12-2012

Refinancing Pressure and Earnings Management: Evidence from Changes in Short-term Debt and Discretionary Accruals

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December 2012

Acknowledgements: We would like to thank Holly Ashbaugh-Skaife, Neil Fargher, Don Fraser, Chris Hogan, Dalia Marciukaityte, Ted Moorman, James Myers, Puneet Prakash, Oghenovo Obrimah, Nanda K. Rangan and seminar participants at Northern Illinois University, University of New Orleans, Florida Atlantic University, and Virginia Commonwealth University for helpful comments.

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ABSTRACT

Refinancing pressure may entice a very specific form of managerial misbehavior on the part of borrowers. Borrowers utilizing a greater amount of short term debt in one period may feel pressure to make their firms look as attractive as possible leading into the next period when refinancing may take place. In other words, potential refinancing pressure may lead managers to manipulate earnings. We examine the relation between changes in debt in current liabilities (short-term debt) and discretionary accruals as an indicator of the propensity to manage earnings. Our results show that (i) firms have higher discretionary accruals during periods of increased short-term debt, (ii) firms have higher discretionary accruals prior to the initiation of bank loan agreements, and (iii) both of these relations are influenced by a firm's credit risk.

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1. Introduction

Diamond (2004) shows that lenders avoid active enforcement of debt contracts when the costs outweigh the benefits of enforcement. Because lenders are more likely to monitor and enforce debt contracts when repayment or renegotiation is imminent, Diamond (2004) recommends that firms utilize short-term debt. Although increased lender monitoring may provide one benefit to various stakeholders of the firm, having significant debt coming due in the short term comes with inherent risks as well (Flannery 1986 and Diamond 1991). For example, firms may be denied debt renewal, may have to repay the debt before projects mature, may be subject to unfavorable new debt terms, or may have difficulty obtaining new financing – hereafter collectively referred to as "refinancing pressure." Ultimately, the positive effects of increased lender diligence may not be fully realized if refinancing pressure negatively impacts managerial behavior.

Our purpose in this paper is to explore whether managerial behavior is, in fact, influenced by potential refinancing pressure. More specifically, we investigate the relation between discretionary accruals and both changes in short-term debt and subsequent debt financing to determine whether potential refinancing pressure is associated with a decrease in earnings quality. Two conditions must exist for such an association to be expected. First, firms must have sufficient amounts of short-term debt that requires refinancing or must have expansion needs that require new financing. Second, firms must face some obstacle (either actual or perceived) to renewing or to obtaining new financing.[1] In the existing literature, the ex-post influence of capital structure and the tendency to manage earnings prior to covenant

[1] Increases in short-term debt may be the result of previously issued debt currently maturing or newly issued debt or bank loans coming due within the year. For ease of exposition we refer to all debt coming due within one year as short-term debt.

violations have been explored. Additionally, there is evidence that firms manage earnings prior to seasoned equity issues (e.g., Kim and Park 2005, Cohen and Zarowin 2010, Teoh et al. 1998) and public debt issues (Liu et al. 2010). We attempt to bring together these different strands of literature to determine whether refinancing pressures that are more subtle than covenant violations encourage the manipulation of accruals and whether such manipulation is affected by potential obstacles to refinancing.

Our tests reveal several important relationships between debt financing and discretionary accruals. First, we show that higher pre-existing *levels* of short-term debt are associated with lower discretionary accruals. This finding is consistent with the lender monitoring arguments of Diamond (2004) and others. Second, we show that firms with *increases* in short-term debt (our proxy for potential refinancing pressure in the following period) also have significant increases in discretionary accruals. Third, like Liu et al (2010) we find that firms that actually do seek new debt financing appear to engage in accruals management; however, the relationship between increases in short-term debt and discretionary accruals does not depend upon new debt issues ultimately occurring. Finally, we show that the relationship between discretionary accruals and both changes in short-term debt and subsequent debt financing is attenuated for firms that have investment grade debt. That is, firms that are more credit-worthy appear to feel less pressure to manage accruals (i.e., may face fewer obstacles) when they encounter potential refinancing pressure.

Overall, our findings are important because they suggest that capital structure affects managerial behavior in ways that have not previously been identified. Our finding that firms issuing debt appear to manage earnings in the period leading up to the issue is consistent with recent research in the area of security issuance and earnings management. However, our finding that firms need not actually enter debt capital markets for changes in short-term debt

to alter managerial actions is particularly important because it supports the idea that the perceived environment and the resulting potential need to take action in the future may produce value-altering activities by managers.

The remainder of the paper is organized as follows. We present background information and discuss our hypothesis development in Section 2. We describe our data selection process and empirical method in Section 3. We present and discuss our sample characteristics and results in Sections 4 and provide concluding remarks in Section 5.

2. Background and Hypothesis Development

2.1 Background

Our paper is directly related to two major research areas. The first area involves the debt covenant hypothesis, which focuses on the accounting choices made by firms that are likely to experience debt covenant violations (Watts and Zimmerman 1990). The debt covenant hypothesis suggests that if firms are close to violating debt covenants, they will choose accounting methods that shift earnings from future periods to the current period (thereby making violation less likely). Empirical evidence regarding the debt covenant hypothesis is mixed. Healy and Palepu (1990) and DeAngelo et al. (1994) report that firms facing possible dividend covenant violations are more likely to reduce dividends than to make accounting changes. However, Dichev and Skinner (2002) observe that unusually large numbers of firms avoid debt covenant violations by reporting financial measures at or just above covenant thresholds, and DeFond and Jiambalvo (1994) find that firms have excessive discretionary accruals in the year preceding reported debt covenant violations. More recently, Stanley and Sharma (2011) examine financial statement misreporting and the use of bank debt. They find that having bank debt is not adequate to either prevent or detect

misreporting, and that the presence of bank debt may actually provide incentives for firms to manage earnings.

A second strand of literature that relates directly to our paper involves studies that examine earnings management associated with security issuance. Kim and Park (2005), Cohen and Zarowin (2010), and Teoh et al. (1998) show that firms tend to manage earnings prior to seasoned equity issues. They attribute such managerial misbehavior to the firm's need to be attractive to equity buyers. Liu et al. (2010) document similar associations for bond issues and also show that income-increasing earnings management results in lower costs of public debt financing. Bharath et al. (2008) examine the relation between accounting quality and debt prices and find that accounting quality affects whether firms choose to raise funds in public or in private markets. Overall, the evidence in this area suggests that when firms know that they are going to have to raise new debt or equity capital, they may manage earnings in an effort to enhance their appearance to potential funds providers.

Our purpose in this paper is to bring together these two strands of research and examine whether firms with the *potential* for refinancing pressure (as well as those that actually obtain external financing) are likely to engage in earnings management. As such, our paper could be viewed as building from Roberts and Sufi (2009) who find that there are negative consequences associated with alienating creditors. Roberts and Sufi (2009) show that firms that violate debt covenants experience large and persistent declines in future net corporate debt. They also find that violators (even those facing less favorable borrowing terms) rarely switch lenders, which limits their financing choices and compromises their ability to obtain credit. By extension, it seems reasonable to suggest that firms may be tempted to manage earnings when debt is coming due because they perceive that there could be negative consequences associated with appearing unattractive *if they need to refinance*,

even if they are not close to their debt covenant limits. This notion bridges the gap between the debt covenant literature and the current study.

2.2 Hypothesis Development

The central question that we pose in this research is whether potential refinancing pressure (proxied by *changes* in short-term debt) is associated with discretionary accruals. Our first hypothesis, however, is related to *levels* of short-term debt. Diamond (2004) states that because lenders are more likely to monitor and enforce debt contracts when repayment or renegotiation is imminent, the existence of short-term debt should improve lender monitoring of firms. Further, Diamond (1991) and Flannery (1986) explain that the improved lender monitoring associated with the existence of substantial short-term debt should cause firms to misbehave less. If this is true in our setting, higher pre-existing levels of short-term debt should be associated with lower levels of discretionary accruals. Stated formally (and in the alternate form):

> **H1: The level of debt in current liabilities is negatively associated with discretionary accruals**.

As discussed previously, Kim and Park (2005), Cohen and Zarowin (2010), Teoh et al. (1998), and Liu et al. (2010) identify the existence of earnings management leading up to seasoned equity issues and public debt issues. These papers suggest that the need to "look good" prior to obtaining external financing is an important driver of managerial misbehavior. The design that we employ in this paper allows us to investigate whether such misbehavior exists only in cases where debt financing actually occurs or whether the existence of *potential refinancing pressure* – as evidenced by increases in debt in current liabilities – is sufficient to alter managerial behavior. It is also important to note that our empirical tests define "debt financing" as new bank loan financing rather than public debt issuance. We adopt this approach because bank loans are far more common, such that our results should be

generalizable to a larger cross-section of firms. Overall, our contention is that in addition to the pressures that exist when debt financing is imminent, the *potential* refinancing pressures associated with increases in short-term debt combined with the negative consequences that are associated with alienating creditors (Roberts and Sufi 2009) may be sufficient to cause managers to attempt to shift earnings into the current period. Hypotheses 2 and 3 follow directly from these ideas.

H2: The change in debt in current liabilities is positively associated with discretionary accruals.

H3: New debt financing is preceded by increases in discretionary accruals.

Previous research finds that riskier firms face greater obstacles to financing (e.g., Harris and Raviv 1991, Leland 1998). Although we expect that refinancing pressures will affect discretionary accruals in general, we also expect that these relations may be influenced by the extent to which firms are able to obtain credit. Our proxy for credit-worthiness is the presence of investment grade debt. If changes in short-term debt and/or new debt financing impact discretionary accruals to a lesser degree for firms with investment grade debt, this would support our proposition that less risky firms face fewer obstacles to refinancing, and therefore may feel less pressured to manipulate earnings if they have obligations coming due. This notion forms the basis for Hypothesis 4.

H4: The relationship between refinancing pressure and discretionary accruals is attenuated by the presence of investment-grade debt.

3. Data Selection, Variable Definitions, Empirical Model

3.1 Data Selection

We begin sample construction by selecting all firms with positive total assets from Compustat for the ten-year period between 1996 and 2005 (inclusive). This time period is our primary restriction because it covers the intersection of (a) the period for which Loan

Data Corporation Dealscan data are available and (b) the period preceding the global financial crisis period that radically impacted the lending market. For firms to remain in the sample they must have accounting data available on Compustat. Because merger and acquisition (M&A) activity can inject significant noise into the calculation of abnormal accruals, we eliminate from the sample firm-year observations with merger activity identified by Compustat footnote 'AB' for net sales in the year in which we measure abnormal accruals. For firms with M&A activity in the prior three years (but not in the current year) we create a dummy variable to be used as a control variable in the regression analysis. After deleting financial firms and firm-year observations with missing data on requisite variables, our final sample consists of 26,872 firm-year observations.

3.2 Definition of Discretionary Accruals (DACC)

Reported earnings are composed of cash flows from operations and accruals. GAAP allows accruals to mitigate timing problems and to achieve better matching of revenues and expenses when measuring corporate performance over year-long time intervals (Dechow 1994). However, as recognized by Dechow and Skinner (2000), a potential shortcoming of accrual accounting is that it creates opportunities for earnings management. Managers can exercise significant discretion in deciding the size of accruals, and therefore can use accruals to hide bad current period operating performance or to delay recognizing income until future periods. Jones (1991) presents a model to decompose total accruals into non-discretionary and discretionary accruals. The non-discretionary portion of accruals is driven by changes in firms' operations, whereas the discretionary portion of accruals measures the discretion used by managers while reporting earnings. Specifically, discretionary accruals measure the unexplained portion of accruals when a firm's operational factors are used to explain total accruals. Kothari et al. (2009) summarize various modifications of the Jones (1991) model,

and suggest further improvements to the measurement of discretionary accruals. We use the Kothari et al. (2009) definition of total accruals as:

$$TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta StDebt_{it} + \Delta TP_{it} - DepM_{it}, \quad (1)$$

where TA_{it} is total accruals for firm *i* at time *t*, ΔCA_{it} is the change in current assets (Compustat item 4; hereafter "item" refers to Compustat item numbers), ΔCL_{it} is the change in current liabilities (item 5), $\Delta Cash_{it}$ is the change in cash (item 1), $\Delta StDebt_{it}$ is the change in debt in current liabilities (item 34), ΔTP_{it} is the change in tax payable (item 71), and $DepM_{it}$ is depreciation and amortization expense (item 14). All changes are measured from year t-1 to year t.[2]

We run annual cross-sectional regressions of the following model for each of the Fama-French 48-industry groups to estimate the α and β coefficients[3]:

$$\frac{TA_{it}}{Assets_{it-1}} = \alpha \frac{1}{Assets_{it-1}} + \beta_1 \frac{\Delta Sales_{it} - \Delta AR_{it}}{Assets_{it-1}} + \beta_2 \frac{PPE_{it}}{Assets_{it-1}} + \beta_3 \frac{EBEX_{it}}{Assets_{it-1}} + \varepsilon_{it}, \quad (2)$$

where $\Delta Sales_{it}$ is the change in sales (item 12), ΔAR_{it} is the change in accounts receivables (item 2), PPE_{it} is property, plant, and equipment (item 7), and $EBEX_{it}$ is earnings before extraordinary items (item 18 / TA_{it}). Like many previous researchers (e.g., Cohen, Dey, and Lys 2008), we include the last term in equation (2) to control for extreme levels of firm performance.

[2] Although it may initially appear that a mechanical relationship would exist between changes in short-term debt (i.e., debt in current liabilities) and accruals, the total accruals measure includes subtracting changes in debt in current liabilities (item 34) from changes in current liabilities (item 5, which includes accounts payable, current liabilities – other, debt in current liabilities (item 34), and income taxes). Therefore, on net, the change in debt in current liabilities does not appear in the total accruals equation at all.

[3] We obtain the 48 industry definitions from Ken French's website. Our results are robust to the use of 2-digit SIC codes to classify industries.

We calculate non-discretionary accruals as the fitted value of equation (2):

$$NDA_{it} = \hat{\alpha}\frac{1}{Assets_{it-1}} + \hat{\beta}_1\frac{\Delta Sales_{it} - \Delta AR_{it}}{Assets_{it-1}} + \hat{\beta}_2\frac{PPE_{it}}{Assets_{it-1}} + \hat{\beta}_3\frac{EBEX_{it}}{Assets_{it-1}}. \quad (3)$$

Finally, we obtain the signed value of discretionary accruals as:

$$DACC_{it} = \frac{TA_{it}}{Assets_{it-1}} - NDA_{it}. \quad (4)$$

3.3 Empirical Model and Definitions of Independent Variables

Our study focuses on discretionary accruals as they relate to changes in firms' debt in current liabilities. In the following paragraphs we discuss the model that we use to test Hypotheses 1-4. Specifics regarding the calculation of all variables are provided in the Appendix. The model that we employ is as follows:

$$DACC = ß_0 + ß_1 ROA + ß_2 LTDEBT + ß_3 M\&A + ß_4 PPE + ß_5 TA + ß_6 SALES\_STD + ß_7 MTB + ß_8 BIG4 + ß_9 STDEBT + ß_{10} Chg\_STDEBT + ß_{11} NEWDEBT + ß_{12} INVGRADE + ß_{13} INVGRADE*Chg\_STDEBT + ß_{14} INVGRADE*NEWDEBT + Year\ and\ Firm\ Fixed\ Effects$$

Our control variables are based on Ashbaugh-Skaife et al. (2008) who suggest that five types of factors affect discretionary accruals: business fundamentals and operational characteristics, investment in internal controls, GAAP accounting choices, accounting conservatism, and auditor characteristics.[4] Regarding business fundamentals and operating characteristics, we include measures of profitability, leverage, merger and acquisition activity, asset structure, and volatility of revenues. We measure profitability (*ROA*) as net income scaled by total assets and leverage as long-term debt scaled by total assets (*LTDEBT*). We control for prior M&A activity through an indicator variable (*M&A*) set equal to one if the firm was involved in any merger or acquisition activity over the previous

[4] Most of these measures have been identified as important determinants of discretionary accruals by other researchers as well [e.g., Dechow and Dichev (2002), Ball and Shivakumar (2006), Francis, LaFond, Olsson, and Schipper (2004), Givoly and Hayn (2000)].

three years. Francis et al. (2004) hypothesize that firms' asset structures (e.g., intangible versus tangible assets) affect discretionary accruals. We control for differences in asset structure through *PPE*, defined as net property, plant and equipment as a percentage of total assets. Dechow and Dichev (2002) argue that large firms have more stable operations and less error in estimating accruals, and Ashbaugh-Skaife et al. (2008) suggest that firm size is also likely to be associated with investments in internal controls. To control for these factors directly our model includes proxies for firm size (*TA*, log of total assets) and volatility of revenues (*SALES_STD*, standard deviation of sales over the prior five years).

Ball and Shivakumar (2006) define conditional conservatism as the asymmetry between loss and gain recognition. They show that conservative accounting practices may result in increased abnormal accruals. Following Givoly and Hayn (2000) and Ashbaugh-Skaife et al. (2008) we use the log of the firm's market to book (*MTB*) ratio as our measure of the degree of the firm's accounting conservatism. We assume that the market's assessment of value is accurate and comprehensive and that book value will be either high or low depending on the degree of accounting conservatism. If a lower book value is considered conservative, then a higher market to book ratio would reflect greater accounting conservatism and may be related to higher discretionary accruals. Finally, we control for the audit function with a binary variable identifying Big 4/5/6 audit clients (*BIG4*) and we control for GAAP accounting choice by (a) calculating discretionary accruals relative to industry (Fama-French) norms and (b) using panel data models that control for both year and firm fixed effects.

Regarding our test variables, our first two hypotheses require measures of short-term debt. Barclay and Smith (1995) and Johnson (2003) use debt maturing in up to three years as their proxy for short-term debt. In our context, however, the prime factor motivating the

management of accruals is the minimization of refinancing pressure resulting from the potential inability to renew debt or to secure new debt financing to replace debt that is coming due in the very near future. For this reason we define the level of short-term debt (*STDEBT*) as debt in current liabilities (i.e., debt maturing in one year or less) scaled by total assets. We use the previous year-end value of *STDEBT* to test Hypothesis 1 and the change in *STDEBT* from year t-1 to year t (*Chg_STDEBT*) to test Hypothesis 2. If our predictions in Hypotheses 1 and 2 are correct, the coefficient for *STDEBT* should be positive and the coefficient for *Chg_STDEBT* should be negative.[5]

In Hypothesis 3, we predict that discretionary accruals will be higher for firms that do seek new debt financing in the following period. We use the Loan Data Corporation Dealscan database to identify firms that initiate a new bank loan agreement (*NEWDEBT*) in the year following the year in which the change in short-term debt is measured. As indicated previously, we adopt this approach rather than limiting our definition to include only firms that issue new public debt (as in Liu et al. 2010) because bank financing is used by a much broader cross-section of firms. If our prediction in Hypothesis 3 is correct, the coefficient for *NEWDEBT* should be positive.

In Hypothesis 4, we suggest that the relationships between refinancing pressure and discretionary accruals may be affected incrementally by the credit-worthiness of the firm. More specifically, we suggest that firms with investment-grade debt may experience fewer obstacles to refinancing and, therefore, may feel less pressure to manage their accruals when they are facing potential refinancing pressure. We use a binary variable (*INVGRADE*) to identify firms that have S&P ratings of BBB or higher. Firms without S&P debt ratings or with ratings below BBB are classified as non-investment grade. Below-investment grade

[5] When we use the current (rather than previous) year-end value of *STDEBT* our results are qualitatively unchanged.

firms are considered to be relatively risky, and some types of institutional investors are prohibited from buying their securities (effectively limiting the firm's financing alternatives). If our prediction in Hypothesis 4 is correct, the coefficients for *INVGRADE*Chg_STDEBT* and *INVGRADE*NEWDEBT* should be negative.[6]

4. Summary Statistics and Multivariate Tests

4.1 Summary Statistics

Table 1 reports summary statistics for the variables used in this study. All continuous variables are Winsorized at the 1st and the 99th percentiles to reduce the influence of outliers. Discretionary accruals are about –1.23% (mean) of firms' assets, with a median value of -1.09%.[7] Our sample firms have roughly 42% long-term debt and 4.5% debt in current liabilities, both measured relative to total assets. Approximately 80% of our sample firms are clients of large auditors, 13% of the firms have investment grade debt, and 14% initiate new bank loan agreements in the year following the year in which the change in short-term debt is measured. While the average change in short-term debt (0.1%) appears relatively small, at the mean total asset value of $2.2 billion this represents $2.2 million in obligations coming due. Our contention is that potential refinancing pressures such as these may be sufficient to influence managerial behavior.

[Table 1 about here]

Table 2 shows the Pearson correlation coefficients for discretionary accruals and all of the independent variables that are used in our multivariate model. Correlations reported

[6] We make no specific prediction for the coefficient for *INVGRADE* by itself. In a fully interactive model, this coefficient would capture the marginal effect of credit risk on discretionary accruals when there is no change in short-term debt at all and no new debt issued.

[7] Like previous researchers (e.g., Cheng et al. 2012, Ashbaugh-Skafe et al. 2008, Hribar and Collins 2002) our mean discretionary accrual does not equal zero because our accruals models are estimated without intercepts.

with a single asterisk are significant at the 5% level (or lower). Discretionary accruals (*DACC)* are positively related to profitability and leverage, and negatively related to firm size and market-to-book ratio. Discretionary accruals are also lower in the presence of a large auditing firm, consistent with Francis et al. (1999), Myers et al. (2003), and others. Regarding our hypotheses, discretionary accruals are decreasing in the level of short-term debt, increasing in changes in short-term debt, and are higher during the year preceding initiations of new bank loans. While all of these univariate relations are consistent with our predictions, the significant correlations between our test variables and several of the other independent variables point out the importance of evaluating our hypotheses within the context of a multivariate model.

[Table 2 about here]

4.2 Initial Multivariate Tests

Table 3 presents our multivariate analysis. Standard errors for all regressions are corrected for heteroskedasticity and within-firm clusters. Although we control for several observable firm characteristics in the regressions, there is still a chance that important missing characteristics exist. The omitted firm characteristics are captured in the error term of the regression and the error term will be correlated with the independent variables, causing biased and inconsistent coefficient estimates. To alleviate the potential omitted variable bias, we include both year and firm dummies (i.e., year and firm fixed effects) in our regression models.

The results presented in Table 3 suggest, consistent with previous research, that firms that are smaller, more profitable, and that have fewer tangible assets and greater revenue volatility have significantly higher discretionary accruals. Table 3 also illustrates that levels

of short-term debt are significantly negatively correlated with discretionary accruals and changes in short-term debt are significantly positively correlated with discretionary accruals. The coefficients for *Chg_STDEBT* across all three models reveal that for every percentage point change in debt in current liabilities (scaled by total assets), discretionary accruals increase by roughly 0.16%. Furthermore, for a one standard deviation increase in debt in current liabilities (again, scaled by total assets), discretionary accruals increase by 1.05% (0.16 * 0.0659 = 0.0105). Overall, the results suggest that while lender monitoring appears to be more effective in the presence of short-term debt (Hypothesis 1), the potential refinancing pressures that are associated with *changes* in short-term debt do seem to encourage managers to manipulate accruals (Hypothesis 2).

[Table 3 about here]

Hypothesis 3 suggests that discretionary accruals will be higher for firms that subsequently issue new debt. Table 3 shows that the coefficient for *NEWDEBT* is positive and highly significant. This finding, which is consistent with the public debt findings of Liu et al. (2010), suggests that discretionary accruals are managed upward in advance of new bank loans. More specifically, the coefficient for *NEWDEBT* implies that current year discretionary accruals will be from 1.13% to 1.30% higher for firms that initiate new bank loan agreements in the following year, relative to those that do not. However, *Chg_STDEBT* remains positive and significant in these models as well.[8] Thus, both potential and subsequently realized financing pressures contribute to managers' decisions regarding discretionary accruals.

[8] When we interact *Chg_STDEBT* with *NEWDEBT*, both coefficients remain positive and statistically significant and the interaction term is not statistically significant.

Our final hypothesis predicts that the relation between accruals and both changes in short-term debt and subsequently issued debt will be influenced by a firm's credit risk. Our proxy for credit risk is *INVGRADE*, which is equal to one (zero) for firms that have (do not have) investment grade debt. Table 3 shows that *INVGRADE* by itself is statistically insignificant, suggesting that other measures in the model (e.g., firm size, market-to-book ratio, profitability, and leverage) collectively provide an adequate proxy for the main effect of credit risk. However, the interaction between *INVGRADE* and *NEWDEBT* is negative and significant, suggesting that for firms that do enter the debt market, discretionary accruals are significantly lower in the previous year if investment grade debt is present. Stated differently, managers of firms that enter into new loan agreements appear to feel less pressure to manage earnings if their credit risk is lower. The coefficient for the interaction between *INVGRADE* and *Chg_STDEBT* is also negative, but is less significant ($p<0.07$). Overall, our conclusion is that the presence of investment grade debt decreases some of the obstacles to refinancing (i.e., attenuates the relationship between refinancing pressure and discretionary accruals), consistent with the predictions of Hypothesis 4.

4.3 Additional Multivariate Tests

Our dependent variable in Table 3 is discretionary accruals calculated using the Kothari et al. (2009) version of the modified Jones (1991) model. As a sensitivity test, we use two alternative specifications. First, we use the discretionary current accruals measure employed by Liu et al. (2010). Second, we implement a performance-adjusted measure, as recommended by Kothari et al. (2004). In particular, we adjust a firm's discretionary accruals by subtracting the discretionary accruals of a firm from the same industry that is matched on the basis of return on assets. When we estimate the models from Table 3 using these two alternative specifications, our results are qualitatively unchanged.

Hypothesis 2 and a portion of Hypothesis 4 primarily involve – at least implicitly – firms that have increases (as opposed to decreases) in short-term debt. Therefore, it may be reasonable to suggest that our tests of these specific hypotheses should employ models that are restricted to firms that actually experience an *increase* in debt in current liabilities from year t-1 to year t. When we estimate the models in Table 3 with this restriction in place, our inferences regarding the associated hypotheses are unchanged.

Hypothesis 3 and a portion of Hypothesis 4 relate to the relationship between discretionary accruals and new debt issuance. In our primary tests, *NEWDEBT* is a binary variable that identifies firms having a new bank loan agreement in year t+1. As indicated previously, we chose this specification because bank financing is far more common than public debt issuance, thereby enhancing the generalizability of our models. When we increase the scope of *NEWDEBT* to include firms that have new public debt issues (as identified by Securities Data Corporation), our results are qualitatively unchanged.

5. Conclusion

Firms face potential refinancing pressure when debt is maturing and when managers perceive that there may be obstacles to obtaining or renewing the debt once it comes due. To enhance the possibility of debt contract renewal or of obtaining new financing, firms have incentives to project an image of strong financial health. For some firms the easiest way to put forth that strong image is through accruals management. Using a sample of firms from 1996–2005, we present evidence that firms are more likely to have high discretionary accruals when they have increases in short-term debt, implying that accruals management may be taking place in anticipation of debt refinancing. We find that this relation exists both for firms that subsequently initiate bank debt and for firms that do not. We also find that the

tendency to increase discretionary accruals in response to refinancing pressure is attenuated when firms have lower credit risk.

The evidence presented in this study adds to a relatively new area in the finance and accounting literature involving the effects of debt maturity structure on accounting choice. Although the enhanced lender monitoring and enforcement associated with short-term debt has been touted by finance researchers as desirable, our study shows that increases in short-term debt may induce a short-run negative incentive for firms to manage earnings. Future researchers in this area may wish to investigate the long-run ramifications of these managerial actions.

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Appendix A

Variable Definitions

Variable Name	Variable Definition
DACC	Discretionary accruals (see equations 1 through 4)
ROA	Net income as percentage of total assets (Compustat (#172/#6)
LTDEBT	Percentage of long-term total debt relative to total assets at year t-1 ((Compustat #181 – Compustat #34)/#6)
M&A	=1 if the firm is involved in a merger or acquisition in the prior three years (Compustat AFNT#1); =0 otherwise
PPE	Tangible assets (Property, Plant, and Equipment) as a percentage of total assets (Compustat #8/#6)
TA	Total assets (Compustat #6)
LogTA	Log of *TA*
SALES_STD	Standard deviation of sales over the prior 5 years with a minimum of 3 years ((standard deviation of Compustat #12)/#6)
MTB	Market-to-Book ratio (Compustat(#25*#199)/(#6 - #181))
LogMTB	Log of *MTB*
BIGAUD	=1 if firm is a Big 4/5/6 audit client (depending on time period); =0 otherwise
STDEBT	Percentage of short-term debt, defined as debt in current liabilities relative to total assets at year t-1 (Compustat #34/#6)
Chg_STDEBT	Change in *STDEBT* from year t-1 to year t
NEWDEBT	=1 if firm enters into a new bank loan agreement in year t+1, as identified by the Loan Data Corporation *Dealscan* database; =0 otherwise
INVGRADE	=1 if S&P rating is BBB or above; =0 if S&P rating is below BBB or unavailable (Compustat #280)

Table 1
Summary Statistics

Variable	Mean	Median	Quartile 1	Quartile 3	Std Dev
DACC	-0.0123	-0.0109	-0.0552	0.0289	0.1032
ROA	-0.0354	0.0326	-0.0299	0.0748	0.3670
LTDEBT	0.4176	0.4151	0.2472	0.5760	0.2084
M&A	0.0036	0.0000	0.0000	0.0000	0.0603
PPE	0.2878	0.2198	0.0973	0.4252	0.2345
TA	2200.097	163.399	33.385	865.670	8576.063
logTA	5.2052	5.0962	3.5081	6.7635	2.2968
SALES_STD	0.2150	0.1487	0.0813	0.2667	0.2158
MTB	3.9416	1.9205	1.1635	3.3649	52.3507
logMTB	0.6960	0.6526	0.1514	1.2134	0.9323
BIG4	0.8022	1.0000	1.0000	1.0000	0.3984
STDEBT	0.0454	0.0151	0.0003	0.0549	0.0766
Chg_STDEBT	0.0010	0.0000	-0.0073	0.0071	0.0659
NEWDEBT	0.1358	0.0000	0.0000	0.0000	0.3426
INVGRADE	0.1267	0.0000	0.0000	0.0000	0.3327

All continuous variables are Winsorized at the 1st and the 99th percentiles. See Appendix A for variable definitions.

Table 2
Pearson Correlations

Variable	*DACC*	*ROA*	*LTDEBT*	*M&A*	*PPE*	*TA*	*SALES_STD*	*MTB*	*BIG4*	*STDEBT*	*Chg_STDEBT*	*NEWDEBT*
ROA	0.051*	1.000										
LTDEBT	0.033*	0.132*	1.000									
M&A	0.007	0.003	0.026*	1.000								
PPE	0.047*	0.095*	0.298*	0.007	1.000							
TA	-0.013*	0.203*	0.429*	0.011	0.271*	1.000						
SALES_STD	-0.010	-0.098*	-0.004	0.038*	-0.232*	-0.306*	1.000					
MTB	-0.016*	-0.078*	0.048*	0.012*	-0.121*	0.038*	0.034*	1.000				
BIG4	-0.019*	0.094*	0.162*	0.008	0.095*	0.472*	-0.173*	0.071*	1.000			
STDEBT	-0.032*	-0.019*	0.018	0.008	0.023*	-0.078*	0.094*	-0.062*	-0.149*	1.000		
Chg_STDEBT	0.105*	-0.064*	0.072*	-0.008	0.024*	-0.007	-0.001	-0.003	0.007	-0.347*	1.000	
NEWDEBT	0.026*	0.084*	0.162*	0.003	0.074*	0.320*	-0.071*	0.058*	0.147*	-0.019*	-0.024*	1.000
INVGRADE	0.004	0.094*	0.244*	0.010	0.208*	0.556*	-0.169*	0.117*	0.175*	0.027*	-0.003	0.235*

*denotes significance at $p<0.05$

All continuous variables are Winsorized at the 1st and the 99th percentiles. See Appendix A for variable definitions.

Table 3
Multivariate Refinancing Pressure Models

$$DACC = ß_0 + ß_1 ROA + ß_2 LTDEBT + ß_3 M\&A + ß_4 PPE + ß_5 TA + ß_6 SALES\_STD + ß_7 MTB + ß_8 BIG4 + ß_9 STDEBT + ß_{10} Chg\_STDEBT + ß_{11} NEWDEBT + ß_{12} INVGRADE + ß_{13} INVGRADE*Chg\_STDEBT + ß_{14} INVGRADE*NEWDEBT + Year\ and\ Firm\ Fixed\ Effects$$

Variable	Coefficient	Coefficient	Coefficient
Intercept	0.0895*	0.0888*	0.0886*
	(0.000)	(0.000)	(0.000)
ROA	0.0282*	0.0281*	0.0281*
	(0.007)	(0.0001)	(0.001)
LTDEBT	0.0387*	0.0393*	0.0396*
	(0.001)	(0.000)	(0.000)
M&A	-0.0017	-0.0019	-0.0018
	(0.937)	(0.929)	(0.934)
PPE	-0.0756*	-0.0754*	-0.0758*
	(0.000)	(0.000)	(0.000)
TA	-0.0196*	-0.0196*	-0.0196*
	(0.000)	(0.000)	(0.000)
MTB	-0.0015	-0.0016	-0.0016
	(0.389)	(0.357)	(0.351)
SALES_STD	0.0163*	0.0161	0.0160
	(0.049)	(0.051)	(0.053)
BIG4	0.0015	0.0011	0.0011
	(0.721)	(0.798)	(0.799)
STDEBT **(H1)**	-0.0488*	-0.0498*	-0.0501*
	(0.019)	(0.017)	(0.016)
Chg_STDEBT **(H2)**	0.1569*	0.1572*	0.1602*
	(0.000)	(0.000)	(0.000)
NEWDEBT **(H3)**		0.0113*	0.0130*
		(0.000)	(0.000)
INVGRADE			0.0024
			(0.409)
*INVGRADE*Chg_STDEBT* **(H4)**			-0.0455
			(0.074)
INVGRADE NEWDEBT* **(H4)**			-0.0074*
			(0.008)
Adjusted R^2	0.0339	0.0349	0.0350

All continuous variables are Winsorized at the 1st and the 99th percentiles. See Appendix A for variable definitions. All models include firm and year fixed-effects. Adjusted R^2 excludes firm-specific intercepts for fixed effect regressions.

*denotes significance at $p<0.05$. P-values (reported in parentheses) are adjusted for heteroskedasticity and within-firm clustering, and are one-tailed for the four directional hypothesis tests.