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Early Debt Repurchases as a Real Earnings Management Tool

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EARLY DEBT REPURCHASES AS A REAL EARNINGS MANAGEMENT TOOL

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To: Dean William Hardin
College of Business

This dissertation, written by Ahmad AlAhmad, and entitled Early Debt Repurchases as a Real Earnings Management Tool, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Florida International University, 2022

DEDICATION

To my mother, Dr. Amal Alhamlan, and my father, Abdullatif AlAhmad.

Without your blessings, support and encouragement I, let alone this dissertation, would be incomplete.

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ABSTRACT OF THE DISSERTATION

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Professor Maria Vulcheva, Major Professor

Recent studies have found evidence of the role of debt repurchases as a real earnings management tool (REM). Specifically, researchers found that a significant number of firms use the gain from early debt extinguishment to achieve earnings benchmarks (Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017). The purpose of this empirical study is to extend the literature on real earnings management through financing activities, exploring several additional aspects of debt repurchases in the context of earnings management. First, I examine whether interest expense reduction plays a role in firms' ability to achieve earnings benchmarks. Second, I examine whether early debt repurchases, as an earnings management tool, are associated with firms' future performance. Lastly, I examine the relationship between early debt repurchases and various accrual and real earnings management approaches.

My findings show a positive association between firms repurchasing debt and achieving prior-period earnings benchmarks. Furthermore, I find that firms face negative performance in period $t+3$ ($t+2$) when they repurchase debt and meet prior-period earnings benchmarks (zero earnings benchmarks). Finally, I find that debt repurchases, as an

earnings management tool, are a complement to rather than a substitute for other real earnings management approaches.

This study's findings contribute to the literature on REM through financing activities by providing additional evidence on the relationship between debt repurchases and earning management. Furthermore, this study examines unexplored areas relating to debt repurchases. Mainly, the relation of debt repurchases to future firm performance and the association between debt repurchases and other earnings management approaches. Finally, the study extends the debt literature by providing additional insights into the motives and effects of early debt repurchases.

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I. INTRODUCTION

The recent surge in debt repurchases has prompted researchers to investigate their motives and consequences (Julio 2013; Levy and Shalev 2017). Many economic factors can influence the decision to repurchase debt, including optimal capital structure, tax benefits, interest rate fluctuations, debt overhang, and debt covenants (Levy and Shalev 2017; Mao and Tserlukevich 2015; Julio 2013; Jensen 1986). However, researchers have found evidence of non-economic factors influencing debt repurchases. Specifically, recent studies found that a significant number of firms use the gain from early debt extinguishment to achieve earnings benchmarks (Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017). The focus of these studies is on the gain/loss aspect of debt repurchases. Lemayian (2013) examined debt repurchases from 1994 through 2011 and found that firms at risk of missing earnings benchmarks are reporting higher gains from debt extinguishment. The findings are in line with the idea that firms engage in early debt repurchases solely to meet earnings benchmarks. Similarly, Levy and Shalev (2017) and Barua and Kim (2016) have found evidence of firms exploiting their mispriced debt and reporting higher gains from debt extinguishment to boost their income.

This study expands on this strand of the literature by exploring several additional aspects of debt repurchases as a real earnings management tool, namely: (1) the association between interest expense reduction and the likelihood of meeting certain earnings benchmarks; (2) the relation between early debt repurchases and future firm performance; and (3) the role of early debt repurchases as complements/substitutes to other earnings management methods.

First, I consider the interest expense reduction aspect of debt repurchases and its association with companies' ability to meet certain earnings benchmarks. Interest expense reduction[1] is achieved through an early repurchase of existing long-term debt.[2] This early debt repurchase can be perceived as a positive action if the decision is economically justified and benefits the company in the long term. However, if this early debt repurchase is done to gain short-term benefits by reducing interest expense to achieve earnings benchmarks, then the consequences could impair the company's long-term performance. Unlike prior studies, I examine the implications of the reduction in interest expense associated with debt repurchases rather than the gain from debt extinguishment.

First, I look at the association between debt repurchase in year *t*-1 and the likelihood of firms to meet earnings benchmarks in the current year. Following Burgstahler and Dichev (1997), I include two earnings benchmarks, a prior-period earnings benchmark, and a zero earnings benchmark. Using a sample of 9,947 (6,970) firm-years observations for the prior-period earnings benchmarks (zero earnings benchmarks), I find a positive and significant association between debt repurchases and meeting prior-period earnings benchmarks. On the other hand, I find no association between debt repurchases and firms meeting zero earnings benchmarks.

I next identify a special case in which firms' debt repurchases are more likely to be motivated by opportunism rather than sound economic considerations. This case involves firms that repurchase debt while having a below-optimal leverage ratio. This criterion

[1] While accruals for interest expense can be over- or understated, they are less likely to be used as means of accruals earnings management.

[2] "Early settlement", "debt repurchase", and "early extinguishment of debt" are used interchangeably throughout the paper to refer to early debt settlement.

results in a subsample of 286 firms (363 firm-years) with opportunistic motives. In my analyses, I examine the marginal association between this subsample and the likelihood of meeting the earnings benchmarks used in my study. My analyses show no marginal association between the subsample of firms with opportunistic motives and prior-period earnings benchmarks. However, when I look at the zero earnings benchmarks, I find a positive and significant association between below-optimal leverage firms and the likelihood of achieving zero earnings benchmarks.

Next, I look at another aspect of early debt repurchases, namely their association with firms' future performance. Provided that real earnings management is based on the alteration of real transactions, researchers have always raised concerns about its effects on firm performance. Yet, empirical studies have shown mixed findings on the association between REM and firms' future performance. Gunny (2005) found significant evidence of a negative association between REM and future operating performance measured through return on assets (ROA) and cash flow from operations (CFO). By contrast, Taylor and Xu (2010) examined this issue using different criteria in identifying REM firms and found no significant decline in subsequent operating performance (ROA and CFO). To examine the association between debt repurchases, as an earnings management approach, and future performance (measured as of industry-adjusted return on assets (AdjROA)), I follow Gunny (2010) and look at three years after meeting earnings benchmarks (t+1, t+2, and t+3). I find that firms face negative performance in period t+3 (t+2) when they repurchase debt and meet prior-period earnings benchmarks (zero earnings benchmarks). Additionally, I find that firms with opportunistic incentives (below-optimal leverage) face negative performance in periods t+1 and t+2 if they repurchase debt and meet prior-period

earnings benchmarks. However, I find no effect on future performance when I examine the zero earnings benchmarks sample.

The third aspect of early debt repurchases that I focus on, is the association of debt repurchases with other accrual and real earnings management tools. Research suggests that firms choose between accrual earnings management (AEM) and REM depending on their relative costs and benefits (Zang 2012). For example, REM approaches might prove more costly because they involve real business transactions and require planning ahead of time, unlike AEM, which managers can employ after the fiscal year-end. However, firms with limited accruals management flexibility, due to the use of accruals management in prior periods, are more likely to use real earnings management in the current period (Barton and Simko 2002; Ewert and Wagenhofer 2005). Additionally, after the introduction of the Sarbanes-Oxley Act of 2002 (SOX), companies shifted from AEM to REM, because of the greater scrutiny of AEM following the new regulations (Badertscher 2011; Cohen et al. 2008; Cohen and Zarowin 2010).

Companies opting for REM can choose among various REM approaches. This choice is based on these approaches' relative benefits and costs. Compared to other REM approaches, debt repurchases can be costly. To repurchase debt, firms require a cash reserve balance sufficient to execute the transaction. In many cases, firms are also losing tax-shield benefits when debt is repurchased, but the illiquidity of the debt market makes debt repurchases an attractive choice. Instead of altering other operating activities such as selling, general, and administrative activities (SG&A) or research and development (R&D) activities, firms could exploit market mispricing and repurchase their debt when it's undervalued (Ikenberry et al. 1995; Levy and Shalev 2017). An added feature of debt

repurchases, as an earnings management tool, over other REM approaches is that managers can accurately estimate the amount of income-increasing or expense-decreasing activity while having no such control over other REM approaches. For example, if a manager decides to repurchase debt, they know exactly how much interest expense will be reduced. On the other hand, a manager reducing SG&A expenses cannot have the same control over the exact amount reduced over the period.[3] Lastly, debt repurchases have been documented as a tool to avoid debt covenant violations. Levy and Shalev (2017) found that firms use open market repurchases when they are near a technical violation of their debt covenants. These unique features of debt repurchases can influence the choice of earnings management approach.

Though recent evidence shows that the use of REM has been increasing compared to AEM, some studies have shown that managers employ AEM and REM jointly. For example, Matsuura (2008) shows a complementary relationship between REM and AEM. His evidence indicates that managers generally decide on the level of REM first and adjust their AEM based on their year-end REM results (Matsuura 2008). To further understand the decision and the timing of debt repurchases, this study examines the association between debt repurchases and other earnings management approaches, both accrual and real. To do so, I focus on firms that repurchased debt and achieved earnings benchmarks. My findings indicate that debt repurchases are used as a complement to aggregate real earnings management approaches. The results show a positive and significant association between my proxy of REM and firms who repurchased debt and achieved any of the two

[3] One example of SG&A expense is legal costs. It is possible to reduce legal costs, yet firms cannot predict exactly the amount of legal costs to be incurred in the upcoming year.

earnings benchmarks. On the other hand, the proxy for AEM is positively associated with firms repurchasing debt and achieving prior-period earnings benchmarks, while no association exists when firms achieve zero earnings benchmarks.

In the additional analyses section, I also look at the future performance of firms with opportunistic motives, specifically, firms reporting gain from debt extinguishment and issuing new debt in year t+1. I find that firms face negative performance in year t+3 when they repurchase debt and meet prior-period earnings benchmarks. Furthermore, I re-examine the association between debt repurchases and other earnings management by including separate REM proxies rather than an aggregate proxy of REM. I find that the proxy for abnormal discretionary expenses (REM related to R&D, Advertising, and SG&A) is associated with firms repurchasing debt and meeting zero earnings benchmarks. Last, I partition the sample by size and find that firms in the middle tercile have a significant association between debt repurchases and meeting prior-period earnings benchmarks. This paper's findings are robust to alternative specifications, such as including alternative earnings benchmark intervals following Burgstahler and Dichev (1997) and using alternative debt repurchases variable.

The findings of this study contribute to several strands of literature. First, they add to the earnings management literature by providing additional insights into a unique and recently documented approach to earnings management. In particular, this paper examines interest expense reduction as another aspect of early debt repurchase transactions. This adds to the evidence of firms manipulating earnings through gains/losses realized in the process of debt repurchases found in recent studies (Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017). As compared to prior literature on debt repurchases as an earnings

management tool, another important distinction of the study lies in the broader sample used in the analysis. Recent studies have only examined firms reporting gains from debt repurchases, while this study includes all firms repurchasing debt.

Additionally, this paper expands on the findings of the relation of REM with a firm's operating performance. To the best of my knowledge, this study is the first to examine the association between debt repurchases as an earnings management method and future performance. This is important to investors in both equity and debt markets, as investors can better evaluate the earnings quality of firms repurchasing debt.

The paper also investigates debt repurchases and their association with other earnings management tools. To my knowledge, no prior study has examined the association of debt repurchases with other forms of earnings management. The evidence provided by the paper is important given the inconclusive findings of prior literature regarding the role that different earnings management approaches play in relation to each other.

Furthermore, the study contributes to the debt literature by providing additional evidence on the motives and objectives of debt repurchases. The literature focused mainly on the economic objectives of debt repurchases. For instance, researchers have examined debt policy, tax benefits, and debt overhang as motives for debt repurchases (Jensen 1986; Julio 2013; Levy and Shalev 2017). The findings of earnings management incentives associated with interest expense reductions, add to the recent evidence of opportunistic motives for debt repurchases (Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017).

The remainder of this study is organized as follows: Section II reviews the extant literature on earnings management and debt repurchases and develops the research

questions. Section III discusses the research design and presents the regression models. Section IV shows the empirical results. Section V presents additional analyses and robustness tests. Finally, Section VI includes the conclusions.

II. BACKGROUND AND RESEARCH QUESTIONS

II.1. Earnings Management

A company's earnings, represented by profits over a defined period, serve as an indicator of its financial performance. Increased earnings are seen as the desired outcome of business operations because the present value of future earnings reflects the theoretical valuation of the company. Earnings are also often linked to managers' compensation schemes, including bonuses and stock options. External parties consider a company's earnings to analyze its progress and assess its future operating cash flows. Therefore, organizations and their managers are strongly interested in demonstrating earnings consistency over time (DeFond and Park 1997; Graham et al. 2005). Whereas earnings consistency can naturally arise from excellent business performance, organizations may also apply various accounting tools and approaches to smooth earnings or reduce losses.

Earnings management is a financial reporting approach that involves the use of accounting methods and techniques to produce inflated/deflated earnings. Healy and Wahlen (1999) provide a classical definition of earnings management as managers' use of their judgment "to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." Whereas earnings management seemingly pursues the same purposes as accounting fraud, it does not necessarily violate accounting

principles. Instead, flexibility in accounting approaches is used to achieve certain benchmarks.

II.2. Earnings Management Approaches

There are two major approaches to earnings management: accrual based (AEM) and real earnings management (REM). Within AEM, the financial statements are altered via changes in the accounting methods or transactions identified, whereas in REM changes in operations and reporting periods are practiced (Gunny 2010; Roychowdhury 2006). REM has become the method of preference since the Sarbanes-Oxley Act of 2002, given the Act scrutinizes accounting approaches used by organizations and imposes new levels of oversight and added penalties for violating accounting standards (Cohen et al. 2008; Cohen and Zarowin 2010; Badertscher 2011; Zang 2012). Additionally, firms with limited accrual management flexibility, depending on the usage of accrual management in prior periods, are more likely to use real earnings management in current periods (Barton and Simko 2002; Ewert and Wagenhofer 2005). Arguably, REM encompasses what could be considered "arbitrary" management decisions, which are much harder to detect by regulators (Graham et al. 2005; Tulcanaza-Prieto, Lee, and Koo 2020).

A long stream of REM literature indicates that firms engage in real earnings management techniques to meet earnings benchmarks. A survey by Graham et al. (2005) shows that up to 80% of firms engage in some form of REM. Their findings also suggest that managers believe that it is better for the market to sacrifice long-term value than to have a negative overreaction to earnings misses (Graham et al. 2005). Several studies in the early 1990s produced evidence that executives engage in reducing R&D expenses to meet earnings expectations (e.g., Baber, Fairfield, and Haggard 1991; Dechow and Sloan

1991). Opportunistic reduction of R&D has been one of the most reported REM methods (Bens, Nagar, and Wong 2002; Bens, Nagar, Skinner, and Wong 2003). However, the extant literature on REM reports a much wider variety of approaches. For organization purposes, researchers classify REM methods based on the cash flow activities that they represent: investing, financing, and operating (Ali and Kamardin 2018; Sellami 2015; Xu, Taylor, and Dugan 2007).

REM through investing activities usually involves long-term asset sales and a reduction in R&D (Bartov 1993; Herrmann et al. 2003; Gunny 2005). REM through operating activities represents a wide array of approaches to decrease discretionary expenses and/or increase production levels. The literature provides substantial evidence on sales manipulation (Roychowdhury 2006; Sun et al. 2014), SG&A and advertising expense manipulation (Cohen et al. 2010; Roychowdhury 2006), and spreading fixed production overhead (Gunny 2010; Manowan and Lin 2013). Finally, REM through financing activities involves stock repurchases, stock options, and debt repurchases (Bens et al. 2002, 2003; Burnett et al. 2012; Hribar et al. 2006; Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017).

While the literature on REM through financing activities is relatively scarce, researchers have found some evidence of opportunistic behavior by managers in the context of financing activities. Ben et al. (2002, 2003) examine the stock repurchasing behavior of firms facing earnings per share (EPS) dilution due to employee stock options (ESOs). Their findings show that the effect of ESOs on diluted EPS helps explain managers' stock repurchase decisions (Ben et al. 2003). Hribar et al. (2006) extend this research by examining a wider sample of stock repurchase firms that are not limited to

firms with ESOs. They provide evidence that firms use accretive stock repurchases to meet analysts' forecasts (Hribar et al. 2006).

II.3. Earnings Management and the Debt Repurchases Literature

Turning to debt transactions, earlier research provided evidence of earnings management behavior through debt. Hand, Hughes, and Sefcik (1990) examined market reaction to the announcement of in-substance defeasances, transactions where the firm reserves assets to cover debt repayment, and found that these firms have smoother earnings, implying earnings management incentives (Hand et al. 1990; Hand 1989).

Recent studies have also examined whether firms engage in debt repurchases to opportunistically inflate earnings and meet earnings benchmarks. Lemayian (2013) examined the debt repurchasing behavior of firms short of meeting earnings benchmarks and found evidence of earnings management. Specifically, firms at risk of missing analysts' forecasts or prior-period earnings reported higher extinguishment gains (Lemayian 2013).

Consistent with these findings, Barua and Kim (2016) examined the effect of SFAS 145 which allowed firms to include debt extinguishment gains in income from continuing operations. Their findings showed that firms use the gain from early extinguishment to boost income from continuing operations and achieve earnings benchmarks. Barua and Kim (2016) also showed that a significant number of firms are issuing new debt at higher interest rates in subsequent periods.

Levy and Shalev (2017) further expanded on this strand of the literature by examining the objectives behind the choices of debt repurchase methods. Compared to tender offers, open market repurchases allow firms to repurchase their debt at a lower price.

In line with the previous findings, Levy and Shalev (2017) found that firms, seeking to exploit mispricing or manage their financial reports employed an open-market approach for their debt repurchases.

Three aspects not separately examined by prior studies on debt repurchases are the role of interest expense reduction, the association between early debt repurchases and future firm performance, and the relation between this earnings management tool and other real and accrual earnings management methods. Below, I develop research questions to separately examine each of these aspects.

II.4. The Interest Expense Aspect of Early Debt Repurchases

While debt repurchases impact earnings through the recording of gain or loss from debt extinguishment, interest expense reduction is another way for firms to benefit from debt repurchases. For firms to report gain from debt extinguishment, their debt has to be undervalued in the debt market when they repurchase the debt. This situation offers little flexibility on the timing of the debt repurchases by managers. However, firms can directly benefit from interest expense reduction once the debt is repurchased, regardless of debt pricing. This difference in the debt repurchase timing provides more flexibility to managers to repurchase their debt and utilize it as a REM method. Additionally, the sample of firms reporting gains from extinguishment is far smaller than the sample of firms reducing interest expenses when debt is repurchased. With recent studies overlooking interest expense reduction and examining only firms that report gains from early debt extinguishment, the magnitude of earnings management detected could be understated.

On the other hand, the aggregate effect of interest expense reduction on the bottom line could be minimal due to several reasons. First, relative to the bottom line, the amount

of interest expense is insignificant within large firms. Second, many firms repurchase their debt through the issuance of new debt. In these cases, the interest expense reduction, if any, would be marginal. Third, firms' debt repurchases reduce the tax shield benefits provided by interest expense, potentially offsetting the effect of interest expense reduction on the bottom line. Thus, whether the reduction in interest expense associated with debt repurchases could be used as a REM tool is an empirical question.

Literature on earnings management provided evidence that firms engaging in earnings management tend to report small profits and marginally avoid missing earnings benchmarks (Burgstahler and Dichev 1997; Roychowdhury 2006). Therefore, I examine whether interest expense reduction increases the likelihood of firms achieving earnings benchmarks by formulating the following research question:

(RQ1) *Is the likelihood of meeting or beating earnings benchmarks associated with interest expense reduction following early debt repurchases?*

II.5. Early Debt Repurchases and Future Firm Performance

Research within REM often raises concerns about the effect of REM on a firm's future performance. However, the literature shows two opposing views on the consequences of REM. The first view argues that REM approaches involve the alteration of normal transactions to mislead certain stakeholders, leading them to inefficient decisions and consequently influencing the firm's future performance. Confirming the first view, Graham et al.'s (2005) survey indicated that most managers who responded had engaged in REM and sacrificed long-term economic value to meet short-term earnings benchmarks.

Bhojraj et al. (2009) provide evidence that firms engaged in AEM and REM to meet analyst forecasts face worse operating performance than do firms not managing earnings and missing analysts' forecasts. Likewise, Gunny (2005) identified REM firms engaged in four types of REM methods and examined future earnings and cash flows to proxy for performance.[4] She found REM firms to experience significant negative performance in subsequent periods. Similarly, empirical evidence also indicates that firms engaging in REM face negative subsequent performances (Cohen and Zarowin 2010; Ewert and Wagenhofer 2005; Francis, Hasan, and Li 2016a; Graham et al. 2005; Kothari, Mizik, and Roychowdhury 2016; Leggett, Parsons, and Reitenga 2016; Roychowdhury 2006).

However, another view on the consequences of REM is advanced by the signaling theory. Managers engage in earnings management and achieve earnings benchmarks to signal private information about future firm performance, enhancing the welfare of shareholders. If this view is true, REM is less likely to negatively affect firms' future performance. Taylor and Xu (2010) used different settings to identify REM firms and found no significant declines in the subsequent operating performances of these firms.

In the case of debt repurchases as an earnings management method, the liquidity and leverage of the firm can be impacted when debt is repurchased. The decrease in the firm's liquidity will directly affect the firm's normal operating and investing activities, potentially affecting the firm's future performance. Furthermore, the role of leverage as a control mechanism will decline when a firm repurchases its debt (Jensen 1986). The

[4] The four types of REM examined by Gunny (2005) are: "(1) myopically investing in R&D to increase income, (2) myopically investing in SG&A to increase income, (3) timing of income recognition from the disposal of long-lived assets and investments, and (4) cutting prices to boost sales in the current period and /or overproducing to decrease COGS expense."

decline in debt-related oversight can also have an impact on the firm's future performance. To examine the association between debt repurchases and future firm performance, I formulate the following research question:

(RQ2) *Are early debt repurchases associated with poor future firm performance?*

II.6. Early Debt Repurchases and Other Earnings Management Tools

Prior literature is inconclusive on the association between AEM and REM. It is therefore important to examine whether early debt repurchase is implemented as a complement or a substitute to other earnings management methods (AEM and REM).

Some studies suggest that firms use AEM and REM as substitutes. Zang (2012) identifies a set of costs for REM and AEM and examines their impact on the choice between REM and AEM. Her findings suggest that managers trade off both earnings management approaches based on their relative costs. Other studies indicate that REM and AEM are used as complements. Matsuura (2008) shows that managers first decide the level of REM and adjust their AEM based on their REM year-end results. Furthermore, the unique features of debt repurchases compared to other REM approaches can influence the managers' choice of earnings management approach.

While many REM approaches are expense-reducing and cash-increasing, debt repurchases are cash-decreasing. This difference in cash flow direction raises another important question on the association between debt repurchases and other REM methods. For instance, when managers engage in REM such as advertising expense reduction, they end up with excess cash that can potentially aid debt repurchases.

Lastly, the governance role of debt plays a great role in the association between debt repurchases and AEM. Leverage increases reduce AEM due to the greater scrutiny of lenders along with the required debt re-payments (Jensen 1986; Jelinek 2007). Thus, it remains unclear whether firms would employ debt repurchases as complements or substitutes to other earnings management approaches (AEM and REM). Accordingly, I examine the type of association that debt repurchases have with both AEM and REM approaches, formulating the following research question:

(RQ3) *Are early debt repurchases associated with other earnings management methods (both AEM and REM)?*

III. RESEARCH DESIGN

III.1. Regressions Models

To answer my first research question regarding the association between interest expense reduction and the likelihood of meeting earnings benchmarks, I use the following logistic regression model:

$$EM_t = \beta_0 + \beta_1 call_{t-1} + \sum_2^k \beta_k Controls \quad (1A)$$

In this model, the dependent variable is an earnings management indicator variable (*EM*). *EM* has two alternative specifications: The first is based on a prior-period earnings benchmark, and the second on a zero earnings benchmark. Following Burgstahler and Dichev (1997), for the prior-period earnings benchmark, I define *EM* as an indicator

variable that equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. For the zero earnings benchmarks, *EM* equals 1 if net income scaled by the market value of equity is between 0 and 0.030 and zero if net income scaled by the market value of equity is less than zero and not less than -0.030.

I regress the variable *EM* on my variable of interest $call_{t-1}$, an indicator variable of debt repurchases that equals 1 if a firm had repurchased a debt in the prior year and zero otherwise. I use prior-period debt repurchases for two reasons. First, I want to avoid capturing the effect of the recognition of gain or loss on debt extinguishment in the period of the debt repurchase. Second, I want to examine the subsequent period to fully capture the effect of interest expense reduction.

I follow prior literature and control for variables associated with earnings management (Roychowdhury 2006): size (*size*), measured as the natural logarithm of the market value of common equity; leverage (*levat*), measured as total debt divided by total assets; operating cash flows (*CFO*), measured as operating cash flows divided by lagged total assets; market-to-book ratio (*mb*), measured as the market value of equity divided by its book value. Appendix A presents all variable definitions and data sources.

I run model (1A) on the full sample. Next, I identify a special case subsample, in which firms are more likely to have opportunistic motives for debt repurchases. My goal is to examine the marginal association between the subsample and the likelihood of meeting the earnings benchmarks used in my study. The subsample comprises firms repurchasing debt even though their leverage is lower than the median leverage ratio for

the same industry. A firm's capital structure is a combination of equity and debt to finance its operations. The proportion of debt used to finance a firm's activities is known as leverage (Fama and French 2002). Several theories have been developed to explain how firms should form their capital structure and, therefore, use leverage. Trade-off theory claims that firms can maximize their value by trading costs and benefits of using debt (Myers 1984). The benefits come from the tax shield arising from debt-induced interest payments whereas the risks come in the form of possible bankruptcy costs (Kim 1978). The pecking-order theory proposes a financing hierarchy in which internal financing is primary, followed by debt and equity (Myers and Majluf 1984). Finally, agency theory proposes that the optimization of a firm's capital structure comes through the minimization of the conflicts among its stakeholders (Jensen 1986; Jensen and Meckling 1976).

Researchers argue that critical assumptions within the theories make it difficult to place any of them perfectly in all contexts and unique conditions under which firms operate (Ardalan 2017). Still, evidence suggests that firms do develop leverage targets and try to remain within what the management considers an optimal configuration (Flannery and Rangan 2006; Leary and Roberts 2005). For instance, evidence shows that industry leverage ratios influence a firm's capital structure decisions (Frank and Goyal 2009; Mackay and Philips 2005; Welch 2004). Firms with leverage ratios higher than optimal targets or average industry leverage ratios adjust their capital structure with debt reduction. However, firms with leverage ratios below optimal targets are more susceptible to opportunistic incentives when they reduce debt.

To examine the case of firms with opportunistic motives of below optimal leverage, I include an indicator variable ($suspectlev_{t-1}$), which takes the value of 1 if a firm

leverage ratio (debt/equity) is equal to or below the industry (two-digit SIC) median leverage ratio in year *t*-1 and zero otherwise. The variable of interest in this model is an interaction term ($call_{t-1} \times suspectlev_{t-1}$) that captures firms repurchasing debt when their leverage ratio is below the industry (two-digit SIC) median.

$$EM_t = \beta_0 + \beta_1 call_{t-1} + \beta_2 suspectlev_{t-1} + \beta_3 call_{t-1} \times suspectlev_{t-1} + \sum_3^k \beta_k Controls \quad (1B)$$

To examine my second research question on the association between debt repurchases and future firm performance, I follow prior literature and study three years of performance of firms who used debt repurchases to meet earnings benchmarks. Following Gunny (2010), I use industry-adjusted return on assets (AdjROA) as a dependent variable to estimate the following equations:

$$AdjROA_{t+i} = \alpha_0 + \alpha_1 call_{t-1} + \alpha_2 EM_t + \alpha_3 call_{t-1} \times EM_t + \sum_4^k \alpha_k Controls \quad (2A)$$

and

$$AdjROA_{t+i} = \alpha_0 + \alpha_1 call_{t-1} + \alpha_2 EM_t + \alpha_3 call_{t-1} \times EM_t + \alpha_4 suspectlev_{t-1} + \alpha_5 call_{t-1} \times suspectlev_{t-1} + \alpha_6 EM_t \times suspectlev_{t-1} + \alpha_7 call_{t-1} \times EM_t \times suspectlev_{t-1} + \sum_8^k \alpha_k Controls \quad (2B)$$

where *i* =1, 2, or 3 and $AdjROA_{t+i}$ is the industry-adjusted return on assets, which equals the difference between a firm's return on assets and the median industry return on assets

for the same year. $call_{t-1}$ is an indicator variable, which takes the value of 1 if a firm repurchased debt in the prior year and zero otherwise. EM_t is an earnings management indicator variable, defined as in models (1A) and (1B) above. $call_{t-1} \times EM_t$ is an interaction term that captures firms that have repurchased debt as an earnings management tool. As in models (1A) and (1B), $suspectlev_{t-1}$takes the value of 1 if a firm leverage ratio (debt/equity) is equal to or below the industry (two-digit SIC) median leverage ratio in year *t*-1 and zero otherwise. The controls in the model are the same as the ones used in models (1A) and (1B) with the addition of return on assets (*ROA*) to control for the firm's current performance. Appendix A presents all variable definitions and data sources.

Last, to address my third research question on the association between early debt repurchases as an earnings management tool and other methods of earnings management (AEM and REM), I estimate the following logistic regression model:

$$call\_EM_{t-1} = \gamma_0 + \gamma_1 REM_{t-1} + \gamma_2 MDACC_{t-1} + \sum_3^k \gamma_k \, Controls \qquad (3)$$

The dependent variable in this model is debt repurchase as an earnings management (*call_EM*). It is an indicator variable that takes the value of 1 if a firm had repurchased debt in the prior year (*t*-1) and met any of the earnings benchmarks in the current year (t) and zero otherwise. This variable is regressed on EM proxies related to both REM and AEM. Following Roychowdhury (2006), I consider the following three REM measures: abnormal level of cash flows (*REMc*); abnormal production costs (*REMp*); and abnormal discretionary expenses (*REMd*) related to R&D, Advertising, and SG&A. In the model, I

use an aggregate of these three measures (*REM*).[5] As a proxy for AEM, I use current discretionary accruals (*MDACC*) estimated following the modified Jones model (Dechow et al. 1995). I discuss the EM estimation models for my variables of interest in Appendix B. I include the same control variables as the ones included in models (1A) through (2B). Appendix A presents all variable definitions and data sources.

III.2. Data and Sample

Accounting data are collected from the Compustat Annual database. Data on public debt and debt repurchases are collected from the Mergent Fixed Income Securities Database (FISD). The Mergent Fixed Income Securities Database (FISD) provides data on U.S. public debt, including bond acquisition and disposal activities. The database is used to extract information on interest and debt recalls (i.e., those with "Action Type" data set to "E"), defined as an "Entire Issue Called". These data are merged with the extracted observations in the Compustat full sample.

Table 1 describes the sample selection process. The sample period begins in 1988 and ends in 2017 (due to the availability of key variables in both databases). I start with 58,750 (54,194) firm-years for the prior-period earnings benchmarks (zero earnings benchmarks) subsample. These observations represent 12,331 (11,749) unique firms. I remove 26,491 (28,257) firm-years from the financial and utilities sectors due to their highly regulated environment. I further remove 21,714 (18,435) firm-years with

[5] In the main analysis, I use an aggregate measure of real earnings management to examine the association between early debt repurchases and REM overall, rather than focusing on specific REM method. As part of my additional analyses in Section V, I examine each of the REM methods separately and instead of *REM,* I include in the regression the abnormal level of cash flows (*REMc*), the abnormal production costs (*REMp*), and the abnormal discretionary expenses (*REMd*). I find that only REMd (including R&D, Advertising, and SG&A expenditures) is positive and significantly associated with debt repurchases and meeting zero earnings benchmarks.

insufficient information, including firm-years I was unable to match with the Mergent Fixed Income Securities database. The remaining 10, 545 (7,502) firm-year observations, representing 2,290 (2,240) unique firms, are used in examining the first two research questions.[6] For the third research question, the main sample is further restricted to firm-year observations with sufficient information to estimate REM measures, which results in 7,277 (5,002) firm-years and 1,764 (1,720) unique firms. All continuous variables are winsorized at the one and ninety-nine percent levels.

IV. RESULTS

IV.1. Descriptive Statistics

Table 2 presents descriptive statistics for the variables used in the two samples of the main analysis. I show the results of *t*-test of the difference in means. I also report results of the Wilcoxon rank-sum test of the differences in medians.

Panel A of Table 2 presents descriptive statistics for the variables used in the main analyses based on the prior-period earnings benchmarks sample. The mean (median) operating cash flow ratio (*CFO*) for non-debt repurchase firms is statistically higher than that for firms with debt repurchases (12.3% (11.6%) compared to 11.3% (10.8%), respectively). Firms that do not repurchase debt tend to be more profitable than their debt-repurchasing counterparts. Their mean (median) return on assets (*ROA*) is significantly higher at 7.0% (6.7%) compared to 6.3% (5.8%) for debt repurchase firms. On the other hand, the mean (median) aggregate measure of REM (*REM*) for non-debt repurchase firms

[6] The number of observations in the main regression models is less than the total number of observations available due to the inclusion of lagged variables in the models.

is significantly lower than that for debt repurchasing firms (0.063 (0.072) compared to 0.109 (0.087), respectively).

Panel B of Table 2 reports descriptive statistics for the variables used in the main analyses based on the zero earnings benchmarks sample. On average, firms that repurchase and do not repurchase debt in this sample are quite similar. However, firms that repurchase debt are larger compared to their counterparts that do not do any debt repurchases. The mean (median) *size* of non-debt repurchase firms is 7.044 (6.976) compared to that for debt repurchase firms of 7.284 (7.264). Results also show that the mean (median) market-to-book ratio (*mb*) of debt repurchase firms is significantly higher (2.719 (1.740) compared to 2.390 (1.558) for non-debt repurchase firms)

IV.2. Early Debt Repurchases and Meeting Earnings Benchmarks

IV.2.1. Prior-Period Earnings Benchmarks

Panel A in Table 3 reports the results from estimating the logistic regressions in models (1A) and (1B) relating to firms meeting/missing prior-period earnings benchmarks. Column (1) presents the results from model (1A). The coefficient on the variable of interest $call_{t-1}$ is positive and statistically significant (coefficient = 0.241, $p < 0.05$). This coefficient corresponds to an odds ratio of 1.27, indicating 27% higher odds of meeting prior-period earnings benchmarks for firms that repurchased debt in year *t*-1 compared to non-debt repurchase firms. Thus, in line with the earnings management incentives, the results indicate that firms repurchasing debt are more likely to meet prior-period earnings benchmarks.

Column (2) of Panel A shows the results from model (1B) including controls for the subsample of opportunistic incentive firms with below-optimal leverage ratios. The

coefficient on $call_{t-1}$ remains positive and statistically significant (coefficient = 0.294, p < 0.05). The coefficient corresponds to an odds ratio of 1.34. However, the coefficient on the interaction term $call_{t-1} \times suspectlev_{t-1}$ is statistically insignificant indicating no incremental association between firms repurchasing debt and the likelihood of meeting prior-period earnings benchmarks for firms below the optimal leverage.

Looking at the control variables in both columns of Table 3, Panel A, the results show that firms with higher operating cash flows (*CFO*), higher-growth firms (*mb*), and firms with larger discretionary accruals (*MDACC*) are significantly more likely to meet prior-period earnings benchmarks. On the other hand, I find a significant and negative association between firm leverage and the likelihood of meeting prior-period earnings benchmarks.

IV.2.2. Zero Earnings Benchmarks

Table 3, Panel B, presents the results from estimating models (1A and 1B) relating to firms meeting/missing zero earnings benchmarks. The coefficient on $call_{t-1}$ in column (1) is statistically insignificant, which indicates no association between firms repurchasing debt and meeting zero earnings benchmarks in the subsequent period. Column (2) shows the results relating to model (1B) where the variable of interest $call_{t-1} \times suspectlev_{t-1}$ shows the marginal effect of debt repurchases for firms that repurchase debt when their leverage ratio is below the industry median. The coefficient on $call_{t-1} \times suspectlev_{t-1}$ is positive and statistically significant at the ten percent level (coefficient = 0.920, p < 0.10). The odds ratio for the coefficient on $call_{t-1} \times suspectlev_{t-1}$ is 2.13. This implies that the odds of meeting zero earnings benchmarks are 113% higher for firms that repurchase debt when their leverage ratio is below the industry median. The findings here

suggest some association between below-optimal leverage firms and zero earnings benchmarks. In both columns, the control variables indicate that larger firms (*size*), firms with higher operating cash flows (*CFO*), and firms with larger discretionary accruals (*MDACC*) are significantly more likely to meet zero earnings benchmarks. However, higher leverage significantly decreases the likelihood of meeting zero earnings benchmarks.

The results from the two panels of Table 3 indicate a positive and significant association between debt repurchases in the prior year and the probability of meeting prior-period earnings benchmarks. On the other hand, I find no significant association between debt repurchases and meeting the zero earnings benchmarks. The difference in the results between the two subsamples could be explained by the importance of each earnings benchmark. According to Graham et al., (2005), 85% of CFO regard the same quarter of the prior period as the most important metric to achieve, whereas the zero earnings benchmark comes third after the analyst consensus estimate.

IV.3. Early Debt Repurchases and Future Performance

IV.3.1. Firms Meeting Prior-Period Earnings Benchmarks

Table 4 Panel A reports the results from estimating model (2A), examining the association between debt repurchases and firms' future performance relating to firms meeting/missing prior-period earnings benchmarks. The dependent variable of this model is the industry-adjusted return on assets (*AdjROA*) in years t+1, t+ 2, and t+3. The variable of interest is the interaction term $call_{t-1} \times EM_t$, which indicates firms that repurchased debt in year t-1 and met prior-period earnings benchmarks in year t. The coefficient on $call_{t-1} \times EM_t$ is statistically insignificant in t+1 and t+2, while the coefficient on $call_{t-1} \times EM_t$ in

t+3 is negative and statistically significant at the ten percent level (coefficient = -0.017, p < 0.10). The findings show that debt repurchases and achieving prior-period earnings benchmarks do not have negative consequences in the first two years. However, a weak negative association is present in year t+3. Looking at the control variables, the results show that firms with higher growth (*mb*), larger firms (*size*), firms with higher operating cash flows (*CFO*), and firms performing better in year t (ROA) have better performance in years t+1, t+2, and t+3. On the other hand, firms with higher leverage (*levat*) face a worse future performance in the next three years.

IV.3.2. Firms Meeting Zero Earnings Benchmarks

Table 4 Panel B presents the results from estimating model (2A) relating to firms meeting zero earnings benchmarks and their future performance. The coefficient on the interaction term $call_{t-1} \times EM_t$ is negative and statistically significant in period t+2 (coefficient = -0.023, p < 0.10). The coefficient on the interaction is statistically insignificant in years t+1 and t+3. The results indicate a negative association between firms repurchasing debt to achieve zero earnings benchmarks and their performance in year t+2, while no association exists in years t+1 and t+3. Consistent with Panel A, the results indicate that firms growing faster (*mb*), larger firms (*size*), and firms with higher operating cash flows (*CFO*) have a positive future performance. I also find that leverage (*levat*) has no association with future performance in this subsample.

IV.3.3. Firms Meeting Earnings Benchmarks (Below-Optimal Leverage Firms)

Table 5 reports the results from estimating model (2B) relating to firms meeting prior-period earnings benchmarks (Panel A) and zero earnings benchmarks (Panel B). The variable of interest in this model is the interaction term $call_{t-1} \times EM_t \times suspectlev_{t-1}$. In

Panel A, the coefficients on this variable in years t+1 and t+2 are negative and statistically significant (coefficient= -0.031, $p < 0.05$ in year t+1 and coefficient= -0.029, $p < 0.10$ in year t+2, respectively). The results indicate a decrease in performance for the subsample of firms with below-optimal leverage in the first two years after meeting prior-period earnings benchmarks. The results also show that larger firms, firms with higher operating cash flows, and firms that are currently more profitable (ROA) perform better over the subsequent three years.

Panel B of Table 5 shows insignificant coefficients on the interaction $call_{t-1} \times EM_t \times suspectlev_{t-1}$. Thus, there is no association between performance and debt repurchases for firms that manage earnings and are part of the second subsample with potentially opportunistic incentives. The results also show a positive and significant association between firm growth (*mb*), firm size (*size*) and future performance (*AdjROA*). The coefficients on *mb* and *size* are all positive and significant at the 1 percent level.

IV.4. Early Debt Repurchases and Other Earnings Management (AEM and REM)

Table 6 reports the results from estimating model (3) on the association between debt repurchases and other earnings management behavior. The results shown in columns (1) and (2) relate to the prior-period earnings benchmarks and the zero earnings benchmarks, respectively. The variables of interest in this table are the aggregate proxy for REM (*REM*) and the proxy for AEM (*MDACC*). In column (1), *REM* and *MDACC* are both positive and statistically significant (coefficient = 0.612, $p < 0.05$ and coefficient = 2.961, $p < 0.05$, respectively), indicating a positive association between firms repurchasing debt to meet earnings benchmarks and engaging in both types of earnings management activities. Turning to column (2), I find that for the zero earnings benchmarks sample only

REM is positive and statistically significant (coefficient = 0.708, $p < 0.05$), while *MDACC* is statistically insignificant. The weaker results in the zero earnings benchmark sample is consistent with the importance of prior-period earnings benchmarks compared to the zero earnings benchmarks. The positive association between REM and debt repurchases in both columns suggests a complementary relationship between debt repurchases and other real earnings methods. The results also show that more profitable firms are more likely to repurchase debt and meet both earnings benchmarks.

V. ADDITIONAL ANALYSES AND ROBUSTNESS TESTS

V.1. Firms Reporting Gain from Debt Extinguishment and Issuing New Debt in the Following Year

According to Barua and Kim (2016), more than 50% of firms reporting gain from debt extinguishment obtain a new debt within a year of their debt repurchase. Their findings also show that a large proportion of these firms boost their income in the current period while incurring higher interest expenses in subsequent periods (Barua and Kim 2016). In a period of rising interest rates, firms report gains from debt extinguishment and subsequently issue new debt and incur higher costs in the long run. These higher costs are a result of higher interest rates for the new debt and the transaction costs associated with the repurchase and debt issuance.[7] Consistent with the earnings management literature, opportunistic managers seeking short-term gains are willing to sacrifice long-term value (Graham et al. 2005). To further understand how these higher costs impact firms' future

[7] Firms reporting gain from debt repurchase are likely to have a higher interest rate due to the gain they recognized.

performance, I re-examine model (2B) and include firms reporting gains from debt extinguishment and issuing new debt in the subsequent year.

I include an indicator variable (*suspectnew*) to identify firms, which report a gain from debt extinguishment in year *t*-1 and issue new debt with a higher interest rate in year *t*. To identify firms with higher interest expenses in year *t*, I follow Barua and Kim (2016) by comparing the interest expense of the debt extinguishment year to the subsequent year's interest expense. Interest expense is calculated by dividing interest expense by long-term debt. *suspectnew* takes the value of 1 if a firm reported gain from debt extinguishment in year *t*-1 and issued a new debt with a higher interest rate in year *t* and zero otherwise. This criterion results in a subsample of 627 firms (822 firm-years) that report gains from debt extinguishment in year *t*-1 and issue new debt in year *t*.[8]

Table 7 shows the results from estimating model (2B) related to firms reporting gains from debt extinguishment and their future performance. Panel A of Table 7 relates to firms in the prior-period earnings benchmarks sample. The coefficient on the variable of interest $call_{t-1} \times EM_t \times suspectnew_t$ for year *t*+3 is negative and statistically significant (coefficient= -0.039, $p < 0.05$). The findings indicate that firms reporting gains from debt extinguishment face negative performance in year *t*+3 after meeting prior-period earnings benchmarks.

Panel B of Table 7 shows the results related to firms in the zero earnings benchmarks sample. The coefficients on $call_{t-1} \times EM_t \times suspectnew_t$ are statistically

[8] Although I consider this subsample as firms with opportunistic motives, I do not examine model (1B) for this subsample because these firms are by default reporting higher interest expense in year t when compared to year *t*-1.

insignificant in all three periods of future performance (*AdjROA)* indicating no marginal association for this firm subsample.

V.2. Alternative Real Earnings Management Measures

As noted in the discussion, some REM methods differ in terms of their impact on the bottom line. For example, the reduction of SG&A or R&D decreases expenses and can increase cash. On the other hand, overproduction as REM would lower the cost of goods sold (COGS) and decrease cash. Given the distinct nature of each REM method, I further examine the association of individual REM methods with debt repurchases. To do this, I re-examine model (3) of the main analysis and include each REM measure separately, in place of the aggregate measure.

Table 8 shows the results of estimating model (3) with separate REM measures. The results shown in columns (1) and (2) relate to the prior-period earnings benchmarks and the zero earnings benchmarks, respectively. The variables of interest in this table are the proxies for REM (*REMd, REMp,* and *REMc*) and the proxy for AEM (*MDACC*). In column (1), *MDACC* is both positive and statistically significant (coefficient = 2.859, $p < 0.10$) indicating an association between firms repurchasing debt to meet earnings benchmarks and engaging in accrual earnings management activities. Compared to the results in the main analysis, I lose the significance found for the proxy of REM when the aggregate measure is decomposed. Turning to column (2), I find that for the zero earnings benchmarks sample only *REMd* (discretionary expenses REM related to R&D, Advertising, and SG&A) is positive and statistically significant (coefficient = 1.838, $p < 0.10$), while *MDACC* is statistically insignificant. The findings here suggest that firms repurchasing debt are reducing R&D, Advertising, and SG&A.

The difference in the associations between the main analysis and this analysis suggests that firms may be engaging in multiple methods rather than a specific method.

V.3. Alternative Earnings Benchmarks Intervals

In this section, I provide robustness tests using alternative measures of earnings management benchmarks. Burgstahler and Dichev (1997) apply three earnings change intervals to identify firms meeting prior-period earnings benchmarks (-0.005 to 0.005, -0.01 to 0.01, and -0.015 to 0.015) and three earnings level intervals for firms meeting zero earnings benchmarks (-0.01 to 0.01, -0.02 to 0.02, and -0.03 to 0.03). I re-examine my main analysis using two additional intervals for each of the earnings benchmarks. For the prior-period earnings benchmarks, I examine two additional intervals (-0.005 to 0.005, and -0.01 to 0.01). For the zero earnings benchmarks, I include the following two intervals (-0.01 to 0.01, and -0.02 to 0.02).

The collective findings are consistent with the main results. However, few models produced minor differences. For example, the coefficients on the interaction term $call_{t-1} \times EM_t$ of model (2A) relating to prior period sample are negative and significant in year t+1 while insignificant in years t+2 and t+3. In contrast, the main analyses have shown a negative but weak association in year t+3 only. The difference in the results could be attributed to the reduction in the sample size due to the decrease in the earnings intervals.

V.4. Alternative Debt Repurchases Variable

I substitute the debt repurchases variable $call_{t-1}$ with a broader variable extracted from the Compustat Annual database indicating debt repurchases. I generate an indicator variable EXT_{t-1} which equals 1 if a firm reported a gain or a loss from debt extinguishment in the prior period and 0 otherwise. This substitution of the debt

repurchases variable results in an increase in the sample size used in the analysis due to the inclusion of firms with private debt repurchases. The sample size used in the main regression model increases from 9,947 to 28,144 firm-years observations. All the results from the main analyses remained unchanged.

V.5. Firm Size Effect

In this section, I examine the influence of firm size on the findings of the main analysis. I re-examine model (1A) of the main analysis after I split the sample into terciles based on firm size (*size*) across the sample period. The focus of this analysis is to understand how firm size influences the decision to repurchase debt and meet earnings benchmarks. Table 9 Panel A (Panel B) presents the results related to firms meeting prior-period earnings benchmarks (zero earnings benchmarks). Columns (1) through (3) show the results for each tercile with the smallest firms being in tercile (1) and the largest in tercile (3). The variable of interest $call_{t-1}$ is only positive and statistically significant in column (2) of Panel A (coefficient = 0.461, $p < 0.05$). The findings indicate that firms in the mid-sized tercile have a significant association between debt repurchases in year *t*-1 and meeting prior-period earnings benchmarks in year *t*. On the other hand, Panel B of Table 9 shows no associations between debt repurchases and meeting zero earnings benchmarks consistent with the findings of the main analysis.

VI. CONCLUSION

This study aims to extend the literature on earnings management by providing insights into several new aspects of debt repurchases. I examine whether firms repurchase debt in one year to achieve earnings benchmarks in the subsequent year. The findings of

the main model show a significant and positive association between firms repurchasing debt and achieving prior-period earnings benchmarks. However, I fail to find significant associations between debt repurchases and firms achieving zero earnings benchmarks.

Further, I examined the consequences of repurchasing debt to meet earnings benchmarks, I find some negative associations between firms repurchasing debt and firms' performance in subsequent years based on industry-adjusted return on assets (AdjROA). Specifically, the findings show that firms repurchasing debt to meet prior-period earnings benchmarks face a negative future performance only in year t+3, while no associations are found for years t+1 and t+2. On the other hand, firms meeting the zero earnings benchmarks face negative performance in year t+2, while I find no association in years t+1 and t+3.

Lastly, I examined whether debt repurchases are associated with other earnings management behavior. My findings show a significant and positive association between debt repurchases, as an earnings management tool, and both REM and AEM for firms meeting prior-period earnings benchmarks.

The study contributes to both the earnings management and debt literatures. In particular, it adds to the recent evidence of firms engaging in debt repurchases to inflate earnings and avoid missing earnings benchmarks (Barua and Kim 2016; Lemayian 2013; Levy and Shalev 2017). The study also expands on the consequences of REM on firms' future performance by finding some negative effects on firms' future performance. The study further provides evidence of a positive association between debt repurchases and other earnings management approaches. Lastly, the study offers additional insights into the motives and objectives of debt repurchases.

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APPENDIX A

Variables Definitions

Variable	Definition	Data Source
size	Firm size, measured as the natural logarithm of the market value of common equity.	Compustat
levat	Firm leverage, measured as the total debt divided by total assets.	Compustat
CFO	Firm operating cash flows, measured as the operating cash flows divided by lagged total assets.	Compustat
mb	Firm market to book ratio, measured as the market value of common equity divided by book value of common equity.	Compustat
TA_{it}	The total accruals calculated as the income before extrao operatimg cash flows of firm i in year t.	Compustat
A_{it-1}	The total assets of firm i in year $t-1$.	Compustat
$Sales_{i,t}$	The sales of firm i in year *t*.	Compustat
$\Delta Sales_{it}$	The change in sales of firm i from year $t-1$ to t.	Compustat
ΔAR_{it}	The change in Account Recievables of firm i from year t – 1 to t.	Compustat
PPE_{it}	The total Property, Plant, and Equipment of firm i in year	Compustat
$ACFO_{i,t}$	The actual operating cash flow of firm i in year *t*.	Compustat
$DISX_t$	The sum of R&D, advertising, and SG&A expenditures of firm i in year *t*.	Compustat
$PROD_{i,t}$	The production costs of firm i in year *t*.	Compustat
AdjROA	Industry adjusted return on assets which equals the difference between firm return on assets and the median industry return on assets for the same year.	Compustat
EM	Earnings management indicator variable. For the prior-period earnings benchmarks, *EM* equals 1 if the change in net income scaled by market value of equity from the prior year is between 0 & 0.015 and zero if the change in net income scaled by market value of equity from the prior year is less than zero and not less than -0.015. For the zero-earnings benchmarks, *EM* equals 1 if net income scaled by market value of equity is between 0 & 0.03 and zero if net income scaled by market value of equity is less than zero and not less than -0.03.	Compustat
call	Indicator variable which takes the value of 1 if a firm called a debt in prior period and zero otherwise.	Mergent FISD

APPENDIX A (continued)

Variable	Definition	Data Source
EXT	Debt repurchase indicator variable which takes the value of 1 if a firm reported a gain or a loss from debt extinguishment in the prior period and 0 otherwise.	Compustat
call_EM	Debt repurchase and earnings management indicator variable which takes the value of 1 if a firm had repurchased debt in prior year and met any of the earnings benchmarks and zero otherwise.	Compustat/ Mergent FISD
suspectlev	Indicator variable which takes the value of 1 if a firm's leverage ratio (debt/equity) is equal to or below the industry (two-digit SIC) median leverage ratio and zero otherwise.	Compustat
suspectnew	Indicator variable which takes the value of 1 if a firm reported gain from debt extinguishment in period *t*-1 and issued a new debt with a higher interest rate in period *t* and zero otherwise.	Compustat
REMc	Abnormal level of cash flows, REM proxy as estimated in appendix B.	
REMd	Abnormal discretionary expenses, REM proxy for R&D, advertising, and SG&A expenditures as estimated in appendix B.	
REMp	Abnormal production costs, REM proxy as estimated in appendix B.	
REM	An aggregate measure of REM equals *REMc+ REMp+(-1* REMd)*	
MDACC	Current discretionary accruals, AEM proxy as estimated in appendix B.	

APPENDIX B

Measurement of Earnings Management Variables

1. Current Discretionary Accruals

Following the literature on earnings management, the current discretionary accruals (*MDACC*) were treated as a proxy for earnings management calculated following the modified Jones model (Dechow et al. 1995). The proxy is calculated using cross-sectional regressions taking into account the economic changes by controlling for a firm's performance compared to the original Jones model (Jones 1991).

$$\frac{TA_{it}}{A_{it-1}} = \beta_0 \frac{1}{A_{it-1}} + \beta_1 \frac{\Delta Sales_{it}}{A_{it-1}} + \beta_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it} \quad (4)$$

where:
$TA_{it} = the\ total\ accruals\ calculated\ as\ the\ income\ before\ extraorinary\ items\ minus\ operatimg\ cash\ flows\ of\ firm\ i\ in\ year\ t;$
$A_{it-1} = the\ total\ assets\ of\ firm\ i\ in\ year\ t-1;$
$\Delta Sales_{it} = the\ change\ in\ sales\ of\ firm\ i\ from\ year\ t-1\ to\ t;$
$\Delta AR_{it} = the\ change\ in\ Account\ Recievables\ of\ firm\ i\ from\ year\ t-1\ to\ t;\ and$
$PPE_{it} = the\ total\ Property, Plant, and\ Equipment\ of\ firm\ i\ in\ year\ t.$

Following the estimation of coefficients in model (4), the discretionary accruals for each firm in each period were calculated as shown in equations (5) and (6):

$$NonDiscrationaryAccruals_{it} = \hat{\beta}_0 \frac{1}{A_{it-1}} + \hat{\beta}_1 \frac{\Delta Sales_{it} - \Delta AR_{it}}{A_{it-1}} + \hat{\beta}_2 \frac{PPE_{it}}{A_{it-1}} \quad (5)$$

$$MDACC_{it} = \frac{TA_{it}}{A_{it-1}} - NonDiscrationaryAccruals_{it} \quad (6)$$

2. Real Earnings Management

Following Roychowdhury (2006), three REM approaches were considered by estimating the abnormal level of cash flows (*REMc*) , abnormal discretionary expenses (*REMd*), and abnormal production costs (*REMp*). The abnormal cash flows are calculated

by decomposing the actual cash flows into expected and unexpected cash flows by estimating and obtaining the fitted values of equation (7):

$$\frac{ACFO_{i,t}}{A_{i,t-1}} = \gamma_1 \left(\frac{1}{A_{i,t-1}}\right) + \gamma_2 \left(\frac{Sales_{i,t}}{A_{i,t-1}}\right) + \gamma_3 \left(\frac{\Delta Sales_{i,t}}{A_{i,t-1}}\right) e_{i,t} \quad (7)$$

where:
$ACFO_{i,t}$ = actual cash flow of firm *i* in year *t;*
$A_{i,t-1}$ = the total assets of firm *i* in year *t-1*;
$Sales_{i,t}$ = the sales of firm *i* in year *t*; and
$\Delta Sales_{i,t}$ = the change in sales of firm i from year *t-1* to *t.*

The abnormal discretionary expenses and production costs were calculated by decomposing the actual costs into expected and unexpected through estimating and obtaining the fitted values of equations (8) & (9):

$$\frac{DISX_{i,t}}{A_{i,t-1}} = \gamma_0 + \gamma_1 \left(\frac{1}{A_{i,t-1}}\right) + \gamma_2 \left(\frac{Sales_{i,t-1}}{A_{i,t-1}}\right) + e_{i,t} \quad (8)$$

where:
$DISX_t$ = the sum of R&D, advertising, and SG&A expenditures of firm i in year *t*;
A_{t-1} = the total assets of firm i in year *t-1*; and
$Sales_{i,t}$ = the sales of firm i in year *t.*

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \left(\frac{1}{A_{i,t-1}}\right) + \beta_2 \left(\frac{Sales_{i,t}}{A_{i,t-1}}\right) + \beta_3 \left(\frac{\Delta Sales_{i,t}}{A_{i,t-1}}\right) + \beta_4 \left(\frac{\Delta Sales_{i,t-1}}{A_{i,t-1}}\right) + \varepsilon_{i,t} \quad (9)$$

where:
$PROD_{i,t}$ = the production costs of firm i in year *t*;
A_{t-1} = the total assets of firm *i* in year *t-1*;
$Sales_{i,t}$ = the sales of firm *i* in year *t*; and
$\Delta Sales_{i,t}$ = the change in sales of firm i from year *t-1* to *t.*

Table 1
Sample Selection Procedure

	Prior-Period Earnings Benchmarks Sample		Zero Earnings Benchmarks Sample	
	Firm-Years	**Firms**	**Firm-Years**	**Firms**
Observations from Compustat annual database for the sample period 1988–2017	58,750	12,331	54,194	11,749
Less: Observations in the financial and utilities sectors	(26,491)	(5,201)	(28,257)	(3,872)
Less: Observations without sufficient information to calculate essential variables*	(21,714)	(4,840)	(18,435)	(5,637)
Total observations used for the first two research questions	**10,545**	**2,290**	**7,502**	**2,240**
Less: Observations without sufficient information to calculate REM proxies	(3,268)	(526)	(2,500)	(529)
Total observations used for the third research question	**7,277**	**1,764**	**5,002**	**1,720**

Notes: The table includes my sample selection procedure. My sample period starts in 1988 and ends in 2017. Accounting data are collected from the Compustat annual database. I exclude firms in the financial and utilities sectors from the sample due to their highly regulated environment. *This step includes firms that were not matched with information from Mergent Fixed Income Securities Database (FISD).

Table 2
Descriptive Statistics

Panel A: Prior-Period Earnings Benchmarks Sample

	Firm-years Observations Without Debt Repurchases (N=10,052)			Firm-years Observations With Debt Repurchases (N=493)		
Variables	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**
size	8.300	8.178	1.578	8.293	8.238	1.541
levat	0.290	0.273	0.141	0.285	0.284	0.160
CFO	0.123	0.116	0.081	0.113***	0.108***	0.072
mb	4.434	2.983	4.763	4.259	3.024	4.416
ROA	0.070	0.067	0.066	0.063**	0.059***	0.057
AdjROA	0.046	0.030	0.085	0.036**	0.021***	0.075
REMd	0.040	0.044	0.201	0.065***	0.054**	0.179
REMp	-0.017	-0.013	0.181	0.005***	-0.005**	0.174
REMc	0.040	0.031	0.095	0.039	0.028	0.095
REM	0.063	0.072	0.338	0.109***	0.087**	0.300
MDACC	-0.003	-0.005	0.060	-0.006	-0.004	0.054

Panel B: Zero Earnings Benchmarks Sample

	Firm-years Observations Without Debt Repurchases (N=7,138)			Firm-years Observations With Debt Repurchases (N=364)		
Variables	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**
size	7.044	6.976	1.659	7.284***	7.264***	1.532
levat	0.369	0.355	0.156	0.353*	0.342*	0.169
CFO	0.074	0.071	0.066	0.074	0.072	0.052
mb	2.390	1.558	3.279	2.719*	1.740***	3.633
ROA	0.009	0.012	0.021	0.010	0.013	0.018
AdjROA	-0.013	-0.021	0.056	-0.015	-0.021	0.046
REMd	0.060	0.049	0.178	0.064	0.043	0.162
REMp	0.041	0.032	0.157	0.045	0.031	0.150
REMc	-0.001	-0.006	0.088	-0.003	-0.009	0.079
REM	0.100	0.084	0.296	0.105	0.071	0.266
MDACC	-0.006	-0.008	0.071	-0.011	-0.009	0.058

Notes: The table includes descriptive statistics (number of observations, mean, median, and standard deviation) for the control variables used in the analyses. The statistics are shown separately for firm-years with and without debt repurchases. Panel A shows these descriptive statistics for the prior-period earnings benchmarks sample. Panel B shows these descriptive statistics for the zero earnings benchmarks sample. Both panels also include a difference in means. The statistical significance for the difference in means is based on a *t*-test. A Wilcoxon rank-sum test (z-statistic) is used to examine the statistical significance of the differences between medians. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 3
Association Between Debt Repurchases and Meeting Earnings Benchmarks

Panel A: Prior-Period Earnings Benchmark Sample

	(1) Model 1A	(2) Model 1B
$call_{t-1}$	0.241**	0.294**
	(0.110)	(0.129)
$suspectlev_{t-1}$		-0.123*
		(0.070)
$call_{t-1} \times suspectlev_{t-1}$		-0.198
		(0.246)
size	0.031*	0.028
	(0.018)	(0.018)
levat	-1.142***	-1.384***
	(0.186)	(0.223)
CFO	3.654***	3.677***
	(0.374)	(0.375)
mb	0.030***	0.031***
	(0.007)	(0.007)
MDACC	1.951***	1.964***
	(0.433)	(0.433)
Intercept	1.268	1.379*
	(0.773)	(0.776)
Industry fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	9,947	9,947
Pseudo R^2	0.045	0.046

Table 3 (continued)
Panel B: Zero Earnings Benchmarks Sample

	(1)	(2)
	Model 1A	**Model 1B**
$call_{t-1}$	0.217	0.106
	(0.146)	(0.154)
$suspectlev_{t-1}$		-0.270***
		(0.101)
$call_{t-1} \times suspectlev_{t-1}$		0.920*
		(0.497)
size	0.149***	0.148***
	(0.021)	(0.021)
levat	-0.996***	-1.243***
	(0.214)	(0.243)
CFO	9.091***	9.087***
	(0.607)	(0.607)
mb	-0.012	-0.011
	(0.010)	(0.010)
MDACC	5.201***	5.243***
	(0.494)	(0.495)
Intercept	1.003	1.122
	(0.803)	(0.805)
Industry fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	6,970	6,970
Pseudo R^2	0.074	0.075

Notes: The table includes results from the following model: (1) $\mathrm{EM_t} = \beta_0 + \beta_1 \mathrm{call_{t-1}} + \sum_2^k \beta_k$ Controls. (2) $\mathrm{EM_t} = \beta_0 + \beta_1 \mathrm{call_{t-1}} + \beta_2 suspectlev_{t-1} + \beta_3 call_{t-1} \times suspectlev_{t-1} \sum_4^k \beta_k$ Controls. In panel A, *EM* equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. In panel B, *EM* equals 1 if net income scaled by the market value of equity is between 0 and 0.03 and zero if net income scaled by the market value of equity is less than zero and not less than -0.03. $call_{t-1}$is an indicator variable equal to 1 if a firm had recalled one of its bonds in year *t*-1 and zero otherwise. $suspectlev_{t-1}$is an indicator variable, which equals 1 if a firm's leverage ratio (debt/equity) is equal to or below the industry (two-digit SIC) median leverage ratio and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 4
Association Between Debt Repurchases and Firm's Future Performance

Panel A: Prior-Period Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	0.005	-0.001	0.006
	(0.006)	(0.007)	(0.007)
EM_t	0.000	0.001	0.002
	(0.001)	(0.002)	(0.002)
$call_{t-1} \times EM_t$	-0.005	-0.005	-0.017*
	(0.006)	(0.008)	(0.009)
size	0.003***	0.004***	0.004***
	(0.000)	(0.001)	(0.001)
levat	-0.022***	-0.016***	-0.016**
	(0.005)	(0.006)	(0.007)
CFO	0.044***	0.050***	0.029*
	(0.012)	(0.014)	(0.016)
mb	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
ROA	0.628***	0.516***	0.451***
	(0.017)	(0.020)	(0.022)
Intercept	-0.053***	-0.042*	-0.054**
	(0.019)	(0.022)	(0.024)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	9,947	9,430	8,584
R-squared	0.513	0.451	0.410

Table 4 (continued)
Panel B: Zero Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	0.005	0.014	-0.008
	(0.008)	(0.011)	(0.011)
EM_t	0.001	0.005	0.006
	(0.003)	(0.004)	(0.004)
$call_{t-1} \times EM_t$	-0.008	-0.023*	0.006
	(0.009)	(0.013)	(0.012)
size	0.004***	0.003***	0.002***
	(0.001)	(0.001)	(0.001)
levat	-0.008	0.007	0.001
	(0.006)	(0.008)	(0.008)
CFO	0.040***	0.029	0.022
	(0.013)	(0.018)	(0.018)
mb	0.003***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)
ROA	0.334***	0.054	0.095
	(0.067)	(0.092)	(0.094)
Intercept	-0.050***	-0.039	-0.043*
	(0.019)	(0.025)	(0.025)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	7,157	6,538	5,728
R-squared	0.238	0.186	0.187

Notes: The table includes results from the following model: $AdjROA_{t+i} = \alpha_0 + \alpha_1 call_{t-1} + \alpha_2 EM_t + \alpha_3 call_{t-1} \times EM_t + \sum_4^k \alpha_k Controls$. where i = 1, 2, or 3. $AdjROA_{t+i}$ is an Industry adjusted return on assets which equals the difference between a firm's return on assets and the median industry (two-digit SIC) return on assets for the same year. In panel A, EM equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. In panel B, EM equals 1 if net income scaled by the market value of equity is between 0 and 0.03 and zero if net income scaled by the market value of equity is less than zero and not less than -0.03. call $_{t-1}$is an indicator variable equal to 1 if a firm had recalled one of its bonds in year *t*-1 and zero otherwise. $call_{t-1} \times EM$ is an interaction term that captures firms that have repurchased debt as an earnings management tool. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 5
Association Between Debt Repurchases and Firm's Future Performance - Below Optimal Leverage Firms

Panel A: Prior-Period Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	-0.002	-0.005	0.006
	(0.007)	(0.008)	(0.009)
EM_t	0.000	0.001	0.001
	(0.002)	(0.002)	(0.002)
$call_{t-1} \times EM_t$	0.003	0.004	-0.017*
	(0.008)	(0.009)	(0.010)
$suspectlev_{t-1}$	0.003	0.004	0.004
	(0.003)	(0.003)	(0.004)
$call_{t-1} \times suspectlev_{t-1}$	0.027**	0.014	0.000
	(0.012)	(0.014)	(0.017)
$EM_t \times suspectlev_{t-1}$	0.001	-0.003	0.001
	(0.003)	(0.004)	(0.004)
$call_{t-1} \times EM_t \times suspectlev_{t-1}$	-0.031**	-0.029*	-0.001
	(0.014)	(0.017)	(0.019)
size	0.003***	0.004***	0.004***
	(0.000)	(0.001)	(0.001)
levat	-0.015**	-0.013*	-0.008
	(0.006)	(0.007)	(0.008)
CFO	0.043***	0.049***	0.028*
	(0.012)	(0.014)	(0.016)
mb	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
ROA	0.627***	0.516***	0.450***
	(0.017)	(0.020)	(0.022)
Intercept	-0.056***	-0.044**	-0.057**
	(0.019)	(0.022)	(0.024)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	9,947	9,430	8,584
R-squared	0.514	0.452	0.410

Table 5 (continued)
Panel B: Zero Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	0.003	0.012	-0.008
	(0.008)	(0.012)	(0.011)
EM_t	0.001	0.004	0.005
	(0.003)	(0.004)	(0.004)
$call_{t-1} \times EM_t$	-0.006	-0.018	0.005
	(0.009)	(0.013)	(0.013)
$suspectlev_{t-1}$	0.003	-0.001	-0.001
	(0.005)	(0.006)	(0.007)
$call_{t-1} \times suspectlev_{t-1}$	0.026	0.027	-0.004
	(0.028)	(0.037)	(0.036)
$EM_t \times suspectlev_{t-1}$	0.003	0.005	0.005
	(0.005)	(0.007)	(0.007)
$call_{t-1} \times EM_t \times suspectlev_{t-1}$	-0.027	-0.044	0.010
	(0.031)	(0.041)	(0.040)
size	0.004***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)
levat	-0.002	0.010	0.005
	(0.006)	(0.009)	(0.009)
CFO	0.040***	0.029	0.021
	(0.013)	(0.018)	(0.018)
mb	0.003***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)
ROA	0.332***	0.052	0.095
	(0.067)	(0.092)	(0.094)
Intercept	-0.054***	-0.040	-0.044*
	(0.019)	(0.025)	(0.025)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	7,157	6,538	5,728
R-squared	0.238	0.186	0.187

Notes: The table includes results from the following model: $AdjROA_{t+i} = \alpha_0 + \alpha_1 call_{t-1} + \alpha_2 EM_t + \alpha_3 call_{t-1} \times EM_t + \alpha_4 suspectlev_{t-1} + \alpha_5 call_{t-1} \times suspectlev_{t-1} + \alpha_6 EM_t \times suspectlev_{t-1} + \alpha_7 call_{t-1} \times EM_t \times suspectlev_{t-1} + \sum_8^k \alpha_k Controls$. where i = 1, 2, or 3. $AdjROA_{t+i}$ is Industry adjusted return on assets which equals the difference between a firm's return on assets and the median industry (two-digit SIC) return on assets for the same year. In panel A, *EM* equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. In panel B, *EM* equals 1 if net income scaled by the market value of equity is between 0 and 0.03 and zero if net income scaled by the market value of equity is less than zero and not less than -0.03. $call_{t-1}$ is an indicator variable equal to 1 if a firm had recalled one of its bonds in year *t*-1 and zero otherwise. $suspectlev_{t-1}$ is an indicator variable equal to 1 if a firm's leverage ratio (debt/equity) is equal to or below the industry (two-digit SIC) median leverage ratio and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 6
Association Between Debt Repurchases as EM and Other Earnings Management (AEM & REM)

	(1) *call_EM* *(Prior-period earnings)*	(2) *call_EM* *(Zero earnings)*
REM	0.612**	0.708**
	(0.243)	(0.356)
MDACC	2.961**	0.732
	(1.475)	(1.413)
ROA	4.143*	28.260***
	(2.132)	(4.960)
size	0.010	0.032
	(0.054)	(0.064)
levat	-0.325	-0.839
	(0.575)	(0.633)
CFO	0.507	-0.877
	(1.582)	(1.754)
mb	-0.028	0.020
	(0.022)	(0.028)
Intercept	-4.592***	-3.454***
	(1.179)	(0.801)
Industry fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	7,277	5,002
Pseudo R^2	0.050	0.097

Notes: The table includes results from the following model: $call\_EM_t = \gamma_0 + \gamma_1 REM + \gamma_2 MDACC\_w + \sum_3^k \gamma_k \, Controls$. *call_EM* is a debt repurchase and earnings management indicator variable which takes the value of 1 if a firm had repurchased debt in year *t*-1 and in yeat t met prior-period earnings benchmark (column 1) or zero earnings benchmark (column 2), respectively and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. The methods used to calculate the earnings management variables are included in Appendix B. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 7
Association Between Debt Repurchases and Firm's Future Performance - Firms Reporting Gain and Issuing New Debt

Panel A: Prior Period Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	0.006	0.002	-0.014
	(0.009)	(0.011)	(0.012)
EM_t	-0.000	0.003	0.002
	(0.002)	(0.002)	(0.003)
$call_{t-1} \times EM_t$	-0.002	-0.004	0.007
	(0.010)	(0.012)	(0.013)
$suspectnew_t$	-0.004*	0.005*	0.001
	(0.002)	(0.003)	(0.003)
$call_{t-1} \times suspectnew_t$	-0.000	-0.005	0.034**
	(0.011)	(0.013)	(0.015)
$EM_t \times suspectnew_t$	0.001	-0.005	-0.001
	(0.003)	(0.003)	(0.004)
$call_{t-1} \times EM_t \times suspectnew_t$	-0.007	-0.002	-0.039**
	(0.013)	(0.016)	(0.017)
size	0.003***	0.004***	0.004***
	(0.000)	(0.001)	(0.001)
levat	-0.022***	-0.017***	-0.016**
	(0.005)	(0.006)	(0.007)
CFO	0.042***	0.049***	0.030*
	(0.012)	(0.014)	(0.016)
mb	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
ROA	0.631***	0.516***	0.450***
	(0.017)	(0.020)	(0.022)
Intercept	-0.050***	-0.044**	-0.055**
	(0.019)	(0.022)	(0.024)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	9,942	9,426	8,580
R-squared	0.514	0.452	0.411

Table 7 (continued)
Panel B: Zero Earnings Benchmarks Sample

	(1) *AdjROA t+1*	(2) *AdjROA t+2*	(3) *AdjROA t+3*
$call_{t-1}$	0.002	0.005	-0.024
	(0.011)	(0.016)	(0.015)
EM_t	-0.001	0.008*	0.012***
	(0.003)	(0.005)	(0.005)
$call_{t-1} \times EM_t$	0.004	-0.007	0.021
	(0.013)	(0.018)	(0.018)
$suspectnew_t$	-0.006*	0.009**	0.013***
	(0.003)	(0.004)	(0.004)
$call_{t-1} \times suspectnew_t$	0.007	0.018	0.033
	(0.016)	(0.022)	(0.022)
$EM_t \times suspectnew_t$	0.003	-0.006	-0.013**
	(0.004)	(0.005)	(0.005)
$call_{t-1} \times EM_t \times suspectnew_t$	-0.021	-0.032	-0.031
	(0.018)	(0.025)	(0.025)
size	0.004***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)
levat	-0.007	0.007	0.000
	(0.006)	(0.008)	(0.008)
CFO	0.039***	0.030*	0.022
	(0.013)	(0.018)	(0.018)
mb	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)
ROA	0.341***	0.058	0.109
	(0.067)	(0.093)	(0.094)
Intercept	-0.047**	-0.045*	-0.050**
	(0.019)	(0.025)	(0.025)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	7,154	6,535	5,726
R-squared	0.239	0.188	0.189

Notes: The table includes results from the following model: $AdjROA_{t+i} = \alpha_0 + \alpha_1 call_{t-1} + \alpha_2 EM_t + \alpha_3 call_{t-1} \times EM_t + \alpha_4 suspectnew_t + \alpha_5 call_{t-1} \times suspectnew_t + \alpha_6 EM_t \times suspectnew_t + \alpha_7 call_{t-1} \times EM_t \times suspectnew_t + \sum_8^k \alpha_k Controls$. where i = 1, 2, or 3. $AdjROA_{t+i}$ is an Industry adjusted return on assets which equals the difference between a firm's return on assets and the median industry (two-digit SIC) return on assets for the same year. In panel A, EM equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. In panel B, EM equals 1 if net income scaled by the market value of equity is between 0 and 0.03 and zero if net income scaled by the market value of equity is less than zero and not less than -0.03. $call_{t-1}$ is an indicator variable equal to 1 if a firm had recalled one of its bonds in year *t*-1 and zero otherwise. $suspectnew_t$ is an indicator variable equal to 1 if a firm reported gain from debt extinguishment in year *t*-1 and issued a new debt with a higher interest rate in year t and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 8
Association Between Debt Repurchases as EM and Other Earnings Management (AEM & Individual REM Measures)

	(1) *call_EM (Prior-period earnings)*	(2) *call_EM (Zero earnings)*
REMd	0.612	1.838*
	(0.746)	(0.982)
REMp	0.607	-0.564
	(0.845)	(1.074)
REMc	-0.273	-1.264
	(1.438)	(1.867)
MDACC	2.859*	0.876
	(1.480)	(1.424)
ROA	4.005*	27.954***
	(2.184)	(4.998)
size	0.018	0.040
	(0.055)	(0.065)
levat	-0.294	-0.919
	(0.579)	(0.637)
CFO	1.313	0.553
	(1.915)	(2.216)
mb	-0.030	0.023
	(0.022)	(0.028)
Intercept	-4.726***	-3.630***
	(1.192)	(0.818)
Industry fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
N	7,277	5,002
Pseudo R^2	0.051	0.098

Notes: The table includes results from the following model: $call\_EM_t = \gamma_0 + \gamma_1 REMd + \gamma_2 REMp + \gamma_3 REMc + \gamma_4 MDACC\_w + \sum_5^k \gamma_k Controls$. *call_EM* is a debt repurchase and earnings management indicator variable which takes the value of 1 if a firm had repurchased debt in year *t*-1 and in year t met prior-period earnings benchmark (column 1) or zero earnings benchmark (column 2), respectively and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. The methods used to calculate the earnings management variables are included in Appendix B. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

Table 9
Association Between Debt Repurchases and Meeting Earnings Benchmarks Based on Firm Size

Panel A: Prior-Period Earnings Benchmark Sample

	(1) Tercile 1	(2) Tercile 2	(3) Tercile 3
$call_{t-1}$	0.088	0.461**	0.112
	(0.196)	(0.192)	(0.198)
levat	-1.370***	-1.203***	-1.407***
	(0.304)	(0.334)	(0.366)
CFO	2.665***	4.838***	4.032***
	(0.623)	(0.666)	(0.713)
mb	0.036**	0.041***	0.021**
	(0.015)	(0.012)	(0.010)
MDACC	0.679	3.519***	2.941***
	(0.673)	(0.757)	(0.947)
Intercept	1.900*	0.159	0.785*
	(1.068)	(1.601)	(0.473)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	3,316	3,312	3,293
Pseudo R^2	0.048	0.060	0.071

Table 9 (continued)
Panel B: Zero Earnings Benchmarks Sample

	(1) Tercile 1	(2) Tercile 2	(3) Tercile 3
$call_{t-1}$	0.157	0.183	0.276
	(0.297)	(0.253)	(0.239)
levat	-1.989***	-1.279***	-0.827**
	(0.354)	(0.380)	(0.418)
CFO	10.791***	9.066***	8.614***
	(1.045)	(1.068)	(1.170)
mb	0.014	0.013	-0.028*
	(0.018)	(0.019)	(0.017)
MDACC	5.579***	5.465***	6.085***
	(0.800)	(0.886)	(1.014)
Intercept	3.784***	0.366	-0.683
	(1.300)	(0.574)	(0.643)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	2,323	2,309	2,283
Pseudo R^2	0.096	0.089	0.076

Notes: The table includes results from the following model: (1) $\mathrm{EM_t} = \beta_0 + \beta_1 \mathrm{call_{t-1}} + \sum_2^k \beta_k$ Controls. The sample is split into terciles based on firm size across the period sample. Columns (1) through (3) represent each tercile with tercile (1) including the smallest firms and tercile (3) including the largest firms of the sample. In panel A, *EM* equals 1 if the change in net income scaled by the market value of equity from the prior year is between 0 and 0.015 and zero if the change in net income scaled by the market value of equity from the prior year is less than zero and not less than -0.015. In panel B, *EM* equals 1 if net income scaled by the market value of equity is between 0 and 0.03 and zero if net income scaled by the market value of equity is less than zero and not less than -0.03. $call_{t-1}$ is an indicator variable equal to 1 if a firm had recalled one of its bonds in year *t*-1 and zero otherwise. All continuous variables are winsorized at the one and ninety-nine percent levels. Appendix A presents all variable definitions and their sources. Standard errors are in parenthesis. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 percent levels, respectively.

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2010-2014	Bachelor of Business Administration (Magna Cum Laude) California State University – East Bay Hayward, California Major: Accounting & Corporate Management
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