The Influence Of Public Equity Ownership On Earnings Management Through The Manipulation Of Operational Activities

Yura Kim, University of Seoul, Korea

ABSTRACT

This paper examines whether public equity firms and private equity firms with public debt exhibit different degrees of real earnings management, defined as the manipulation of operational activities in order to influence reported earnings. Public equity firms face intense capital market scrutiny that their private equity counterparts do not. Therefore, this study's comparison of the two types of firms provides insight on the impact of capital market pressure on real earnings management behaviors. My results show that public equity firms are more likely than private equity firms to opportunistically alter normal operations to improve earnings by pushing sales through discounts and promotions, and by lowering costs of sales through overproduction. I find no difference in abnormal discretionary expenses between public equity and private equity firms. Although private equity firms with public debt do not face the same capital market pressure that public equity firms face, they are not immune from incentives to engage in real earnings management. Specifically, I find that private equity firms with public debt engage in real earnings management as their debt moves closer to default. Moreover, private equity firms with public debt that do engage in real earnings management appear to emphasize the zero earnings benchmark, consistent with prior research, suggesting that this benchmark is of primary importance to creditors.

Keywords*:* Earnings Management; Real Activities Management; Capital Markets; Private And Public Firms

INTRODUCTION

In a widely cited survey of corporate CFOs by Graham et al. (2005), more than two-thirds of respondents said they would decrease spending on research and development, advertising and maintenance and one-third of respondents indicated that they would postpone investment in positive net present value projects in order to meet short-term earnings goals. This startling evidence raises the question of whether the stock market's excessive focus on near-term earnings performance leads managers to make operational decisions in the short run at the expense of long-term performance — a concern that has been echoed by influential business leaders[1] In this paper, I provide empirical evidence directly related to this question by comparing the tendency of public equity firms and a matched sample of private equity firms with public debt [2] to meet earnings benchmarks through real earnings management, defined as the manipulation of operational activities to influence reported earnings. Prior research documents that firms engage in real earnings management to achieve various earnings targets (Baber et al. 1991; Bartov 1993; Roychowdhury 2006; Zang 2012; Chen 2009; Demers and Wang 2010). Under Sections 13 and 15(d) of the Securities Exchange Act of 1934, both public equity firms and private equity firms with publicly traded debt are subject to the same financial reporting requirements and regulations. The

[1] For example, John Bogle (of Vanguard), Warren Buffett (of Berkshire Hathaway) and Lou Gerstner (ex-CEO, IBM) were signatories to the Aspen Institute's call for an end to excessive short-termism in American business as set forth in Overcoming Short-termism: A Call for a More Responsible Approach to Investment and Business Management, Aspen Institute dated September 9, 2009.

[2] In this paper, I interchangeably use the terms private equity with public debt firms, private firms, and public debt firms. These terms mean that the firm has private equity, but has publicly traded debt. I also interchangeably use public firms, public equity ownership, and publicly held firms. They mean that firms trade equity publicly in stock exchanges. These firms may or may not have publicly traded debt.

availability of financial accounting data for public equity and private equity firms (with public debt) under SEC reporting requirements allows me to test whether the greater capital market pressure faced by public equity firms contributes to this practice.

The pressure associated with public stock markets is due to the fact that stock prices respond quickly to the release of new information such as earnings. An extensive stream of research shows that the capital market penalizes those firms with earnings that fail to meet important thresholds including: profits, growth and analyst forecasts (Penno and Simon 1986; Stein 1989; Beatty et al. 2002; Bartov, Givoly and Hayn 2002; Brown and Caylor 2005; Kasznik and McNichols 2002; Fischer and Stocken 2004; Givoly et al. 2010). Because stock prices are often a direct input into managers' evaluations and compensation managers of public firms are concerned with how stock markets react to earnings releases and, therefore, face pressure to meet these benchmarks (Cheng and Warfield 2005).

The impact of capital market pressure is not clear ex ante. On the one hand, the scrutiny associated with the public equity markets may play a disciplining role that leads firms to refrain from activities that distort reported earnings. Under this view, external investors demand high quality financial reporting to diligently monitor and discipline managers and managers of public firms respond to this demand by providing earnings reports that are more reflective of true financial outcomes than those of their private counterparts. Consistent with this perspective, Burgstahler et al. (2006) conclude that the capital market evaluates a firm's overall reporting environment and improves earnings informativeness. On the other hand, public ownership of equity may increase managers' reporting incentives to satisfy market expectations due to the penalties faced by public equity firms that fail to meet earnings benchmarks (e.g. Penno and Simon 1986; Stein 1989; Beatty et al. 2002; Bartov, Givoly and Hayn 2002; Brown and Caylor 2005; Kasznik and McNichols 2002; Fischer and Stocken 2004; Givoly et al. 2010). This additional pressure may lead to greater manipulation of reported earnings.

My sample consists of 5,414 firm-years related to 882 private equity firms with public debt and 42,389 firm-years related to 5,805 public equity firms from 1987 through 2009. I focus on the following forms of real earnings management identified by Roychowdhury (2006): (1) the acceleration of sales through aggressive sales through aggressive sales discounts or lenient credit terms, (2) the lowering of the cost of goods sold by overproducing to spread fixed production costs over more units, and (3) the reduction of discretionary expenses such as selling, general and administrative expenses and advertising expenses. I find that the public equity firms are more likely than private equity firms to opportunistically alter normal operations to meet earnings benchmarks by pushing sales through discounts and promotions, and by lowering costs of sales through overproduction. I find no difference in abnormal discretionary expenses between public equity and private equity firms. These results are robust to the inclusion of controls for various determinants of real earnings management as well as to various procedures designed to correct for the endogenous nature of the firm's status as a public or private firm including: the Heckman two-stage correction and propensity score matching techniques. Collectively, the results suggest that exposure to the public equity markets is associated with a greater tendency to meet earnings benchmarks through the alteration of operational activities.

Although private equity firms exhibit less real earnings management than public equity firms in response to potentially missing earnings benchmarks, they are not free from incentives to manage earnings (Coppens and Peek 2005). Specifically, Jiang (2008) shows that the zero earnings benchmark is particularly relevant for debt investors and that firms that fail to meet this earnings benchmark are punished in the form of higher cost of debt capital. Therefore, I examine whether private equity firms engage in a greater degree of earnings management in response to the zero earnings benchmark versus the zero earnings growth benchmark. I find that private equity firms with public debt engage in real earnings management to a greater degree in response to the zero earnings benchmark, consistent with prior research suggesting that this benchmark is of primary importance to creditors. In addition, prior research demonstrates that the payoffs to debt claims behave more like equity and that earnings become more relevant to debtholders as the debt moves closer to default (Coppens and Peek 2005; Easton et al. 2009). Hence, public debt investors in private equity firms with speculative debt may exert similar pressure to that exerted by public equity investors. To test this possibility, I examine whether private equity firms with public debt engage in real earnings management to meet earnings benchmarks to a greater degree when the debt is speculative. I find that private equity firms with public debt engage in a greater degree of real earnings management as their debt moves closer to default,

consistent with the notion that public debtholders exert similar pressure to public equity holders when debt claims become more equity-like.

This study makes a number of contributions. First, it provides evidence directly related to the question of whether the stock market's focus on short-term earnings performance affects a firm's operational decisions. Second, following Givoly et al. (2010) I examine the role of ownership structure on reported earnings in a unique setting where both public and private equity firms face similar reporting requirements but different market pressure. Third, I provide evidence on the circumstances under which private equity firms (with public debt) face earnings management incentives even in the absence of the pressure exerted by public equity markets. Specifically, my evidence that private equity firms engage in more real earnings management to meet benchmarks as their debt approaches default suggests that the public equity markets are not the only source of pressure for firms to meet earnings benchmarks. Finally, I demonstrate that real earnings management behavior in response to earnings benchmarks differs based on the importance of the benchmarks. Specifically, I find that private equity firms are more responsive to the zero earnings benchmark than are public equity firms, consistent with prior evidence that the zero earnings benchmark is most relevant for creditors. My evidence that public equity firms appear to alter operations more extensively in response to earnings benchmarks than do private firms provides an interesting perspective on the stock market. While the primary role of capital markets is to efficiently allocate capital through prices, my findings raise the possibility that public equity markets may distort operational decisions to the extent managers consider factors other than net present value as they make these decisions.

I discuss the motivation of my study and develop testable hypotheses in the Introduction section. Data and sample selection procedure and research design are discussed in next section, followed by descriptive statistics and the results of the empirical tests. Finally, I present a summary and conclusions of the paper.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Earnings are a highly scrutinized measure of firm performance, and is a common input in the managers' performance evaluations. The literature finds that earnings benchmarks serve as convenient focal points for investors in assessing firm performance (Burgstahler and Dichev 1997; Degeorge et al. 1999; Fischer and Stocken 2004). Consistent with this notion, a substantial body of research firms has documented discontinuities in the distribution of reported earnings around key earnings benchmarks, with an abnormally high frequency of reported earnings just above versus just below the earnings benchmark of interest (Degeorge et al. 1999; Burgstahler and Dichev 1997).

One stream of research argue that private firms face less capital market pressure than firms with publicly traded equity because their stocks are not publicly traded and executive compensation is not tied to stock price performance (Beatty et al., 2002; Givoly et al., 2010). Unlike to private firms, managers of public firms have incentives to avoid the penalties associated with missing earnings benchmarks because a firm's stock price performance has important compensation and career consequences for the manager. Specifically, executives' cash and bonus payments are dependent upon firm performance (Gaver et al. 1995). In addition, as the equity market has expanded, a significant portion of executive compensation has become equity-based (Babchuk and Grinstein 2005). Also, because private firms are on average smaller, less diversified, and have lower analyst following, their financial statements are the main source of information for outsiders (Beatty et al. 2002). As a result, private firms may have greater incentives to produce more informative financial statements and, therefore, may engage in less real earnings management to meet earnings targets.

The other stream of research shows that public equity ownership requires more transparency and higher reporting quality since the market monitors the corporation more actively (i,e., Burgstahler et al., 2006). If private firms face fewer constraints on their behavior because they do not face the active monitoring of the capital market, then they may engage in more earnings management to meet earnings targets. Consistent with this possibility, Ball and Shivakumar (2005) and Burgstahler et al. (2006) find that private equity firms produce less conservative and lower quality earnings reports in an absence of market demand for high quality financial statements and reduced regulatory requirements. Based on the arguments so far, I propose the following null hypothesis:

H1: Public equity firms and private equity firms do not differ in the extent of real operating activities manipulation to meet earnings benchmarks.

Although private firms do not face capital market pressure from the public equity markets, they are not necessarily free of incentives to meet earnings benchmarks. Prior research shows that, as in the equity market, bond markets respond to earnings news (Coppens and Peek 2005; Plummer and Tse 1999) and reward firms for meeting earnings benchmarks in the form of lower cost of debt capital (Jiang 2008). Therefore, private firms have incentives to report earnings that meet or exceed earnings targets in order to satisfy bond markets and minimize the cost of debt capital. Consistent with this notion, DeFond and Jiambalvo (1994) find that firms near a debt covenant violation tend to inflate earnings. Therefore, I expect that the difference between public equity firms and private equity firms with public debt in their use of real earnings management to meet earnings targets to decline as the public debt of the private equity firms moves closer to default. Therefore, I propose the following hypothesis, stated in the alternative form.

H2a: The difference between public and private firms in the propensity to engage in real earnings management to meet or beat the earnings benchmarks declines as the private firms' publicly traded debt approaches default.

The pressure to meet earnings targets to satisfy the bond market likely differs from the pressure to meet earnings targets in the equity market due to differences in the relevance of earnings in the two markets as a results of differences in the payoff functions of debt and equity (Coppens and Peek 2005; Jiang 2008; Easton et al. 2009). Specifically, shareholders focus on upside opportunities since their downside risks are limited to their investments, while their wealth for the upside potential is unlimited. By contrast bondholders, as fixed claimants, are less interested in upside potential and are mainly concerned whether the firm will survive and satisfy its financial obligations. Therefore, in contrast to its impact on shareholders, earnings are more relevant to bondholders as a firm's financial condition weakens. Consistent with this notion, Plummer and Tse (1999) find that earnings are more informative to bondholders as bond ratings decline and as firms report losses, Similarly, Easton et al. (2009) find that the earnings are more informative for bondholders when the earnings news is negative for firms with speculative-grade bonds. Jiang (2008) shows that, among the various earnings benchmarks, bondholders are more interested in the firm's ability to report positive income than in its ability to beat prior year income. Collectively, these studies suggest that private equity firms with public debt are more likely to tailor any earnings management activities they engage in around the profit benchmark than around the earnings growth benchmark. This argument leads to the following hypothesis, stated in the alternative form.

H2b: Private equity firms with public debt are more likely to engage in real earnings management to beat the profit benchmark than to beat the earnings growth benchmark.

THE EMPIRICAL MODEL

Data And Sample Selection

My sample of firms is taken from Compustat for the years 1987-2009.[3] I exclude financial institutions (SIC code 6000-6999) and other regulated industries (SIC code 4800-4900). I further delete firms with missing variables of interests for my regression models. I restrict the sample to those firms with at least one stock price quote available on Compustat or CRSP for the period to be classified as public equity firm-years, and have an S&P senior debt rating[4] available on Compustat (Faulkender and Petersen 2006; Givoly et al. 2010) to be classified as public debt firm-years. Following Berkovitch et al. (2006), I exclude firms with less than $50 million of total debt (sum of short- and long-term debt).[5] This may bias my sample toward larger and more leveraged firms. The sample selection procedures result in a sample consisting of 47,803 firm-year observations and 6,357 unique firms.

[3] I limit my data to post-1987 since I want a more accurate measure of operating cash flows and accruals in the cash flow statement (Collins and Hribar 2000) and prior to 1987, cash flow from operations disclosed under Statement of Financial Accounting Standards No. 95 (SFAS 95 (1987)) is unavailable.

[4] When the S&P senior debt rating is not available, I considered an S&P rating on new debt issuance from Securities Data Company (SDC).

[5] Rating agencies rate all public debt issues with at least $50 million. Small fractions of debt less than $50 million may be rated.

Firms can go public with debt or with equity. Firms with publicly traded debt differ from firms with publicly traded equity in many aspects (Berkovitch et al. 2006; Givoly et al. 2010). Nonetheless, under Sections 13 and 15(d) of the Securities Exchange Act of 1934, both types of firms are subject to the same financial reporting requirements and regulations. These two types of firms face the similar reporting requirement but different capital market pressure. Therefore, it is a nice setting to isolate the impact of capital market pressure on managers' tendency to engage in real earnings management to meet earnings targets. Firms that choose to access the public debt markets are relatively rare. Only about 17% - 20% of Compustat firms access the public debt markets (Faulkender and Petersen 2006).

I classify firms into public equity and private equity (with public debt) firms. I classify a firm as a private equity firm with public debt if the firm has S&P senior debt rating and a non-zero amount of debentures on Compustat and/or the firm has information on new debt issuance on Securities Data Company's (SDC) Global New Issues database. Public equity firms have stock price quotes available during the current year t either on Compustat or CRSP. Public debt is rare. Firms choose to go public with equity more than with debt (Faulkender and Petersen 2006). However, public debt is becoming more common.

Of the 47,803 firm-year observations of the final sample, I have 5,414 firm-year observations of 882 distinct public debt firms and 42,389 firm-year observations of 5,805 distinct firms with public equity. Table 2 presents the percentage of private equity and public equity firm-year observations across the sample periods of 1987 and 2009.

Table 1: Number Of Observations Of Sample Firms By Ownership Type

	Private Equity Firms		Public Equity Firms		Total Sample
Year	No. of Obs.	% of Sample	No. of Obs.	% of Sample	No. of Obs.
1987	164	10.6%	1,376	89.4%	1,540
1988	192	11.9%	1,417	88.1%	1,609
1989	229	13.9%	1,418	86.1%	1,647
1990	245	14.4%	1,455	85.6%	1,700
1991	232	14.0%	1,420	86.0%	1,652
1992	206	12.0%	1,515	88.0%	1,721
1993	207	11.6%	1,572	88.4%	1,779
1994	206	11.0%	1,673	89.0%	1,879
1995	200	9.9%	1,828	90.1%	2,028
1996	204	9.4%	1,968	90.6%	2,172
1997	201	8.6%	2,140	91.4%	2,341
1998	227	9.2%	2,247	90.8%	2,474
1999	222	8.9%	2,261	91.1%	2,483
2000	269	11.0%	2,182	89.0%	2,451
2001	304	12.8%	2,066	87.2%	2,370
2002	330	14.2%	1,993	85.8%	2,323
2003	338	14.9%	1,933	85.1%	2,271
2004	299	13.1%	1,989	86.9%	2,288
2005	270	11.9%	2,001	88.1%	2,271
2006	240	10.5%	2,051	89.5%	2,291
2007	210	9.1%	2,086	90.9%	2,296
2008	220	9.6%	2,072	90.4%	2,292
2009	199	10.3%	1,726	89.7%	1,925
Total	5,414	11.3%	42,389	88.7%	47,803

I obtain an S&P credit rating data for the issuing firm from the Ratings section of Compustat North America Fundamentals Annual database.[6] I use the public bond rating as a proxy for the firm's financial distress (Plummer and Tse 1999). Firms with investment grade bonds (BBB or above) are classified as low default risk firms. To test my second hypothesis, I require that the firm must have publicly traded bonds and must have S&P senior bond ratings data available in Compustat. For this reason, I use a subset of my sample to test my second

[6] Compustat has had S&P credit rating information available since 1985. S&P assigns long-term ratings for the issuer that measures a company's ability to meet its financial obligations. S&P also assigns a debt rating to an individual debt issuance.

hypothesis. I compare two groups of firms: private equity firms with public debt and public equity firms with public debt and exclude public equity firms without public debt from consideration.

Research Design

Using Roychowdhury's (2006) broader definition of real earnings management, I consider other real activities that are often used to improve earnings. Managers may choose to boost the current period's sales to meet the earnings targets. Sales discounts and lenient credit terms temporarily increase sales volume and total amount of sales revenue, but result in lower cash flows per sales dollar. Following Roychowdhury (2006), I estimate the normal level of cash flows from operations (CFO) by running the following regression model for every 2-digt SIC code and year:

$$\frac{CFO_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_t}{Asset_{t-1}} + \varepsilon_t \quad (1)$$

where $Asset_{t-1}$ is the total assets of the period t-1, $Sales_t$ the total sales during the period t, and ΔSales the change in sales relative to the prior period. Abnormal cash flow from operations is the difference between the actual value and predicted cash flow from operations using the estimated coefficients from the above equation (1).

The firm may choose to overproduce to inflate earnings. Overproduction spreads the fixed costs over a larger number of units and reduces the cost of goods sold for the current year, but increases the margin for the given level of sales revenue. To estimate normal production costs, I first estimate the normal cost of goods sold (COGS) and normal level of inventory growth using the following two regressions for each industry (2-digit SIC code) and each year:

$$\frac{COGS_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_t}{Asset_{t-1}} + \varepsilon_t \quad (2)$$

$$\frac{\Delta INV_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{\Delta Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \quad (3)$$

where $COGS_t$ is cost of goods sold in year t, ΔINV_t is the change in inventory in year t relative to year t-1, $\Delta Sales_{t-1}$ is the change in sales in year t-1 relative to year t-2 and $Asset_{t-1}$ is the change in total assets in year t-1 relative to year t-2. Using (2) and (3), I estimate normal level of production costs (PROD) which is the sum of COGS and ΔINV.

$$\frac{PROD_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k3 \frac{\Delta Sales_t}{Asset_{t-1}} + k4 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \quad (4)$$

The abnormal production costs are the difference between the actual value and the normal value using the fitted values of the above regression. A higher abnormal value indicates the firm's overproduction to lower cost of goods sold and inflates the current period earnings.

Firms facing small earnings decline or a small loss can meet earnings thresholds by cutting discretionary expenses. Consistent with Roychowdhury (2006), I define discretionary expense (DISEXP) as the sum of selling, general, and administrative expenses, R&D expenses and advertising expenses. Similarly, I estimate the normal level of discretionary expense and then subtract that from the actual amount of the expense to compute abnormal discretionary expense:

$$\frac{DISEXP_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \quad (5)$$

I test the real earnings management behavior of firms near earnings thresholds using abnormal levels of cash flows, production costs and discretionary expenses estimated from cross-sectional regression equations (1), (4) and (5). The three measures are named as Abnormal CFO, Abnormal PROD and Abnormal DISEXP. In addition to the three real earnings management measures discussed above, I include one additional measure which is an aggregate of the three measures (Abnormal ALL) because the firm can alter more than one type of real activity simultaneously (Gunny 2010). In computing Abnormal ALL, I multiply Abnormal PROD by -1 so that the negative value is associated with opportunistic overproduction. Then, I take the sum of Abnormal CFO, Abnormal PROD multiplied by -1 and Abnormal DISEXP.

The firm is a suspect firm if the firm's income before extraordinary item scaled by lagged total assets is between 0 and 0.005 (See Roychowdhury 2006). Roychowdhury (2006) classifies a firm-year observation as suspect firm-year when the income is just right of zero. In this study suspect firm-years also include those firm-years that report small earnings increases in the current year as compared to the prior year. That is, the firm is also a suspect firm if the change of income before extraordinary items scaled by lagged total assets is between 0 and 0.005. An indicator variable, SUSPECT, equals one if the firm just meets zero or just beats the last year's earnings, and zero otherwise. To test the association between meeting the earnings benchmarks and real earnings management and how that relationship is influenced by ownership structure, I estimate the following equations:

$$\begin{aligned} Abnormal\ RM = {} & \Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 SUSPECT\_PRIVATE_{i,t} + \Upsilon_3 SUSPECT\_PUBLIC_{i,t} + \Upsilon_4 SIZE_{i,t} + \\ & \Upsilon_5 LEVERAGE_{i,t} + \Upsilon_6 ROA_{i,t} + \Upsilon_7 SALESGROWTH_v + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t} \\ & + \Upsilon_{10} INV\_MILLS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (6)$$

where Abnormal RM is one of three measures of real earnings management estimated from (1), (4) and (5) and an aggregate of three measures. $SUSPECT\_PRIVATE_{i,t}$ is 1 if a firm is classified as a private equity firm and just beats earnings benchmarks, and 0 otherwise. Similarly, $SUSPECT\_PUBLICE_{i,t}$ is 1 if a firm is classified as a public equity firm and just beats earnings benchmarks, and 0 otherwise. Regression equation (6) is a ordered group regression which tests the degree of earnings management between private equity firms and public equity firms. Low values of Abnormal CFO and Abnormal DISEXP and higher values of Abnormal PROD indicate higher levels of income-increasing real earnings management. For Abnormal PROD, higher value is the result of real earnings management. A finding that $\Upsilon_3 < \Upsilon_2$ for Abnormal CFO, Abnormal DISEXP, and Abnormal ALL indicates that public equity firms alter operations to meet earnings benchmarks to a greater extent than private firms and would support H1. A finding that $\Upsilon_3 > \Upsilon_2$ for Abnormal PROD sample indicates that public equity firms are more likely than private equity firms to overproduce to meet earnings benchmarks.

Private and public equity firms exhibit different firm characteristics that may affect firm's real earnings management behavior and thus it is important to control for the endogeneity of the decision to hold private versus public equity. To control for the effect of firm characteristics, industry and the year, I employ a propensity score matched pair methodology in addition to Heckman (1979).[7] Propensity score methodology assumes that firms that are similar in observable characteristics are similar in unobservable factors (Rosenbaum and Rubin 1985). The treatment group consists of the firm-years that have the private equity with public debt and the control group consists of those with publicly traded equity. Each treatment observation is matched to each observation with the closest propensity score in the control sample. In a logit model, I obtain a propensity score that is the predicted probability of the decision to hold private equity with public debt given firm characteristics such as size, leverage, sales growth, quick ratio, firm age, big5 audit firms, operating cycle and cash to total asset ratio. Then, I use the propensity score to match firms. I match each of the private equity firm-years with a firm-year in the public equity firm samples that is (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have similar firm size and

[7] Francis and Lenox (2011) study selection problems in accounting research and suggest the propensity score methodology over the Heckman (1979) procedure.

leverage, and (4) have the smallest propensity score difference. These procedures result in 4,484 pairs of the matched-firm years.

To test H2a I use a bond rating as a proxy for a firm's financial distress and its default risk (Plummer and Tse 1999). Credit rating agencies consider various aspects of the firm when they issue the credit rating for the firm. Standard and Poor's (S&P) issues a credit rating for a firm after evaluating several aspects of business risks and financial risks (Standard & Poor's 2008). Bond ratings are positively associated with reported earnings (Ashbaugh-Skaife, Collins, and LaFond 2006; Ziebart and Reiter 1992) and corporate governance (Ashbaugh-Skaife, Collins, and LaFond 2006). Firms with better earnings quality receive more favorable credit ratings and have a lower cost of debt (Ahmed et al. 2002). Evidence shows that firms with poor ratings and at risk of covenant violations are more likely to inflate earnings (DeFond and Jiambalvo 1994). Credit rating agencies rate firms near a debt covenant violation poorly and those firms are more likely to inflate earnings as compared to firms with good credit ratings (DeFond and Jiambalvo 1994).

To test the relation between the firm's financial distress and real earnings management and to test the relation between real earnings management and the public equity ownership under financial distress, I use an indicator variable (DEFAULT) equal to one if the firm has a non-investment-grade rating (BBB- or above) from S&P and zero, otherwise. Since this test requires a firm to have an S&P senior debt rating, public equity firms with private debt are excluded. I run equation (6) separately for high default risks firms and low default risks firms.

In regression equation (6), I classify firm-year observations as suspect firms when the earnings just beat the zero earnings benchmark or the zero earnings growth benchmark. To test Hypothesis 2b, I further divide suspect firm-year observations into two different earnings benchmark categories: zero earnings benchmark and zero earnings growth benchmark. In doing so, I examine the relative importance of the two earnings benchmarks for private equity firms and for public equity firms. MEET_ZERO is an indicator variable equal to 1 if the firm has small pretax income, and zero otherwise. MEET_LAST is an indicator variable equal to one if the firm has a small increase in earnings compared to the prior year, and zero otherwise. In order to investigate the likelihood of real earnings management to meet two different earnings benchmarks by private equity firms and public equity firms, I run the following two ordered group regressions separately:

$$\begin{aligned} \textit{Abnormal RM} = {} & \Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 MEET\_ZERO\_PRIVATE_{i,t} + \Upsilon_3 MEET\_ZERO\_PUBLIC_{i,t} + \\ & \Upsilon_4 SIZE_{i,t} + \Upsilon_5 LEVERAGE_{i,t} + \Upsilon_6 ROA_{i,t} + \Upsilon_7 SALESGROWTH_{i,t} + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t} + \\ & \Upsilon_{10} INV\_MILLS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (7)$$

$$\begin{aligned} \textit{Abnormal RM} = {} & \Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 MEET\_LAST\_PRIVATE_{i,t} + \Upsilon_3 MEET\_LAST\_PUBLIC_{i,t} \\ & + \Upsilon_4 SIZE_{i,t} + \Upsilon_5 LEVERAGE_{i,t} + \Upsilon_6 ROA_{i,t} + \Upsilon_7 SALESGROWTH_{i,t} + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t} + \\ & \Upsilon_{10} INV\_MILLS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (8)$$

Control Variables

I include several control variables that are likely to influence a firm's degree of real earnings management, some of which are the same variables used in the first stage model to capture the characteristics of the private equity with public debt firms. I measure the size of the firm (SIZE) as the natural logarithm of total assets to controls for the size effect. I control for the firm's profitability by including return on assets (ROA), which is income before extraordinary items divided by lagged total assets. I include sales growth (SALES_GROWTH) to capture firm performance. Firm's incentives to manage earnings may be related to firm's sales growth (SALES_GROWTH). Firm's sales growth can also be a proxy for a firm's life cycle stage. Higher sales growth is likely positively associated with higher growing firms (Anthony and Ramesh 1992). LEVERAGE controls for the firm's factors that are associated with private equity (with public debt) firms. Leverage (LEVERAGE) is measured as the ratio of the

firm's total debt to total assets. Leverage is expected to be positively associated with real earnings management and can be a proxy for the degree of shareholder-bondholder conflicts because shareholder-bondholder conflicts increase with leverage (Ahmed et al. 2002). Shareholders of leveraged firms have incentives to make risky investments to transfer wealth from bondholders (Jensen and Meckling 1976). I include the inverse Mills ratio estimated from the Probit regression to control for endogeneity of the nature of the firm that goes public with debt, but not with its equity.

Based on Barton and Simko (2002), I include net operating assets (NOA) as a measure of bloated balance sheets to control for the firm's accruals management opportunities in my regression models because accruals management is an alternative approach to meeting earnings targets. Firms with higher NOAs are more constrained in their ability to manage earnings upwards. I measure NOA as net operating assets scaled by lagged sales.[8]

EMPIRICAL FINDINGS

Descriptive Statistics

Table 2 presents the correlations among firm characteristics. An indicator variable, PRIVATE, is positively correlated with SIZE, LEVERAGE, PPEGT_AT and LOSS, and negatively correlated with ROA, SALES_GROWTH, OPERATYING_CYCLE, QUICK, and CASH_AT. That is, consistent with the literature, issuance of public debt is positively related with leverage and the ratio of property, plant and equipment to the total assets, but is negatively associated with sales growth, operating cycle, and cash holdings to the total assets ratio.

Table 2: Pearson Correlation Matrix

	PRIVATE	SIZE	LEVERAGE	ROA	SALES GROWTH	NOA	LOSS	FIRM AGE	BIG5	OPERATING CYCLE	QUICK	RNOA	CASH_AT
SIZE	0.045***												
LEVERAGE	0.181***	-0.351***											
ROA	-0.023***	0.222***	-0.383***										
SALES _GROWTH	-0.060***	-0.022***	-0.070***	0.183***									
NOA	0.001	-0.002	0.119***	-0.122***	-0.018***								
LOSS	0.003	-0.225***	0.337***	-0.634***	-0.189***	0.087***							
FIRM AGE	0.005	0.365***	-0.216***	0.144***	-0.099***	-0.138***	-0.184***						
BIG5	0.016***	0.124***	-0.049***	0.029***	-0.006	-0.023***	-0.019***	0.007					
OPERATING _CYCLE	-0.103***	-0.024***	-0.032***	-0.046***	-0.159***	0.224***	0.055***	-0.005	-0.038***				
QUICK	-0.058***	0.019***	-0.010	-0.034***	0.068***	0.135***	0.005***	-0.161***	0.021***	-0.148***			
RNOA	0.032***	0.121***	-0.150***	0.530***	0.099**	-0.091***	-0.353***	0.088***	0.002	-0.033***	-0.036***		
CASH_AT	-0.139***	-0.047***	-0.066***	-0.061***	0.116***	0.035***	0.057***	-0.153***	0.009*	0.076***	0.366***	-0.044***	
PPEGT_AT	0.098***	0.090***	-0.018***	0.095***	0.136***	0.078***	-0.112***	0.081***	-0.016***	-0.318***	0.119***	0.051***	-0.155***

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively.

[8] Alternatively, I use discretionary accruals based on Modified Jones Model (Jones 1991) as described in Dechow et al. (1995). For each industry (2-digit SIC code) and each year, I estimate firm-specific normal accruals. Then, discretionary accruals are total accruals less normal accruals. The results of using discretionary accruals instead of a bloated balance sheet measure by Barton and Simko (2002) are qualitatively similar.

Private equity firms with public debt and public equity firms exhibit different innate firm characteristics. Prior literature finds that the firms that go public with debt only are more leveraged, are more R&D intensive and have a higher ratio of property, plant and equipment to total assets. The firms with both public debt and public equity are older, bigger, and more profitable compared to the private equity firms (Berkovitch et al. 2006; Givoly et al. 2010). Table 3 Panel A provides descriptive data about firm characteristics of two groups of the sample firms: private equity firms and public equity firms. I present a two-tailed t-test and a Wilcoxon rank-sum test for differences across two groups of the firms. For the full sample, it is evident that public equity firm-years are significantly more leveraged and less profitable than all public firm-years. Private equity firms have shorter operating cycles, lower cash holdings, and higher ratios of PP&E to total assets than the public firms. Additionally, private equity firms are more constrained in terms of free cash flows and available funds for the firm's operations.

Table 3

Panel A: Descriptive Statistics Of The Firms By Two Ownership Type Two Groups

Variable		Private Equity Firms	Public Equity Firms	Difference in Mean / Median
SIZE	Mean	7.344	7.125	0.219***
	Median	7.300	6.924	0.377***
LEVERAGE	Mean	50.1%	37.1%	0.131***
	Median	39.4%	33.7%	0.057***
NOA	Mean	0.203	0.201	0.003
	Median	-0.024	0.002	-0.027***
SALES_GROWTH	Mean	2.2%	6.9%	-0.047***
	Median	3.5%	7.5%	-0.040***
ROA	Mean	1.6%	2.4%	-0.008***
	Median	2.9%	3.8%	-0.009***
No. of Obs.		5,414	42,389	
No. of Firms		882	5,805	

Panel B: Descriptive Statistics of the Firms by Two Ownership Type Three Groups

Variable		Private Equity Firms with Public Debt (1)	Public Equity Firms with Private Debt (2)	Public Equity Firms with Public Debt (3)	Difference in Mean / Median (1)-(2)	Difference in Mean / Median (1)-(3)
SIZE	Mean	7.344	6.448	7.778	0.896***	-0.434***
	Median	6.385	8.385	10.385	-2.000***	-4.000***
LEVERAGE	Mean	50.1%	37.3%	36.8%	0.128***	0.133***
	Median	39.4%	33.5%	33.9%	0.059***	0.055***
NOA	Mean	0.203	0.296	0.109	-0.092***	0.094***
	Median	-0.024	0.023	-0.014	-0.048***	-0.011
SALES_GROWTH	Mean	2.2%	9.0%	4.9%	-0.068***	-0.027***
	Median	3.5%	9.0%	6.4%	-0.056***	-0.029***
ROA	Mean	1.6%	1.9%	3.0%	-0.003*	-0.014***
	Median	2.9%	3.7%	3.9%	-0.008***	-0.010***
No. of Obs.		5,414	20,807	21,582		
No. of Firms		882	4,520	2,743		

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. I present two-tailed t-test for mean differences and Wilcoxon rank-sum test for median differences across three groups.

Panel B of Table 3 provides descriptive data about three groups of my sample: private equity firms with public debt, public equity firms with private debt and public equity firms with public debt. Private equity firms with publicly traded debt firm-years are significantly smaller in size, more leveraged, and less profitable than firms with both public equity and public debt. Public equity firms with private debt have shorter operating cycles, lower cash holdings, and a higher ratio of PP&E to total assets than all public firms. Firms with public equity but with private debt are the smallest, but have the most growth opportunities among three groups of the sample.

Empirical Analysis

In the first-stage, I run a probit regression (results not tabulated). I use the estimates from the first-stage probit model to compute the inverse Mills' ratio for each firm and include it as an additional control variable in my analysis. Consistent with Katz (2009), private firms are younger, more leveraged and have a shorter operating cycle. Private equity firms also show fewer growth opportunities and have lower cash to assets ratio.

Table 4 shows regression results of equation (6) for the full sample, which test hypothesis H1. Results of real earnings management as a consequence of just meeting small positive income and beating last year's earnings between two groups of firms that are private equity firms and public equity firms are presented in Panel A of Table 4. The first column is the regression result of the abnormal level of sales for two groups of firms. The coefficient on SUSPECT_PRIVATE (Υ_2) is statistically insignificant, but the coefficient on SUSPECT_PUBLIC (Υ_3) is negative and statistically significant at the 1% level for Abnormal CFO. Overall, the regression outcome for abnormal cash flows suggests sales manipulation occurs more frequently for public firms.

The second column is the regression result of the abnormal level of production between two groups of firms. Higher amounts of Abnormal PROD mean more opportunistic overproduction to lower the cost of sales. The coefficient SUSPECT_PRIVATE (Υ_2) is insignificant. The coefficient SUSPECT_PUBLIC (Υ_3) is positive and significant at the 1% level. That is, private equity firms engage in less overproduction to lower cost of sales per product to satisfy earnings benchmarks. The third column reports the results of firm's ownership type on the level of abnormal discretionary expense. Discretionary expense is the sum of R&D expenditures, SG&A expenses and advertising expenses. Coefficients on both groups, SUSPECT_PRIVATE (Υ_2) and SUSPECT_PUBLIC (Υ_2), are negative and significant. This indicates that there is no statistically significant difference between the two groups of firms. In other words, it appears that public equity firms and private equity firms do not differ in managing discretionary expenses to meet earnings benchmarks. The regression outcomes of real earnings management behavior using an aggregate of three measures (Abnormal ALL) by two types of firms is in the fourth column. The coefficient on SUSPECT_PRIVATE (Υ_2) is positive and insignificant, but the coefficient on SUSPECT_PUBLIC (Υ_3) is negative and significant at the 1% level. This result confirms the finding that the firms that go public with debt, but not with their equity, attain their earnings goals significantly less through manipulation of real activities than those firms that become public with equity.

Table 4

Panel A: Cross-sectional Regressions of Abnormal Real Earnings Management Measures by Ownership Types (Two Groups): Full Sample

$$\text{Abnormal RM} = \Upsilon_0+\Upsilon_1\text{PRIVATE}_{i,t} + \Upsilon_2\text{SUSPECT\_PRIVATE}_{i,t} + \Upsilon_3\text{SUSPECT\_PUBLIC}_{i,t} + \Upsilon_4\text{SIZE}_{i,t} + \Upsilon_5\text{LEVERAGE}_{i,t} + \Upsilon_6\text{ROA}_{i,t} + \Upsilon_7\text{SALES\_GROWTH}_{i,t} + \Upsilon_8\text{NOA}_{i,t} + \Upsilon_9\text{LOSS}_{i,t} + \Upsilon_{10}\text{INV\_MILLS}_{i,t} + \varepsilon_{i,t}$$

Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	-0.003	0.148***	-0.183***	-0.301***
		(-0.48)	(9.01)	(-9.35)	(-9.22)
PRIVATE	Υ_1	-0.003*	-0.005	-0.003	0.014
		(-1.66)	(-1.00)	(-0.35)	(1.51)
SUSPECT_PRIVATE	Υ_2	**0.003**	**-0.002**	**-0.025****	**0.003**
		(1.30)	(-0.47)	(-2.36)	(0.34)
SUSPECT_PUBLIC	Υ_3	**-0.007*****	**0.013*****	**-0.014*****	**-0.026*****
		(-6.50)	(4.55)	(-4.06)	(-5.07)
SIZE	Υ_4	-0.003***	-0.003**	0.010***	0.010***
		(-5.93)	(-2.18)	(6.33)	(3.66)
LEVERAGE	Υ_5	0.010*	-0.106***	0.030*	0.122***
		(1.94)	(-8.85)	(1.93)	(5.13)
ROA	Υ_6	0.325***	-0.506***	-0.068**	0.725***
		(19.69)	(-20.38)	(-2.24)	(15.17)
SALEGS_GROWTH	Υ_7	-0.018***	-0.032***	0.096***	0.091***
		(-6.26)	(-6.35)	(16.54)	(10.04)
NOA	Υ_8	0.001	-0.001	-0.007***	-0.003
		(0.95)	(-1.21)	(-6.03)	(-1.33)
LOSS	Υ_9	-0.003	-0.004	-0.004	-0.007
		(-1.43)	(-1.09)	(-0.80)	(-1.00)
INV_MILLS	Υ_{10}	0.007***	-0.035***	0.051***	0.084***
		(4.18)	(-10.86)	(12.46)	(12.92)
Statistical Test:					
F-test: $\Upsilon_2 = \Upsilon_3$		18.50***	8.68**	0.98	9.0**
Adj. R^2		15.50%	10.00%	6.50%	9.10%
N		42,548	45,250	36,448	45,222

This table presents results of ordered group regression which tests real earnings management for public and private firms. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Panel B: Cross-sectional Regressions of Abnormal Real Earnings Management Measures by Ownership Types (Three Groups): Full Sample

$$\text{Abnormal RM} = \Upsilon_0+\Upsilon_1\text{PRIVATE}_{i,t} + \Upsilon_2\text{PUBLIC}_{i,t}+ \Upsilon_3\text{SUSPECT\_PRIVATE}_{i,t} +\Upsilon_4\text{SUSPECT\_PUBLIC}_{i,t} + \Upsilon_5\text{SUSPECT\_BOTH}_{i,t} + \Upsilon_6\text{SIZE}_{it} + \Upsilon_7\text{LEVERAGE}_{i,t} + \Upsilon_8\text{ROA}_{i,t} + \Upsilon_9\text{SALES\_GROWTH}_{i,t} + \Upsilon_{10}\text{NOA}_{i,t} + \Upsilon_{11}\text{LOSS}_{i,t,t} + \Upsilon_{12}\text{INV\_MILLS}_i + \varepsilon_{i,t}$$

Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	-0.007	0.130***	-0.189***	-0.292***
		(-0.98)	(7.41)	(-8.77)	(-8.39)
PRIVATE	Υ_1	-0.001	-0.001	-0.001	0.012
		(-0.75)	(-0.29)	(-0.11)	(1.20)
PUBLIC_EQUITY	Υ_2	0.003**	0.010**	-0.001	-0.007
		(2.13)	(2.26)	(-0.13)	(-0.85)
SUSPECT_PRIVATE	Υ_3	**0.003**	**-0.003**	**-0.026****	**0.004**
		(1.52)	(-0.82)	(-2.49)	(0.45)
SUSPECT_PUBLIC	Υ_4	**-0.009*****	**0.020*****	**-0.019*****	**-0.039*****
		(-4.78)	(4.27)	(-3.48)	(-4.64)
SUSPECT_BOTH	Υ_5	**-0.004*****	**0.004**	**-0.008****	**-0.011***
		(-3.63)	(1.29)	(-1.97)	(-1.81)
SIZE	Υ_6	-0.002***	-0.001	0.010***	0.008***
		(-4.94)	(-0.92)	(5.64)	(2.86)
LEVERAGE	Υ_7	0.010*	-0.102***	0.029*	0.119***
		(1.85)	(-8.45)	(1.88)	(4.97)
ROA	Υ_8	0.364***	-0.574***	-0.032	0.858***
		(22.95)	(-22.18)	(-1.05)	(17.18)
SALEGS_GROWTH	Υ_9	-0.020***	-0.034***	0.080***	0.081***
		(-6.86)	(-7.34)	(14.63)	(9.78)
NOA	Υ_{10}	-0.000**	-0.000*	0	0
		(-2.45)	(-1.71)	(0.85)	(-0.86)
LOSS	Υ_{11}	0.001	-0.013***	-0.001	0.008
		(0.52)	(-3.37)	(-0.28)	(1.17)
INV_MILLS	Υ_{12}	0.006***	-0.034***	0.051***	0.083***
		(3.69)	(-10.63)	(12.38)	(12.81)
Statistical Test:					
F-test: $\Upsilon_3 = \Upsilon_4$		18.55***	13.70***	0.37	13.12***
F-test: $\Upsilon_3 = \Upsilon_5$		10.66***	2.07	2.62	2.1
F-test: $\Upsilon_4 = \Upsilon_5$		3.71*	7.89***	2.56	7.51***
Adj. R^2		15.40%	10.20%	6.20%	9.40%
N		42,548	45,250	36,448	45,222

This table presents results of ordered group regression which tests real earnings management tendency for public equity, private equity with public debt, and firms with both public equity and public debt In this regression, I classify firms into three groups: private equity firms with public debt, private equity firms without public debt and firms with both public equity and debt. SUSPECT_PRIVATE is 1 if the firm is a suspicious of engaging in earnings management and has private equity with public debt, and 0 otherwise. SUSPECT_PUBLIC is 1 if the firm is suspicious of engaging in earnings management and has public equity, but don't have public debt and 0 otherwise. SUSPECT_BOTH is 1 if the firm is suspicious of engaging in earnings management and has both public equity and public debt, and 0 otherwise. All other variable definitions are in Appendix A.. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Panel B of Table 4 presents results for the three group classification. The coefficient on SUSPECT_PRIVATE (Υ_3) is insignificant except for Abnormal DISEXP sample, but the coefficient on SUSPECT_PUBLIC (Υ_4) and SUSPECT_BOTH (Υ_5) are significant in the direction of more abnormal real operating activities. However, abnormal levels of real earnings management are lower for firms with both public debt and equity than for public equity firms with private debt. This may be interpreted that the existence of both shareholders and bondholders plays a governance role.

Using propensity score matched-pairs for the treatment and the control samples, I find that public equity firms are more likely to push sales and overproduce to inflate the current period earnings. Consistent with the full sample result, I find that both private equity firms and public equity firms manage discretionary expenses to meet their earnings benchmarks. The findings for propensity-matched pairs are statistically and qualitatively similar as the regression outcome using the full sample. Overall, I conclude that the public equity ownership puts earnings pressures on firms to which they respond by altering operations to meet their near-term earnings targets.

Table 5 presents results that compare real earnings management behavior between private equity and public equity firms based on propensity score matching methodology. Each private equity firm is matched to the observation with the closest propensity score in the public equity sample. The results in Panel A of Table 5 are qualitatively similar to the results found for the full sample. The coefficients of SUSPECT_PRIVATE (Υ_2) are insignificant for Abnormal CFO, Abnormal PROD, and Abnormal ALL models, but the coefficients on SUSPECT_PUBLIC (Υ_3) are significant at 1% level for Abnormal CFO, Abnormal PROD, and Abnormal ALL models. The coefficients of SUSPECT_PRIVATE (Υ_2) and SUSPECT_PUBLIC (Υ_3) for Abnormal DISEXP are significant for both private equity and public equity firms. This may indicate that managing discretionary expense is less costly and thus the most preferred choice by managers to meet earnings benchmarks both for private and for public equity firms.

Panel B of Table 5 presents results of the three group analysis. Except Abnormal DISEXP measure of real earnings management, I find that public equity firms are more likely to manage real activities to meet earnings benchmarks.

Table 5

Panel A: Cross-sectional Regressions of Abnormal Real Earnings Management Measures by Ownership Types (Two Groups): Propensity Score Matched-Pairs

$$\text{Abnormal RM} = \Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 SUSPECT2\_PRIVATE_{i,t} + \Upsilon_3 SUSPECT2\_PUBLIC_{i,t} + \Upsilon_4 SIZE_{i,t} + \Upsilon_5 LEVERAGE_{i,t} + \Upsilon_6 ROA_{i,t} + \Upsilon_7 SALES\_GROWTH_{i,t} + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t} + \varepsilon_{i,t}$$

Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal All
Intercept	Υ_0	0.016***	0.052***	-0.009	-0.035
		(2.59)	(3.58)	(-0.33)	(-1.25)
PRIVATE	Υ_1	-0.005***	0.012**	-0.026***	-0.026***
		(-2.77)	(2.37)	(-2.69)	-(2.69)
SUSPECT_PRIVATE	Υ_2	**0.002**	**0.000**	**-0.027*** **	**-0.005**
		(1.05)	(-0.07)	(-2.61)	-(0.66)
SUSPECT_PUBLIC	Υ_3	**-0.007*** **	**0.012*** **	**-0.018***	**-0.026*** **
		(-3.89)	(3.23)	(-1.86)	-(3.65)
SIZE	Υ_4	-0.003***	0.000	0.003	0.00
		(-4.77)	(-0.27)	(0.96)	(-0.10)
LEVERAGE	Υ_5	-0.004	-0.075***	-0.029	0.026
		(-0.58)	(-4.28)	(-1.25)	(0.75)
ROA	Υ_6	0.297***	-0.460***	-0.072	0.686***
		(9.54)	(-9.73)	(-1.19)	(7.14)
SALEGS_GROWTH	Υ_7	-0.006	-0.024***	0.108***	0.067***
		(-1.34)	(-3.55)	(7.85)	(4.99)
NOA	Υ_8	0.001*	-0.005**	-0.002	0.006**
		(1.68)	(-2.47)	(-1.02)	(2.11)
LOSS	Υ_9	-0.011***	0.009	-0.011	-0.033***
		(-3.09)	(1.51)	(-1.32)	(-2.79)
Statistical Test:					
F-test: $\Upsilon_2 = \Upsilon_3$		12.26***	5.04**	0.43	0.05*
Adj. R^2		18.10%	9.20%	3.40%	8.40%
N		8,626	8,968	4,107	8,966

I examine the influence of public equity ownership for two groups of firms: public equity firms and private equity firms. Here, I match each of the private equity firm-years with a firm-year in the public equity firm samples that are (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have firm size and leverage within $\pm$ 25%, and (4) have the smallest propensity score difference. These procedures result in 4,484 pairs of the matched-firm years. The number of matched pairs used for each of four real earnings management measure varies. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Panel B: Cross-sectional Regressions of Abnormal Real Earnings Management Measures by Ownership Types (Three Groups): Propensity Score Matched-Pairs

Abnormal RM = ϒ0+ϒ1PRIVATEi,t + ϒ2PUBLICi,t + ϒ3SUSPECT_PRIVATEi,t + ϒ4SUSPECT_PUBLIC,t + ϒ5SUSPECT_BOTHi,t + ϒ6SIZEi,t + ϒ7LEVERAGEi,t + ϒ8ROAi,t + ϒ9SALES_GROWTHi,t +ϒ10NOAi,t + εi,t

Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.020***	0.047***	-0.018	-0.03
		(2.96)	(3.09)	(-0.62)	(-1.06)
PRIVATE	Υ_1	-0.004**	0.012**	-0.023**	-0.024**
		(-2.07)	(2.25)	(-2.22)	(-2.35)
PUBLIC_EQUITY	Υ_2	0.001	0	0.008	0.006
		(0.48)	(-0.05)	(0.71)	(0.42)
SUSPECT_PRIVATE	Υ_3	**0.001**	**0.000**	**-0.026****	**-0.005**
		(0.72)	(-0.01)	(-2.55)	(-0.72)
SUSPECT_PUBLIC	Υ_4	**-0.013*****	**0.021*****	**-0.030****	**-0.043*****
		(-3.70)	(2.67)	(-2.00)	(-3.08)
SUSPECT_BOTH	Υ_5	**-0.005****	**0.008***	**-0.007**	**-0.017****
		(-2.20)	(1.94)	(-0.60)	(-2.15)
SIZE	Υ_6	-0.003***	-0.001	0.003	0.001
		(-4.32)	(-0.70)	(1.09)	(0.33)
LEVERAGE	Υ_7	-0.008	-0.071***	-0.026	0.02
		(-1.20)	(-4.00)	(-1.11)	(0.56)
ROA	Υ_8	0.221***	-0.368***	-0.04	0.545***
		(5.67)	(-6.90)	(-0.71)	(5.40)
SALEGS_GROWTH	Υ_9	-0.002	-0.035***	0.102***	0.082***
		(-0.48)	(-4.92)	(7.44)	(5.95)
NOA	Υ_{10}	0	-0.001	-0.002	0.002*
		(0.21)	(-1.43)	(-1.45)	(1.84)
LOSS	Υ_{11}	-0.019***	0.019***	-0.008	-0.049***
		(-4.30)	(2.85)	(-0.91)	(-3.81)
Statistical Test:					
F-test: $\Upsilon_3 = \Upsilon_4$		12.87***	95.37**	0.04	5.20**
F-test: $\Upsilon_3 = \Upsilon_5$		4.63**	2.02	1.53	1.13
F-test: $\Upsilon_4 = \Upsilon_5$		4.29**	2.09	1.51	2.26
Adj. R^2		16.00%	8.40%	3.40%	7.90%
N		8,626	8,968	4,107	8,966

In this regression, I classify firms into three groups: private equity firms with public debt, private equity firms without public debt and firms with both public equity and debt. SUSPECT_PRIVATE is 1 if the firm is a suspicious of engaging in earnings management and has private equity with public debt, and 0 otherwise. SUSPECT_PUBLIC is 1 if the firm is suspicious of engaging in earnings management and has public equity, but don't have public debt, and 0 otherwise. SUSPECT_BOTH is 1 if the firm is suspicious of engaging in earnings management and has both public equity and public debt, and 0 otherwise. Here, I match each of the private equity firm-years with a firm-year in the public equity firm samples that are (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have firm size and leverage within ± 25%, and (4) have the smallest propensity score difference. These procedures result in 4,484 pairs of the matched-firm years. The number of matched pairs used for each of four real earnings management measure varies. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Table 6 present empirical findings that test Hypothesis 2a. When the firm is financially distressed, earnings changes become more relevant to the bondholders because bondholders are fixed claimants. Thus, I expect that private equity with public debt firms have incentives to manipulate real operations of the firm to satisfy earnings benchmarks.

Panel A of Table 6 presents evidence that both private equity and public equity firms manage their operating activities to meet earnings thresholds when they are financially weak. For the high default risk firm sample, coefficients of SUSPECT_PRIVATE and SUSPECT_PUBLIC are significant in the direction of more real earnings manipulation. Unlike for the high default firm sample, the coefficients of SUSPECT_PRIVATE are not significant for three real earnings management measures, but the coefficients of SUSPECT_PUBLIC are significant for all four measures of real earnings management. A finding of $\Upsilon_3 < \Upsilon_2$ ($\Upsilon_3 > \Upsilon_2$ for Abnormal PROD) for low default firms indicates that public equity firms engage in more real earnings management to meet earnings benchmarks than do private equity firms when they are financially strong. F-test shows a difference between private equity and public equity firms in their likelihood of using real earnings management for low default risk sample. When the firm is financially healthy, private equity firms seem less likely to manage real operations measured by real earnings metrics suggested by Roychowdhury (2006) compared to public equity firms.

Panel B of Table 6 reports the results of the regression that test real earnings management behavior by high default versus low default firms using propensity score matching methodology. The regression outcome using propensity score matched-pairs shows that private firms manage real activities more actively than do the public equity firms when the firms' default risk increases. For low default risk group, the public equity firms manage real activities more (Abnormal DISEXP and Abnormal ALL) than do private equity firms. Significant F-test for low default firms reconfirms findings in Table 13. However, the evidence is weak and mixed using the propensity score matched-pairs.

Table 6

Panel A: Cross-sectional Regressions of Abnormal Real Earnings Management Measures for High Default Risk vs. Low Default Risk Firms: Full Sample

Variable		High Default Risk Firms				Low Default Risk Firms			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL	Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.041***	0.060**	-0.139***	-0.146**	-0.036***	0.215***	-0.209***	-0.434***
		(2.92)	(2.00)	(-3.88)	(-2.38)	(-3.16)	(6.46)	(-4.56)	(-6.38)
PRIVATE	Υ_1	0.001	-0.003	0.004	0.011	0.000	0.001	-0.025*	0.005
		(0.32)	(-0.38)	(0.39)	(0.69)	(-0.22)	(0.18)	(-1.93)	(0.50)
SUSPECT_PRIVATE	Υ_2	**-0.010****	**0.024****	**-0.029****	**-0.056*****	**0.003**	**-0.005****	**0.011**	**0.008****
		(-2.28)	(2.39)	(-2.53)	(-2.86)	(1.64)	(-2.43)	(0.73)	(1.97)
SUSPECT_PUBLIC	Υ_3	**-0.015*****	**0.014****	**-0.009**	**-0.036*****	**-0.003****	**0.008****	**-0.010***	**-0.017****
		(-5.16)	(2.35)	(-1.55)	(-3.12)	(-2.22)	(2.23)	(-1.81)	(-2.36)
SIZE	Υ_4	-0.006***	0.005*	0.006**	-0.003	-0.001	-0.004*	0.007**	0.009**
		(-5.62)	(1.84)	(2.10)	(-0.62)	(-0.85)	(-1.69)	(2.04)	(2.06)
LEVERAGE	Υ_5	-0.006	-0.099***	0.034	0.109***	0.01	-0.147***	0.104***	0.246***
		(-0.69)	(-4.84)	(1.40)	(2.62)	(0.99)	(-4.83)	(2.62)	(4.09)
ROA	Υ_6	0.103*	-0.104	-0.153***	0.051	0.421***	-0.857***	0.330***	1.599***
		(1.82)	(-1.34)	(-3.31)	(0.30)	(18.74)	(-12.89)	(4.41)	(11.75)
SALEGS_GROWTH	Υ_7	-0.009*	-0.039***	0.076***	0.098***	-0.021***	0.017**	0.070***	-0.011
		(-1.88)	(-5.09)	(9.41)	(6.49)	(-5.07)	(2.11)	(6.15)	(-0.70)
NOA	Υ_8	0.001	-0.006***	0.00	0.005	0.002*	-0.004	-0.010**	0.002
		(0.48)	(-2.96)	(-0.23)	(1.41)	(1.76)	(-1.19)	(-2.32)	(0.39)
LOSS	Υ_9	-0.033***	0.051***	-0.022***	-0.103***	-0.010***	0.039***	-0.049***	-0.098***
		(-4.21)	(4.46)	(-2.86)	(-4.18)	(-4.30)	(5.16)	(-4.59)	(-6.37)
INV_MILLS	Υ_{10}	0.001	-0.024***	0.038***	0.058***	0.015***	-0.069***	0.078***	0.154***
		(0.32)	(-4.92)	(5.72)	(5.28)	(4.35)	(-7.68)	(7.40)	(8.04)
Statistical Test:									
F-test: $\Upsilon_2 = \Upsilon_3$		1.07	0.82	2.55	0.86	7.17***	10.02***	1.70	9.47***
Adj. R^2		12.20%	6.80%	7.20%	5.40%	18.30%	15.20%	8.50%	15.60%
N		10,562	0,963	10,050	10,961	13,274	13,864	8,706	13,862

I run equation (6) separately for high default firms and low default firms. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Panel B: Cross-sectional Regressions of Abnormal Real Earnings Management Measures for High Default Risk vs. Low Default Risk Firms: Propensity Score Matched-Pairs

Variable		High Default Risk Firms				Low Default Risk Firms			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL	Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.032**	-0.003	0.014	0.044	-0.001	0.099***	-0.077	-0.128***
		(2.53)	(-0.09)	(0.33)	(0.65)	(-0.16)	(5.05)	(-1.54)	(-3.71)
PRIVATE	Υ_1	-0.002	0.013	-0.011	-0.021	-0.004**	0.008**	-0.047***	-0.018**
		(-0.52)	(1.26)	(-0.93)	(-1.07)	(-2.00)	(1.97)	(-2.75)	(-2.38)
SUSPECT_PRIVATE	Υ_2	**-0.002**	**0.018***	**-0.030*****	**-0.049****	**0.003**	**-0.005*****	**-0.003**	**0.009****
		(-0.53)	(1.72)	(-2.60)	(-2.48)	(1.55)	(-3.23)	(-0.19)	(2.47)
SUSPECT_PUBLIC	Υ_3	**-0.016*****	**-0.001**	**0.002**	**-0.015**	**-0.001**	**0.006**	**-0.026***	**-0.013***
		(-2.76)	(-0.08)	(0.12)	(-0.63)	(-0.63)	(1.60)	(-1.78)	(-1.84)
SIZE	Υ_4	-0.006***	0.008**	-0.002	-0.014*	-0.001*	-0.004***	0.007	0.004*
		(-4.26)	(2.09)	(-0.43)	(-1.94)	(-1.68)	(-3.46)	(1.49)	(1.79)
LEVERAGE	Υ_5	0.002	-0.075***	-0.039	0.029	-0.009	-0.088**	0.086	0.127*
		(0.23)	(-3.03)	(-1.32)	(0.58)	(-0.89)	(-2.19)	(1.18)	(1.71)
ROA	Υ_6	0.216***	-0.325***	-0.071	0.454***	0.503***	-0.935***	0.228	1.656***
		(5.67)	(-5.32)	(-1.06)	(4.06)	(7.91)	(-4.99)	(1.06)	(5.12)
SALEGS_GROWTH	Υ_7	-0.011	-0.033***	0.099***	0.099***	-0.006	0.005	0.107***	-0.002
		(-1.26)	(-2.65)	(5.26)	(3.92)	(-1.19)	(0.96)	(3.52)	(-0.22)
NOA	Υ_8	0.001	-0.009**	0.002	0.011*	0.000	-0.001	-0.007	-0.001
		(0.79)	(-2.15)	(0.43)	(1.83)	(-0.09)	(-0.36)	(-1.12)	(-0.12)
LOSS	Υ_9	-0.020***	0.021**	-0.013	-0.056***	0.004	-0.005	-0.008	0.01
		(-4.56)	(2.49)	(-1.24)	(-3.39)	(0.66)	(-0.39)	(-0.40)	(0.38)
Statistical Test:									
F-test: $\Upsilon_2 = \Upsilon_3$		3.68*	1.38	2.57	1.25	2.14	7.53***	1.25	7.33***
Adj. R^2		15.60%	7.70%	2.70%	6.40%	17.30%	20.10%	6.80%	17.80%
N		2,832	2,899	2,459	2,898	4,155	4,313	617	4,312

I run equation (6) separately for high default firms and low default firms. I match each of the private equity firm-years with a firm-year in the public equity firm samples that are (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have firm size and leverage within ± 25%, and (4) have the smallest propensity score difference. These procedures result in 4,484 pairs of the matched-firm years. The number of matched pairs used for each of four real earnings management measure varies. . SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Table 7

Panel A: Cross-sectional Regressions of Abnormal Real Earnings Management Measures for Zero Earnings and Zero Earnings Growth Benchmark: Full Sample

		BEAT_ZERO				BEAT_LAST			
Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL	Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.024**	0.105***	-0.181***	-0.233***	0.024**	0.105***	-0.181***	-0.233***
		(2.54)	(5.70)	(-9.23)	(-6.87)	(2.53)	(5.67)	(-9.23)	(-6.85)
PRIVATE	Υ_1	-0.002	-0.006	-0.003	0.017**	-0.002	-0.005	-0.003	0.015
		(-1.20)	(-1.43)	(-0.38)	(2.06)	(-1.27)	(-1.10)	(-0.35)	(1.59)
BEAT_ZERO_PRIVATE	Υ_2	**-0.019*** **	**0.045*** **	**-0.029***	**-0.092*** **				
		(-3.06)	(3.56)	(-1.79)	(-3.81)				
BEAT_ZERO_PUBLIC	Υ_3	**-0.027*** **	**0.050*** **	**-0.020*** **	**-0.095*** **				
		(-9.20)	(7.88)	(-3.23)	(-8.55)				
BEAT_LAST_PRIVATE	Υ_4					**-0.001**	**0.000**	**-0.02**	**0.003**
						(-0.38)	(-0.01)	(-1.61)	(0.41)
BEAT_LAST_PUBLIC	Υ_5					**-0.007*** **	**0.012*** **	**-0.011*** **	**-0.022*** **
						(-5.85)	(3.88)	(-2.99)	(-3.93)
SIZE	Υ_6	-0.003***	-0.003**	0.010***	0.010***	-0.003***	-0.003**	0.010***	0.011***
		(-5.19)	(-2.21)	(6.32)	(3.64)	(-5.03)	(-2.29)	(6.35)	(3.70)
LEVERAGE	Υ_7	-0.011	-0.074***	0.027*	0.070***	-0.012*	-0.072***	0.026	0.066***
		(-1.63)	(-5.70)	(1.70)	(2.85)	(-1.78)	(-5.50)	(1.64)	(2.68)
ROA	Υ_8	0.074**	-0.114**	-0.065*	0.116**	0.075**	-0.115**	-0.064*	0.118**
		(2.33)	(-2.45)	(-1.91)	(1.96)	(2.34)	(-2.45)	(-1.91)	(1.98)
SALEGS_GROWTH	Υ_9	-0.006*	-0.051***	0.095***	0.119***	-0.005	-0.053***	0.095***	0.123***
		(-1.75)	(-9.26)	(16.54)	(12.84)	(-1.50)	(-9.48)	(16.58)	(13.11)
NOA	Υ_{10}	-0.001	0.001	-0.007***	-0.006***	-0.001	0.001	-0.007***	-0.006***
		(-0.89)	(0.42)	(-6.34)	(-2.87)	(-0.88)	(0.42)	(-6.37)	(-2.88)
LOSS	Υ_{11}	-0.040***	0.052***	-0.004	-0.096***	-0.039***	0.051***	-0.003	-0.093***
		(-7.62)	(6.65)	(-0.57)	(-8.99)	(-7.50)	(6.44)	(-0.50)	(-8.67)
INV_MILLS	Υ_{12}	0.005**	-0.031***	0.050***	0.078***	0.004**	-0.031***	0.050***	0.077***
		(2.17)	(-8.79)	(12.41)	(11.51)	(2.06)	(-8.66)	(12.4)	(11.38)
Statistical Test:									
F-test: $\Upsilon_2 = \Upsilon_3$		1.93	0.15	0.27	0.01				
F-test: $\Upsilon_4 = \Upsilon_5$						8.44***	5.04**	0.48	6.27**
Adj. R^2		9.90%	6.40%	7.00%	6.60%	9.70%	6.20%	7.00%	6.50%
N		42,548	45,250	36,448	45,222	42,548	45,250	36,448	45,222

I run equation (7) and (8) separately for meeting zero earnings benchmark and for meeting zero earnings growth benchmark samples. BEAT_ZERO_PRIVATE is one if a firm meets the zero earnings benchmark and is a private firms, and zero otherwise. BEAT_ZERO_PUBLIC is one if a firm meets the zero earnings benchmark and is a public equity firms, and zero otherwise. BEAT_LAST_PRIVATE is one if a firm meets the zero earnings growth benchmark and is a private firms, and zero otherwise. BEAT_LAST_PRIVATE is one if a firm meets the zero earnings growth benchmark and is a public equity firms, and zero otherwise. All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Panel B: Cross-sectional Regressions of Abnormal Real Earnings Management Measures for Zero Earnings and Zero Earnings Growth Benchmark : Propensity Score Matched-Pairs

Variable		BEAT_ZERO				BEAT_LAST			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL	Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.019***	0.049***	-0.012	-0.031	0.020***	0.049***	-0.013	-0.03
		3.08	3.39	-0.45	-1.12	3.1	3.34	-0.48	-1.08
PRIVATE	Υ_1	-0.003*	0.009**	-0.027***	-0.021**	-0.004**	0.012**	-0.027***	-0.026***
		-1.93	2.01	-2.89	-2.46	-2.2	2.28	-2.9	-2.63
BEAT_ZERO_PRIVATE	Υ_2	**-0.008**	**0.039*** **	**-0.037** **	**-0.085*** **				
		-1.18	2.93	-2.39	-3.48				
BEAT_ZERO_PUBLIC	Υ_3	**-0.023*** **	**0.036*** **	**-0.026**	**-0.074*** **				
		-4.03	3.26	-1.62	-3.71				
BEAT_LAST_PRIVATE	Υ_4					**0.002**	**-0.005**	**-0.019**	**0.007**
						1.43	-1.5	-1.49	0.97
BEAT_LAST_PUBLIC	Υ_5					**-0.004** **	**0.008** **	**-0.012**	**-0.017** **
						-2.4	2.17	-1.11	-2.45
SIZE	Υ_6	-0.003***	0	0.003	0	-0.003***	0	0.003	0
		-4.64	-0.29	0.95	-0.1	-4.64	-0.31	0.97	-0.07
LEVERAGE	Υ_7	-0.007	-0.072***	-0.026	0.023	-0.008	-0.071***	-0.027	0.019
		-1.12	-4.08	-1.13	0.66	-1.23	-3.99	-1.17	0.54
ROA	Υ_8	0.220***	-0.367***	-0.043	0.540***	0.223***	-0.375***	-0.038	0.555***
		5.66	-6.9	-0.76	5.37	5.74	-7.01	-0.67	5.51
SALEGS_GROWTH	Υ_9	-0.004	-0.026***	0.106***	0.070***	-0.004	-0.027***	0.107***	0.072***
		-0.88	-3.78	7.76	5.13	-0.8	-3.89	7.83	5.25
NOA	Υ_{10}	0.001	-0.004**	-0.002	0.006*	0.001	-0.005**	-0.002	0.006**
		1.42	-2.33	-1.06	1.92	1.46	-2.39	-0.99	2
LOSS	Υ_{11}	-0.018***	0.019***	-0.008	-0.049***	-0.018***	0.016**	-0.006	-0.044***
		-4.28	2.74	-0.86	-3.75	-4.14	2.44	-0.65	-3.44
Statistical Test:									
F-test: $\Upsilon_2 = \Upsilon_3$		2.77*	0.04	0.29	0.15				
F-test: $\Upsilon_4 = \Upsilon_5$						7.21***	5.80**	0.16	4.92**
Adj. R^2		16.10%	8.70%	3.30%	8.20%	15.90%	8.50%	3.20%	7.90%
N		8,626	8,968	4,107	8,966	8,626	8,968	4,107	8,966

I run equation (7) and (89) separately for meeting zero earnings benchmark and for meeting zero earnings growth benchmark samples. BEAT_ZERO_PRIVATE is one if a firm meets the zero earnings benchmark and is a private firms, and zero otherwise. BEAT_ZERO_PUBLIC is one if a firm meets the zero earnings benchmark and is a public equity firms and zero otherwise. BEAT_LAST_PRIVATE is one if a firm meets the zero earnings growth benchmark and is a private firms, and zero otherwise. BEAT_LAST_PRIVATE is one if a firm meets the zero earnings growth benchmark and is a public equity firms, and zero otherwise. match each of the private equity firm-years with a firm-year in the public equity firm samples that are (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have firm size and leverage within ± 25%, and (4) have the smallest propensity score difference. These procedures result in 4,484 pairs of the matched-firm years. The number of matched pairs used for each of four real earnings management measure varies All other variable definitions are in Appendix A. *, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters.

Table 7 reports whether private versus public equity firms differ in managing sales, production and other discretionary expenses to meet two different earnings benchmarks. I find that both private and public equity firms do not differ in manipulating operations to satisfy the zero earnings benchmark, but the private equity firms are significantly less likelyto manipulate their operations to beat the zero earnings growth benchmark than are their public equity counterparts. This is evident from the OLS regression outcome presented in Table 7. The coefficients of both MEET_ZERO_PRIVATE (Υ_2) and MEET_ZERO_PUBLIC (Υ_3) are statistically insignificant. The coefficient of BEAT_LAST_PRIVATE (Υ_4) is insignificant while the coefficients on BEAT_LAST_PUBLIC (Υ_5) are significant at the 1% level for all four real earnings management models. Significant Υ_2 and Υ_3 for zero earnings benchmark group indicate that both private equity and public equity firms alter operations to deliver a positive income. A finding of $\Upsilon_5 < \Upsilon_4$ ($\Upsilon_5 > \Upsilon_4$ for Abnormal PROD) indicates that public equity firms engage in more real earnings management to show earnings growth than do private equity firms. I use an F-test to determine whether statistically significant differences between private equity and public equity firms exist to meet earnings growth benchmark as compared to zero earnings benchmark. Significant F-test for zero earnings growth benchmark sample shows a difference between private equity and public equity firms in their likelihood of using real earnings management to show earnings growth. The above findings suggest that both private equity and public equity firms alter operations to meet the zero earnings benchmark, but the public equity firms are more likely to manage real activities to meet the zero earnings growth benchmark than their private counterparts.

Panel B of Table 7 is the result of the regression (7) and the regression (8) for the matched-pairs based on the closest propensity score which is the estimated probability of a logit model. Overall, the regression outcome is qualitatively similar to the findings using the full sample. The first four columns provide empirical evidence for meeting zero earnings benchmark. Except Abnormal CFO, the coefficient of BEAT_ZERO_PRIVATE (Υ_2) is significant for Abnormal PROD, Abnormal DISEXP, and Abnormal ALL. For public equity firms, the coefficient is significant except for Abnormal DISEXP. Column 5 to column 8 provides the evidence of real earnings management for meeting zero earnings growth benchmark. Here, the evidence shows that only public equity firms manage operating activities to report improved earnings figure relative to the prior year. This reconfirms that both private and public equity firms manage real operating activities to meet the zero earnings benchmark, but the private firms are less likely to manage real operating activities to meet the earnings growth benchmark than do the public equity firms.

SUMMARY AND CONCLUSIONS

In this study, I examine the effect of capital market pressure, as proxied by firm ownership structure, on the tendency to use real earnings management to meet earnings targets. Exposure to capital market pressure can be a monitoring factor that demands higher and more transparent earnings reports. However, capital market presence can burden top managers to make suboptimal operational decisions in order to avoid earnings disappointments, which may cause negative equity market reactions. The managers of firms with publicly traded equity bear higher costs of missing earnings thresholds since their compensation is at stake and they fear losing the confidence of equity investors who are sensitive to stock price movements. Using several measures of real earnings management, I find statistically significant empirical evidence that public equity firms have a higher propensity than private firms to manipulate their operations to meet earnings benchmark.

Although private equity firms with public debt do not face the same capital market pressure that public equity firms face, they are not immune from incentives to engage in real earnings management. Specifically, I find that private equity firms with public debt engage in a greater degree of real earnings management as their debt moves closer to default. Given that debt claims become more like equity claims as a firm's debt moves closer to default, this finding suggests that public debtholders exert similar pressure to public equity holders when their claims become more equity-like. Moreover, private equity firms with public debt that do engage in real earnings management appear to emphasize the zero earnings benchmark, consistent with prior research suggesting that this benchmark is of primary importance to creditors.

My study has some limitations. The sample size for the private equity firms (with public debt firms) is relatively small compared with the other groups of firms. Also, I cannot directly observe firms' myopic behavior to manage operating activities to beat the earnings targets. The classification scheme I use for identifying earnings

managers based on the proximity of reported earnings to relevant benchmarks is imperfect and may include those firms that have reasons to deviate from normal operations other than earnings management. The real earnings management proxies I use may be subject to measurement errors.

AUTHOR INFORMATION

Yura Kim, Ph.D., Assistant Professor of Accounting, College of Business Administration, University of Seoul,163 Seoulsiripdae-ro, Dongdaemun-gu, Seoul 130-743, Korea; Phone: +822-6490-2256; E-mail: yurak0@uos.ac.kr

REFERENCES

1. Ahmed, A. S., B. K. Billing, R. M. Morton, and M. Stanford-Harris, 2002, The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs, *The Accounting Review* 77, 867-890.
2. Anthony, J. H., and K. Ramesh, 1992,. Association between accounting performance measures and stock prices: A test of the life cycle hypothesis, *Journal of Accounting and Economic*, 15, 203-227.
3. Ashbaugh-Skaife, H., D. Collins, and R. Lafond, 2006, The effects of corporate governance on firms' credit ratings, *Journal of Accounting and Economics* Vol. 42, 203-243.
4. Athanasakou, V. E. and N. C. Strong, and M. Walker, 2011, The market reward for achieving analyst earnings expectations: does expectations or earnings management matter? *Journal of Business, Finance & Accounting* 38, 58-94
5. Baber, W., P. M. Frirfield, and J. A. Haggard, 1991, The effect of concern about reported income on discretionary spending decisions: The case of research and development, *Accounting Review*, 66, 818-829.
6. Babchuk, L., and Y. Grinstein, 2005, The growth of executive pay, Oxford Review of Economic Policy 21, 283-303.
7. Ball, R., and L. Shivakumar, 2005, Earnings quality in U.K. private firms: Comparative loss recognition timeliness, *Journal of Accounting and Economics* 39, 83-128.
8. Barton, J., and P. J. Simko, 2002, The balance sheet as an earnings management constraint, *The Accounting Review* 77, 1-27.
9. Bartov, E., 1993, The timing of asset sales and earnings manipulation, The *Accounting Review* 68, 840-855.
10. Bartov, E., D. Givoly, and C. Hayn, 2002, The rewards to meeting or beating earnings expectations, *Journal of Accounting and Economics* 33, 173–204.
11. Beatty, A. L., B. Ke, and K. R. Petroni, 2002, Earnings management to avoid earnings declines across publicly and privately held banks, *The Accounting Review*, 77, 547-570.
12. Bergstresser, D., and T. Philippon, 2006, CEO incentives and earnings management, *Journal of Financial Economics* 80, 511-529.
13. Berkovitch, E., R. Gesser, and O. Sarig, 2006, Being a public company: Public debt or public equity? Working paper.
14. Brown, L., and M. Caylor, 2005, A temporal analysis of thresholds: propensities and valuation consequences, *The Accounting Review* 80, 423-440.
15. Burgstahler, D., and I. Dichev, 1997, Earnings management to avoid earnings decreases and losses, *Journal of Accounting and Economics*, 24, 99–126.
16. Burgstahler, D. C., L. Hail, and C. Leuz, 2006, The importance of reporting incentives: Earnings management in European private and public firms, *The Accounting Review* 81, 983-1016.
17. Chen, J. Z., 2009, The choice between real and accounting earnings management, Working paper
18. Chen, J. Z., L.Rees. amd K. Sivaramakrishnan, 2010, On the use of accounting vs. real earnings management to earnings expectations – A market analysis, Working paper.
19. Cheng, Q., and T. Warfield, 2005, Equity incentives and earnings management, *The Accounting Review* 80, 441-476.
20. Collins, D., and P. Hribar, 2000, Errors in estimating accruals: Implications for empirical research, *Journal of Accounting Research*, 40, 105-134.
21. Coppens, L., and E. Peek, 2005, An analysis of earnings management by European private firms, *Journal of International Accounting, Auditing and Taxation* 14, 1-17.
22. Dechow, P., R. Sloan, and A. Sweeney, 1995, Detecting earnings management, *The Accounting Review* 70, 193-225.
23. DeFond, M. L., and J. Jiambalvo, 1994, Debt covenant violations and manipulations of accruals, *Journal of Accounting and Economics* 17, 51-89.

24. Degeorge, F., J. Patel and, R. Zeckhauser, 1999, Earnings management to exceed thresholds, *Journal of business* 72, 1-33.
25. Demers, E., and C. Wang, 2010, The impact of CEO career concerns on accruals based and real activities earnings management, Working paper.
26. Easton, P. D., S. J. Monahan, and F. P. Vasvari, 2009, Initial evidence on the role of accounting earnings in the bond market, *Journal of Accounting Research* 47, 721-766.
27. Faulkender, M., and M. A. Petersen, 2006, Does the source of capital affect capital structure? *The Review of Financial Studies* 19, 46-79.
28. Fischer, P., and P. Stocken, 2004, Effect of investor speculation on earnings management, *Journal of Accounting Research* 42, 843-870.
29. Francis, J., and C. Lennox, 2011, Selection Models in Accounting Research, *The Accounting Review* 87, 589-616.
30. Gaver, J. J., K. M. Gaver, and J. R. Austin, 1995, Additional evidence on bonus plans and income management, *Journal of Accounting and Economics* 19, 3-28.
31. Givoly, D., C. K. Hayn, and S. P. Katz, 2010, Does public ownership of equity improve earnings quality? *The Accounting Review* 85 (1), 195-225.
32. Graham, J.R., C. R. Harvey, and S. Rajgopal, 2005, The economic implications of corporate financial reporting, *Journal of Accounting and Economics* 40, 3-73.
33. Gunny, K., 2010, The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks, *Contemporary Accounting Research,* 27, 855-888.
34. Heckman, J. 1979, Sample selection bias as a specification error, *Econometrica,* 46, 1251-1271.
35. Jensen, M., and W. Meckling, 1976, Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics,* 3, 305-360.
36. Jiang, J, 2008, Beating earnings benchmarks and the cost of debt, *The Accounting Revie*w 83, 377-416.
37. Jones, J, 1991, Earnings management during import relief investigations, *Journal of Accounting Research* 29, 193-228.
38. Kasznik, R., and M. McNichols, 2002, Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices, *Journal of Accounting Research* 40, 727–759.
39. Katz, S. P., 2009, Earnings quality and ownership structure: The role of private equity sponsors, *The Accounting Review* 84, 623-658.
40. Kim, J. B., and B. C. Sohn, 2009, Real versus accrual-based earnings management and implied cost of equity capital, Working paper
41. Leggett, D. M., L. M. Parsons, and A. L. Reitenga, 2009, Real earnings management and subsequent operating performance, Working paper.
42. Penno, M., and D. T. Simon, 1986, Accounting choices: Public versus private firms, *Journal of Business, Finance & Accounting* 13, 561-569.
43. Plummer, C. E., and S. Y. Tse, 1999, The effect of limited liability on the informativeness of earnings: Evidence from the stock and bond markets, *Contemporary Accounting Research* 16, 541-574.
44. Rosenbaum, P., and D. Rubin., 1985, Reducing Bias in Observational Studies Using Sub-classification on the Propensity Score, *Journal of the American Statistical Association* 79, 516-524.
45. Roychowdhury, S., 2006, Earnings management through real activities manipulation, *Journal of Accounting and Economics* 42, 335-370.
46. Standard & Poor's, 2008, Corporate rating criteria, *Standard & Poor's*. available at www.standardand poors.com
47. Stein, J. C., 1989, Efficient capital markets, inefficient firms: A model of myopic corporate behavior, *The Quarterly Journal of Economics* 104, 655-669.
48. Yen, A., 2008, The influence of myopic R&D investment decisions on earnings growth, Working paper.
49. Zang, A. Y., 2012, Evidence on the tradeoff between real manipulation and accrual manipulation, *The Accounting Review* 87, 675-703.
50. Ziebart, D., and S. A. Reiter, 1992, Bond ratings, bond yields and financial information, *Contemporary Accounting Research* 9, 252-282.

Appendix A: Variable Definitions

Variable	Definition
PRIVATE	Indicator variable equal to 1 if a firm has public debt (private equity) and, 0 otherwise
SUSPECT	Indicator variable equal to 1 if (1) net income divided by total assets is greater than 0 but less than or equal to 0.005, or (2) the change in net income divided by total assets relative to the prior year is greater than 0 but less than or equal to 0.005, 0 otherwise
BEAT_ZERO	Indicator variable equal to 1 if net income divided by total assets is greater than 0 but less than or equal to 0.005, 0 otherwise
BEAT_LAST	Indicator variable equal to 1 if the change in net income divided by total assets relative to their prior year is greater than 0 but less than or equal to 0.005, 0 otherwise
CFO	Cash flows from operations divided by lagged total assets
PROD	Production costs, calculated as the sum of cost of goods sold and change in inventory divided by lagged total assets
DISEXP	Discretionary expense, calculated as the sum of selling, general and administration expenses, advertising expenses and R&D expense divided by lagged total assets
Abnormal CFO	Measured as deviations from the predicted values from the CFO model
Abnormal PROD	Measured as deviations from the predicted values from the PROD model
Abnormal DISEXP	Measured as deviations from the predicted values from the DISEXP model
NOA	Net operating assets which is net operating assets computed as shareholders' equity less cash and marketable securities, plus total debt scaled by sales
SIZE	Logarithm of total assets
LEVERAGE	Book value of total short- and long-term debt divided by total assets
SALES_GROWTH	Growth in sales from year t–1 to year t.
ROA	Return on assets, calculated as income before extraordinary items divided by lagged total assets
NOL	Indicator variable equal to one if a firm has net operating loss carryforwards available at the beginning of year t, and zero otherwise
OPERATING_CYCLE	Days for receivable collection period plus inventory turnover, calculated as average accounts receivables divided total revenues divided 360 days plus average inventory divided COGS divided by 360 days.
LOSS	Indicator variable, equal to 1 if income before extraordinary items is less than 0 and, 0 otherwise
RNOA	A profitability measure that is computed as operating income divided by net operating assets, where operating income is net income + translation adjustment + after-tax interest expense - after-tax interest income + minority interest income. Net operating assets are common equity + current debt + long-term debt + preferred stock- cash-investment and advances + minority interest (see Givoly et al. 2010)
FIRM_AGE	Number of years the firm is listed on Compustat Database
BIG5	An indicator variable equal to 1 if the firm is audited by a Big 5 accounting firm, and 0 otherwise
QUICK	Cash and cash equivalents plus total receivables divided by current liabilities
CASH_ASSETS	Ratio of cash and cash equivalents to lagged total assets.
CAPX_ASSETS	Ratio of capital expenditures to total assets
DEFAULT	Indicator variable, equal to 1 if S&P debt rating is an speculative grade (BBB- or below), 0 otherwise.
INV_MILLS	Following the Heckman (1979) procedure, in the first stage I estimate a PROBIT model with firm size, sales growth, leverage, profitability (operating income divided by net operating assets), net operating loss carryforwards, quick ratio, operating cycle, firm age, capital expenditures (divided by total assets), a dummy for loss firms, and audit quality (big5 dummy). Estimates of the PROBIT model are used to compute an Inverse Mills' Ratio for each firm. In the second stage, the Inverse Mills' Ratio is added as a control variable. (See Katz 2009; Givoly et al. 2010)

NOTES