIBDP$_t$ are scaled by market value of equity at the beginning of the period. *RETURN* is the annual market return, corresponding to the four fiscal quarters ending in quarter *t*. *D* is a dummy that represents negative *RETURN*. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Panel B: Cash Flow Predictive Ability

	PERF COV EARNINGS $_t$	*OIBDP* $_t$	*OIBDP* $_t$
	Disclosure Sample	*Disclosure Sample*	*Dealscan Sample*
INTERCEPT	-0.009	0.007	0.018***
	(-1.22)	(0.75)	(15.74)
EARNINGS VARIABLE	0.664***	0.590***	0.630***
	(11.72)	(8.14)	(68.74)
N	1,721	1,708	77,264
ADJRSQ	0.364	0.347	0.373

Notes: The dependent variable is *OPERATING CASH FLOW*$_{t+1}$. The independent variable is noted in the column heading. *PERF COV EARNINGS*$_t$ is annual earnings required by the bank lending agreement ending in quarter *t*. OIBDP$_t$ is the Compustat variable operating income before depreciation. *NET INCOME*$_t$, OIBDP$_t$, and *OPERATING CASH FLOW*$_{t+1}$ are scaled by assets at the end of the period. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors in the regressions are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Table 10
Comparing Sample Firms to Dealscan Firms

Panel A: Asymmetric Timely Loss Recognition

	NET INCOME $_t$			*EBITDA* $_t$		
	Dealscan Sample	*Disclosure Sample*	*Difference*	*Dealscan Sample*	*Disclosure Sample*	*Difference*
INTERCEPT	0.040***	0.018	0.022	0.154***	0.221***	-0.066**
	(21.59)	(0.87)	(1.04)	(45.54)	(6.67)	(-2.01)
RETURN	-0.009**	0.002	-0.011	0.135***	0.184***	-0.048
	(-1.97)	(0.07)	(-0.40)	(17.75)	(3.61)	(-0.95)
D	0.015***	-0.005	0.019	0.034***	0.024	0.010
	(4.77)	(-0.18)	(0.77)	(8.64)	(0.73)	(0.32)
*RETURN * D*	0.391***	0.337***	0.055	0.158***	0.013	0.145
	(27.93)	(3.21)	(0.52)	(9.53)	(0.12)	(1.34)
N	73,403	1,152		73,403	1,152	
ADJRSQ	0.089	0.044		0.076	0.063	

Notes: The dependent variable is noted in the column heading. *NET INCOME*$_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. *EBITDA*$_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + DPQ + TXTQ) ending in quarter *t*. *NET INCOME*$_t$, and *EBITDA*$_t$ are scaled by market value of equity at the beginning of the period. *RETURN* is the annual market return, corresponding to the four fiscal quarters ending in quarter *t*. *D* is a dummy that represents negative *RETURN*. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Panel B: Cash Flow Predictive Ability

	NET INCOME $_t$			*EBITDA* $_t$		
	Dealscan Sample	*Disclosure Sample*	*Difference*	*Dealscan Sample*	*Disclosure Sample*	*Difference*
INTERCEPT	0.091***	0.077***	0.014***	0.056***	0.043***	0.013***
	(99.56)	(21.82)	(3.99)	(54.38)	(8.82)	(2.67)
EARNINGS VARIABLE	0.320***	0.353***	-0.033	0.377***	0.347***	0.030
	(33.66)	(7.47)	(-0.69)	(43.49)	(7.83)	(0.68)
N	77,930	1,721		77,930	1,721	
ADJRSQ	0.147	0.206		0.247	0.243	

Notes: The dependent variable is *OPERATING CASH FLOW*$_{t+1}$. The independent variable is noted in the column heading. *NET INCOME*$_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. *EBITDA*$_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (OIBDPQ + SPIQ + XIQ + DOQ) ending in quarter *t*. *NET INCOME*$_t$, *EBITDA*$_t$, and *OPERATING CASH FLOW*$_{t+1}$ are scaled by assets at the end of the period. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors in the regressions are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Table 11
Comparing Sample Firms in the Pre-Disclosure Period to Sample Firms in Disclosure Period

Panel A: Asymmetric Timely Loss Recognition

	NET INCOME $_t$			*EBITDA* $_t$		
	Pre-Disclosure Quarters	*Disclosure Quarters*	*Difference*	*Pre-Disclosure Quarters*	*Disclosure Quarters*	*Difference*
INTERCEPT	0.052***	0.018	0.034	0.159***	0.221***	-0.061*
	(5.13)	(0.87)	(1.45)	(9.23)	(6.67)	(-1.68)
RETURN	-0.027	0.002	-0.029	0.180***	0.184***	-0.003
	(-1.03)	(0.07)	(-0.75)	(3.36)	(3.61)	(-0.04)
D	-0.005	-0.005	-0.000	0.033	0.024	0.009
	(-0.26)	(-0.18)	(-0.00)	(1.35)	(0.73)	(0.21)
*RETURN * D*	0.256***	0.337***	-0.080	-0.015	0.013	-0.028
	(3.61)	(3.21)	(-0.71)	(-0.14)	(0.12)	(-0.18)
N	1,936	1,152		1,936	1,152	
ADJRSQ	0.060	0.044		0.084	0.063	

Notes: The dependent variable is noted in the column heading. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + DPQ + TXTQ) ending in quarter *t*. $NET\ INCOME_t$, and $EBITDA_t$ are scaled by market value of equity at the beginning of the period. *RETURN* is the annual market return, corresponding to the four fiscal quarters ending in quarter *t*. *D* is a dummy that represents negative *RETURN*. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Panel B: Cash Flow Predictive Ability

	NET INCOME $_t$			*EBITDA* $_t$		
	Pre-Disclosure Quarters	*Disclosure Quarters*	*Difference*	*Pre-Disclosure Quarters*	*Disclosure Quarters*	*Difference*
INTERCEPT	0.088***	0.077***	0.011**	0.058***	0.043***	0.015
	(21.79)	(21.82)	(2.26)	(7.50)	(8.82)	(1.55)
EARNINGS VARIABLE	0.459***	0.353***	0.106	0.320***	0.347***	-0.027
	(6.78)	(7.47)	(1.15)	(4.36)	(7.83)	(-0.31)
N	2,293	1,721		2,293	1,721	
ADJRSQ	0.196	0.206		0.208	0.243	

Notes: The dependent variable is $OPERATING\ CASH\ FLOW_{t+1}$. The independent variable is noted in the column heading. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (OIBDPQ + SPIQ + XIQ + DOQ) ending in quarter *t*. $NET\ INCOME_t$, $EBITDA_t$, and $OPERATING\ CASH\ FLOW_{t+1}$ are scaled by assets at the end of the period. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors in the regressions are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Table 12
Comparison with pro forma I/B/E/S earnings

Panel A: Asymmetric Timely Loss Recognition

	IBES
INTERCEPT	0.060***
	(11.30)
RETURN	0.028***
	(2.65)
D	0.013
	(1.42)
*RETURN * D*	0.142**
	(2.16)
N	781
ADJRSQ	0.095
	0.170**
Test of: *RETURN + RETURN*D*	(2.64)

Notes: The dependent variable is noted in the column heading. $IBES_t$ is the rolling four-quarter sum of actual earnings, as recorded by IBES quarter *t* scaled by market value of equity at the beginning of the period. *RETURN* is the annual market return, corresponding to the four fiscal quarters ending in quarter *t*. *D* is a dummy that represents negative *RETURN*. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

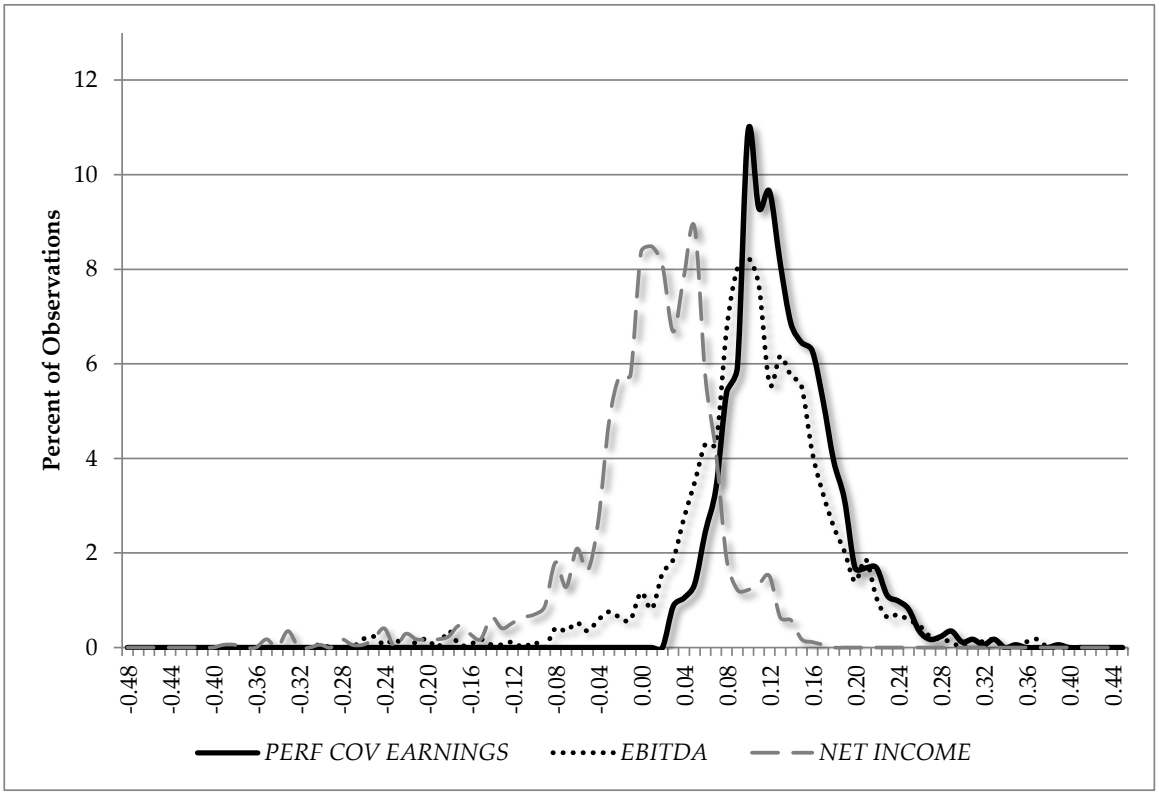
Panel B: Cash Flow Predictive Ability

INTERCEPT	0.071***
	(12.73)
IBES EARNINGS	0.629***
	(7.18)
N	782
ADJRSQ	0.262

Notes: The dependent variable is $OPERATING\ CASH\ FLOW_{t+1}$. The independent variable is $IBES\ EARNINGS_t$, which is the rolling four-quarter sum of actual earnings, as recorded by IBES for the quarter *t* scaled by assets at the end of the period. $OPERATING\ CASH\ FLOW_{t+1}$ is scaled by assets at the end of the period. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels using a two-tailed test. Standard errors in the regressions are clustered by firm. T-statistics are in parentheses below the coefficient estimates.

Figure 1

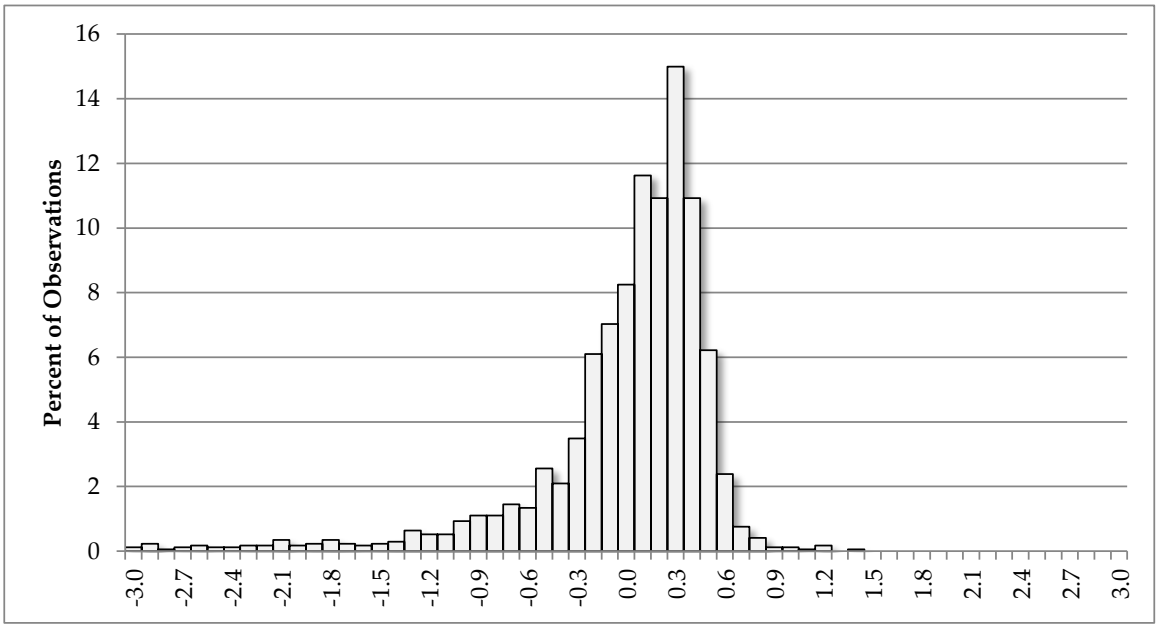
Distributions of *NET INCOME*, *EBITDA*, and *PERF COV EARNINGS*



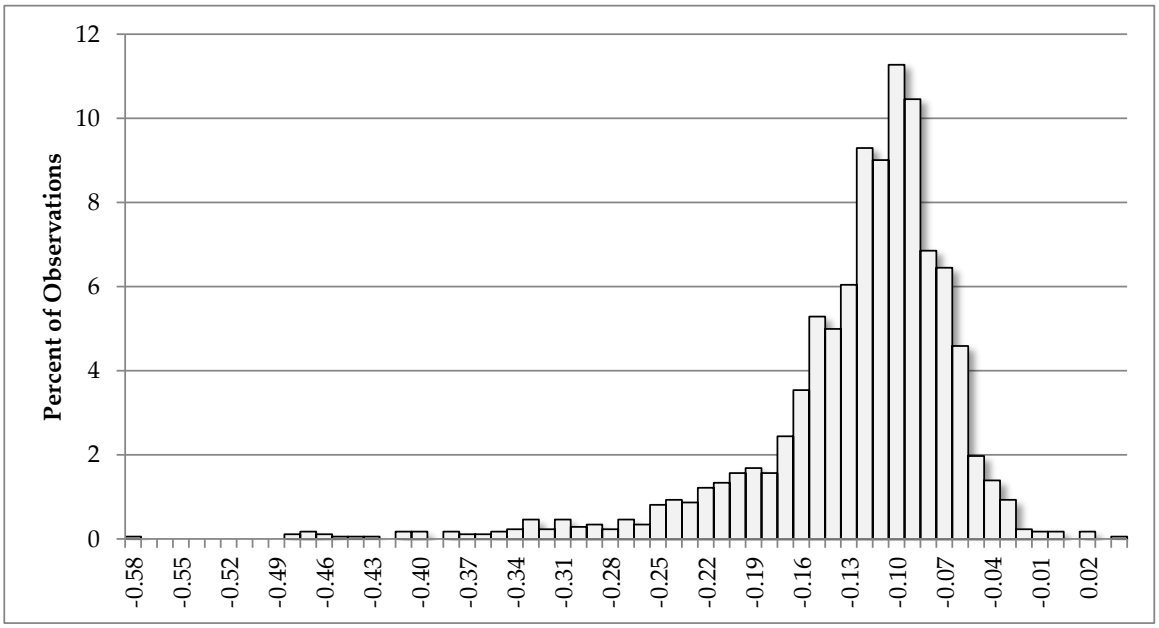
Notes: This figure plots the distribution $NET\ INCOME_t$, EBITDA*t*, and $PERF\ COV\ EARNINGS_t$, each scaled by $TOTAL\ ASSETS_t$. $NET\ INCOME_t$ is the rolling four-quarter sum of net income (NI) ending in quarter *t*. $EBITDA_t$ is the rolling four-quarter sum of earnings before interest, taxes, depreciation and amortization (NI + XINTQ + TXTQ + DPQ) ending in quarter *t*. $PERF\ COV\ EARNINGS_t$ is annual earnings required by the bank lending agreement for performance covenants ending in quarter *t*.

Figure 2
Comparing *NET INCOME* to *PERF COV EARNINGS*

Panel A: Ratio of *NET INCOME* to *PERF COV EARNINGS*



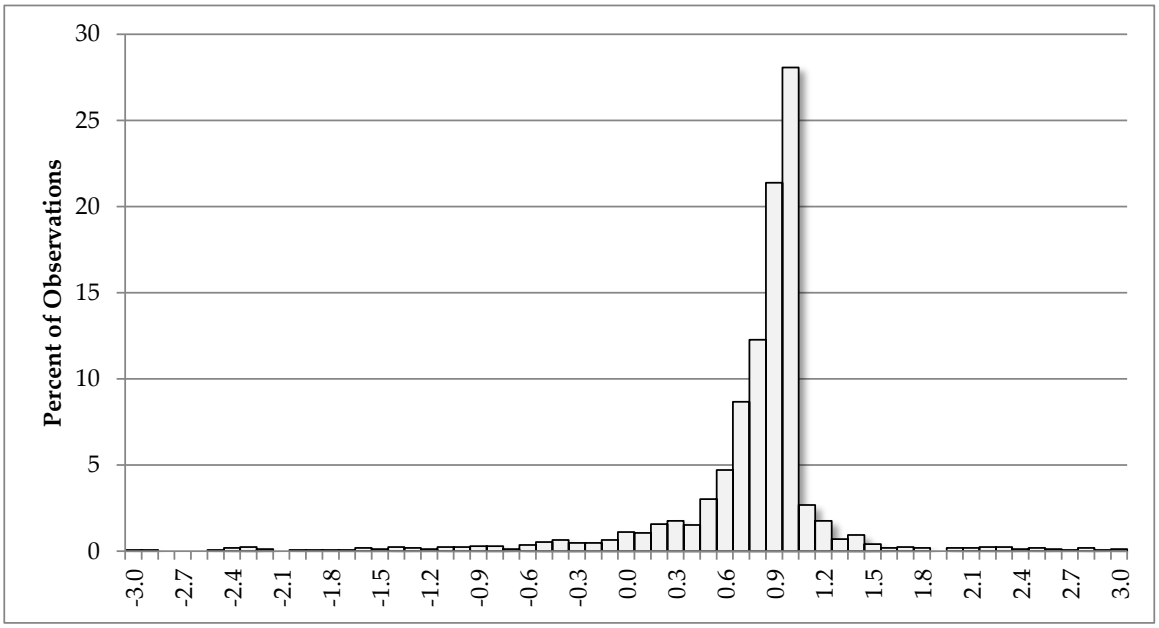
Panel B: NET INCOME minus *PERF COV EARNINGS* scaled by assets



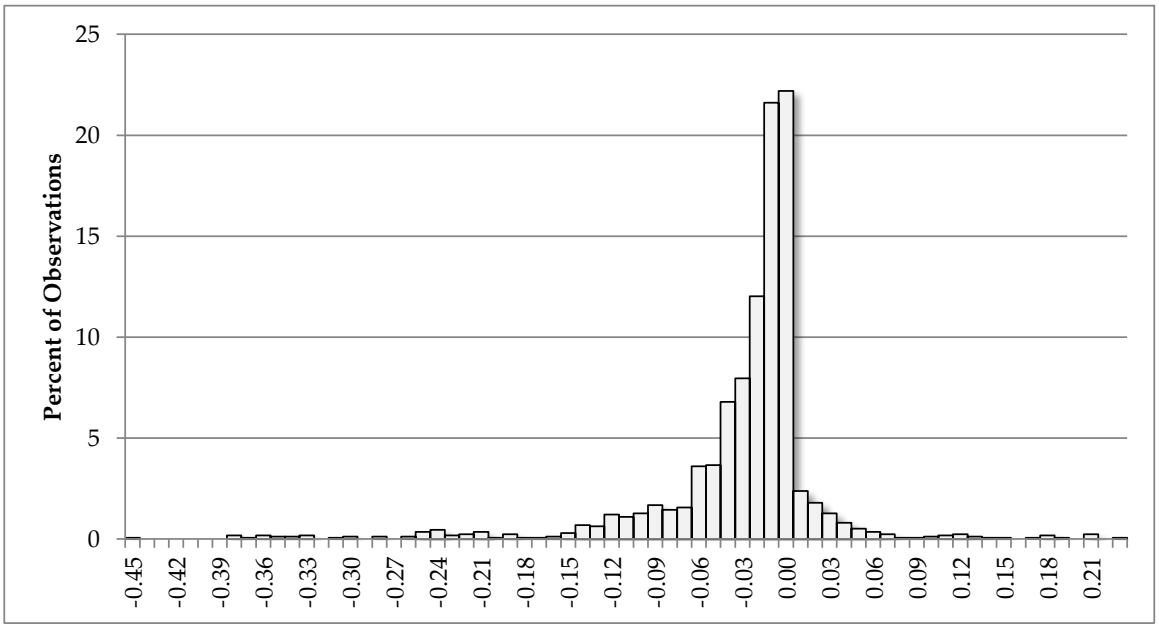
Notes: Panel A plots the distribution of the ratio of $NET\ INCOME_t$ to $PERF\ COV\ EARNINGS_t$ between -3.0 and 3.0. Panel B plots the distribution of ($PERF\ COV\ EARNINGS_t$ - $NET\ INCOME_t$)/$ASSETS_t$. Values less than 1.0 (0.0) on the horizontal axis of Panel A (Panel B) represent observations where *PERF COV EARNINGS*$_t$ is higher than *NET INCOME*$_t$.

Figure 3
Comparing *EBITDA* to *PERF COV EARNINGS*

Panel A: Ratio of *EBITDA* to *PERF COV EARNINGS*



Panel B: EBITDA minus *PERF COV EARNINGS* scaled by assets



Notes: Panel A plots the distribution of the ratio of $EBITDA_t$ to $PERF\ COV\ EARNINGS_t$ between -3.0 and 3.0. Panel B plots the distribution of $(PERF\ COV\ EARNINGS_t - EBITDA_t)/ASSETS_t$. Values less than 1.0 (0.0) on the horizontal axis of Panel A (Panel B) represent observations where $PERF\ COV\ EARNINGS_t$ is higher than $EBITDA_t$.