ABSTRACT

Title of Document:	THE INFLUENCE OF PUBLIC EQUITY OWNERSHIP ON EARNINGS MANAGEMENT THROUGH THE MANIPULATION OF OPERATIONAL ACTIVITIES
	Yura Kim, Doctor of Philosophy, 2011
Directed By:	Professor Michael D. Kimbrough Department of Accounting and Information Assurance Robert H. Smith School of Business

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. 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. On the other hand, the penalties faced by public equity firms that fail to meet earnings benchmarks may put additional pressure on top managers to report positive and improved earnings and hence, may lead to greater distortion of reported earnings through the manipulation of operational activities. Consistent with the latter possibility, I find that public equity firms are more likely than private

equity firms to opportunistically alter normal operations to improve earnings by cutting R&D spending, 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 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.

In addition, I assess the performance implications of capital market-induced real earnings management, by examining its association with one-year ahead industry-adjusted return on assets (ROA). I find that public equity firms that just meet earnings benchmarks while altering real operating activities suffer from lower future industry-adjusted ROA than private equity firms that just meet earnings benchmarks while altering real operating activities. The finding for the public equity firms validates concerns that operating decisions made in response to capital market pressure may negatively impact future firm performance. On the other hand, the results for private equity firms indicate that alterations of operating activities made in the absence of capital market pressure are more likely to be strategically sound.

THE INFLUENCE OF PUBLIC EQUITY OWNERSHIP ON EARNINGS MANAGEMENT
THROUGH THE MANIPULATION OF OPERATIONAL ACTIVITIES

By

Yura Kim

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Advisory Committee:
        Professor Michael D. Kimbrough, Chair
        Professor Shijun Cheng
        Professor Rebecca Hann
        Professor Oliver Kim
        Professor Kyu Yong Choi

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Chapter 1: 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 to[2] meet earnings benchmarks through real earnings management[3], 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 2011; Chen 2009; Demers and Wang 2010). The availability of financial accounting data for public equity and private equity firms under SEC

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[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.

[3] I use real earnings management, manipulation of real operating activities, real operating activities management, and alteration of real operations interchangeably in this paper. They mean a management's action to alter reported earnings by changing the timing and structure of firms' operations such as sales and production, investments, and financing activities.

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.

Consistent with the latter possibility, Givoly et al. (2010) provide evidence that public equity firms engage in accruals management to a greater degree than do private equity firms, a finding that I corroborate for my sample. While this finding suggests that public equity firms may also have a greater tendency to engage in real earnings management to meet earnings targets, such a conclusion is not obvious because there are substantial differences between accruals management and real earnings management that justify a separate examination of real earnings management. In particular, the cost of executing accruals management and real earnings management is likely to differ. To the extent that firms have sufficient slack, managers are free to use permissible discretion to make advantageous accounting choices with little impact on other parts of the firm (Barton and Simko 2002). By contrast, real earnings management is potentially more difficult because re-orienting existing operations potentially requires coordination throughout the firm that may be hard to execute in immediate response to earnings goals. In addition, the implications of the two ways of meeting financial reporting objectives are different. While the direct impact of accruals management is only on reported earnings, real earnings management may impose actual costs on the firm to the extent managers depart from a strict long-term profit maximization objective when making operational decisions. Managers may make sub-optimal business decisions by changing the level and the timing of operating activities to deliver earnings targets. To the extent these changes affect the amount and volatility of current and future cash flows, the firm may subsequently suffer adverse business consequences (Yen 2008; Leggett et al. 2009). Moreover, the two forms of earnings management likely differ in the ease with which investors can detect them. Graham et al. (2005) report that

managers prefer real operating activities management to accruals-based earnings management since it is more difficult for outsiders to distinguish the firm's optimal business decisions from abnormal and suboptimal operational decisions.

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 Bushee (1998) and Roychowdhury (2006): (1) the acceleration of 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, (3) the reduction of discretionary expenses such as selling, general and administrative expenses and advertising expenses, and (4) the reduction of research and development expenditures, which must be expensed immediately but are typically expected to generate long-term benefits.

I examine whether firms exhibit the above forms of real earnings management to a greater degree when they are in danger of failing to meet the zero earnings benchmark and the zero earnings growth benchmark, both of which have been shown to be important focal points for equity investors. I then examine whether private equity and public equity firms differ in their tendency to engage in real earnings management to avoid missing earnings benchmarks. I find that the public equity firms are more likely than private equity firms to opportunistically alter normal operations to meet earnings benchmarks by cutting R&D spending, 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: (1) the Heckman two-stage correction, (2) propensity score matching techniques, and (3) intertemporal analysis for firms whose public or private firm status changed during the sample period. In addition, these results are robust to simultaneous equation model specifications based on Zang (2011) and Yang et al. (2010) that account for managers' ability to jointly use accrual management and real earnings management to meet earnings targets. 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 (2007) 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.

Further, I examine whether the use of real earnings management to meet earnings benchmarks is associated with future firm performance. I conjecture that public equity firms under capital market pressure are more likely to engage in real earnings management to just meet the market expectations while private equity firms alter their normal operations as strategic firm decisions. I use industry-adjusted ROA to measure firm performance. To test whether real earnings management affects future firm performance, I only consider firms that just meet earnings benchmarks either by using real earnings management or not. I find evidence that the public equity firms that just meet the short-term earnings goals while engaging in real earnings management experience more negative future performance while private firms that just meet earnings benchmarks while engaging in real earnings management do not. This may indicate that private equity firms' deviations from their normal operations are more likely to be driven by strategic as opposed to opportunistic considerations.

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. In this regard, this study is similar to concurrent work by Bharath, Dittmar and Sivadasan (2010) who examine whether the pressure of the stock market leads firms to make suboptimal operational decisions by examining the changes in plant productivity for a sample of public firms that go private. They find no changes in plant productivity once firms go

private from which they conclude that the public equity markets do not impair operational decisions. By contrast, I find that public equity firms do appear to alter their operations in the short-term more than private firms in response to the pressure to meet earnings targets. In addition, I find that alterations of operations made by public equity firms in apparent response to capital market pressure appear to negatively impact firm performance. The contrasting conclusions likely result from the fact that Bharath et al. (2010) examine realized performance of firms that go private but fail to consider managers' incentives to use real earnings management to meet earnings benchmarks whereas I focus on future performance consequence of the firms engaging in real earnings management in order to just meet earnings benchmarks.

Second, I extend Givoly et al. (2010) who examine the role of ownership structure on reported earnings. My finding that public equity firms engage in a greater degree of real earnings management to meet earnings benchmarks than private equity firms is largely consistent with Givoly et al.'s (2010) finding that public equity firms engage in a greater degree of accruals management to meet earnings benchmarks than private firms. 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.

The paper proceeds as follows: I discuss the motivation of my study and develop testable hypotheses in the next section. Data and sample selection procedure and research design are discussed in Chapter 3, followed by descriptive statistics to present different characteristics among two types of the firms and the results of the empirical tests in Chapter 4. Finally, Chapter 5 presents a summary and conclusions.

Chapter 2: Literature Review and Hypothesis Development

2.1 The importance of earnings benchmarks in public equity markets

Earnings is a highly scrutinized measure of firm performance, and is a common input in the managers' performance evaluations. The literature discusses three benchmarks that serve as convenient focal points for investors in assessing firm performance: profits, growth over prior year earnings, and financial analysts' earnings forecasts (Burgstahler and Dichev 1997; Degeorge et al. 1999; Fischer and Stocken 2004). Prior studies demonstrate that the stock market rewards firms that consistently meet earnings forecasts (Kaznik and McNichols 2002; Bartov, Givoly and Hayn 2002; Lopez and Rees 2002; Brown and Caylor 2005) and disproportionately penalizes those firms that miss earrings forecasts (Skinner and Sloan 2002).

Managers of firms with publicly traded equity 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).

Stein (1989) theoretically shows that as managers become more concerned about the stock price, they behave more myopically. Consistent with this notion, a substantial body of research on public equity 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). Researchers cite this empirical regularity as evidence that

managers of public equity firms engage in income-increasing earnings management to avoid missing earnings benchmarks. (Beaver, McNichols and Nelson 2004; Dechow, Richardson, and Tuna 2003).[4]

Earnings targets may be reached through accruals management, real earnings management, or both (Burgstahler and Dichev 1997; Degeorge et al. 1999; Roychowdhury 2006: Chen et al. 2010). Accruals management means making cosmetic changes in the books within generally accepted accounting principles (GAAP) accounting choices without affecting firm's real cash flows. Real earnings management is management's intervention in a firm's "normal" daily operations to meet the earnings benchmarks (Roychowdhury 2006). Beatty et al. (2002), Bergstresser and Philippon (2005) and Givoly et al. (2010) explore the impact of capital market pressure on firms' tendency to use accruals management to meet earnings benchmarks. In this paper, I focus on the impact of capital market pressure on firms' tendency to engage in real earnings management. In the next section, I discuss the trade-offs and relevant differences between accruals and real earnings management that justify a separate examination of real earnings management.

2.2 The Trade-off between accruals management and real earnings management

Real earnings management takes several forms. Specifically, firms may attempt to increase sales revenue by giving aggressive sales discounts and promotions or by relaxing credit policies. While sales discounts, promotions and lenient credit terms may increase revenue during

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[4] Alternatively, Durtschi and Easton (2005) document that discontinuity around zero is not explained by earnings management to avoid losses, but rather it is attributable to other factors such as deflation and sample selection criteria. They argue that discontinuity in earnings occur because deflator differs between the left and the right of zero, and encourage researchers to check to see if the deflator differs considerably between the left and the right of zero. I check the mean difference of beginning-of-the-year total assets which is the deflator I use in this study for my left of zero firms and the right of zero firms and find no statistically significant difference in means between firms that just miss profits and just meet positive income.

the promotion period, they may lead to a drop in sales volume in future periods as well as lower cash flows in the current period. In addition, firms may decide to overproduce in order to spread out fixed production costs over more units, but bury the production costs in inventory at the end of the reporting period. This lowers the cost of goods sold per unit, increases margins, and ultimately raises profits in the current reporting period. However, overproduction results in lower cash flows due to higher production costs. Finally, firms may cut positive net present value projects or delay some discretionary expenses until later periods when earnings prospects are more favorable. Although curtailing such expenditures will boost current period earnings, it may have a negative impact on future performance if such expenditures are necessary for the firm's long-run viability. Other studies examine different kinds of real earnings management such as strategic timing of asset sales (Bartov 1993; Gunny 2010). They argue that managers strategically choose the timing of asset sales to recognize realized gains from a sale of long-lived assets to meet an earnings target. When small losses or small earnings declines are expected, managers are more likely to be opportunistically deviate from normal operating practice to meet the earnings targets.

Although Givoly et al. (2010) explore whether the capital market pressure faced by public equity firms affects their tendency to engage in accruals management in order to meet earnings benchmarks, I argue that there are a number of differences between accruals and real earnings management that justify my separate examination of real earnings management. A key difference between accruals management and real earnings management is that real earnings management directly affects the cash flows of the firm while accruals management is simply an inter-temporal shift of income that does not affect the operating activities of the firms. This difference affects the relative ease with which each form of earnings management can be

undertaken. To the extent that firms have sufficient slack, managers can make advantageous accounting choices within their discretion to inflate current year earnings (Barton and Simko 2002). Moreover, the decision to engage in accruals management can be made at the end of the reporting period. On the other hand, real earnings management is more difficult because managers must predict the earnings performance earlier in the period and make operational decisions in anticipation of failing to meet various earnings goals. That is, real earnings management requires managers' anticipatory decision making and coordination to execute alternative business options.

There are limits on managers' ability to engage in accruals management, however. They can only manage accruals when the balance sheet has sufficient slack to accrue additional amounts (Barton and Simko 2002). Using Barton and Simko's (2002) measure of accounting flexibility, Wang and D'Souza (2006) find that firms with less accounting flexibility are more likely to cut R&D expenditures. Moreover, accruals-based earnings management is more likely to be subject to auditor or regulatory scrutiny and is more likely to draw investors' attention than real earnings management. Hence, real earnings management becomes more appealing when the balance sheet is already at a point where accruals can no longer be managed (Barton and Simko 2002) or when firms face other stakeholder constraints on their accruals management activity. For example, a recent study by Barton et al. (2010) find evidence that ethical firms manage earnings primarily through the alteration of real operating activities rather than through accruals manipulation. Their measure of corporate ethical behavior is the involvement in corporate social responsibility (CSR) activities such as production of safe goods, care for environment and etc. Their argument is based on the notion that the earnings number that is produced as a result of accruals management is not a true representation of the firm's financial position while earnings

that reflect the effect of real actions do represent the firm's true position. Cohen et al. (2007) test firms' choices between real and accruals management of pre- and post-SOX periods and find evidence of a switch toward real earnings management due to tighter auditor and regulatory scrutiny after the passage of SOX. The empirical evidence provided by Cohen et al. (2007) is related to an analytical finding by Ewert and Wagenhofer (2005) that tighter accounting standards reduce accruals management but increase costly real earnings management. Graham et al. (2005) provide survey evidence that managers often make business decisions that may deviate from a normal level of operations to meet short-term earnings goals since it may be difficult to find out whether managers make suboptimal business decisions. Because the costs of and likelihood of detection of real earnings management versus accruals management differ and because real earnings management has a direct impact on firms' cash flows while accruals management does not, I examine the impact of capital market pressure on firms' tendency to alter operations in order to meet earnings targets.

2.3 Degree of capital market pressure by the firm's ownership type

Private firms with publicly traded debt 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. Accordingly, Givoly et al. (2010) compare private firms with publicly traded debt to firms with publicly traded equity to isolate the impact of capital market pressure on managers' accrual management behavior. I exploit the same setting to isolate the impact of capital market pressure on managers' tendency to engage in real earnings management to meet earnings targets.

Although past research shows that public equity firms engage in more accruals management to meet earnings targets than private firms, it is not clear whether private and public firms will differ in their use of real earnings management to meet earnings targets. If the capital market creates earnings pressure for managers to be short-term oriented then private firms that are immune from such pressures may exhibit less real earnings management to meet earnings targets. 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. 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. On the other hand, public equity ownership requires more transparency and higher reporting quality since the market monitors the corporation more actively. 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 real 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.

2.4 Incentives to meet earnings benchmarks faced by private firms with public debt

As discussed in section 2.3, my comparison of private firms with public debt to public equity firms is based on the fact that private equity firms do not face capital market pressure from public equity markets. Therefore, the comparison isolates the effect of capital market pressure on firms' tendency to engage in real earnings management to meet earnings targets.

Although private firms with public debt 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 debt cost of capital (Jiang 2007). Therefore, private firms with public debt 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.

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 2007; 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 (2007) finds that the firms with high default risks enjoy bigger benefits from meeting earnings benchmarks in terms of the cost of debt measured by credit ratings and bond yield spread than the firms with low default risks. Moreover, Jiang (2007) 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 the incentive for firms with public debt to beat earnings benchmarks rises as they approach default and that the loss avoidance benchmark is likely to be more important than the earnings growth benchmark for these firms.

While the foregoing discussion establishes that private firms with public debt have incentives to avoid missing the zero profit target, particularly as they become more distressed, it leaves an open question of whether these firms will use real earnings management to meet these targets to the same extent as public equity firms. Differences between the two types of firms in the tendency to use real earnings management may arise because bondholders and stockholders may respond differently to the practice. Specifically, stockholders, who have a preference for risky projects (Jensen and Meckling 1976), may view real earnings management as impairing future financial performance while bondholders may prefer real earnings management to the extent that it conserves firm resources and reduces risky investment by delaying R&D or other discretionary expenditures, for example. Consistent with this notion, Ge and Kim (2009) find that, in contrast to prior findings that the stock market discounts earnings achieved through real earnings management (Mizik and Jacobson 2007), the bond market does not penalize firms that meet the earnings benchmarks through the manipulation of real activities such as sales, production or discretionary expenses.

Bondholders' view of real earnings management is likely to change as a firm moves closer to default and bondholder-shareholder conflicts become more pronounced. Specifically, bondholders may no longer view real earnings management as a desirable operating strategy when they are concerned that the inflated earnings and share prices that may result from real

earnings management may facilitate shareholder expropriation of wealth from bondholders via stock option awards (Ge and Kim 2009) or excessive dividend payouts (Ahmed et al. 2002). Consistent with this possibility, Ge and Kim (2009) show that bondholders request higher risk premiums for firms that achieve earnings targets through real earnings management when they expect potential wealth transfers to shareholders through stock options. This finding suggests that the degree of shareholder-bondholder conflicts affects the decisions of managers of private firms with public debt to manipulate operations in an attempt to beat relevant earnings targets.

2.5 Consequences of capital-market induced real earnings management to meet earnings targets

Several studies investigate the effect of real earnings management on future firm performance (Leggett et al. 2009; Gunny 2010). One stream of research supports the managerial opportunism hypothesis which states that managers decide to cut investment or expenditures at the expense of long-term performance in order to enjoy higher current stock prices or better compensation packages. For example, firms that meet earnings benchmarks through real earnings management suffer from subsequently lower earnings measured by return on assets and operating cash flows (Leggett et al. 2009), lower earnings growth (Yen 2008), and higher cost of equity (Kim and Sohn 2009). The capital market does not reward the firms that meet the earnings forecast through earnings management (Athanasakou et al. 2009).

Alternatively, other studies find no negative future performance consequences to the practice of real earnings management in order to achieve earnings targets. These studies favor the operational efficiency hypothesis, which predicts that managers deviate from the normal levels of sales, production and investments for better future performance. Gunny (2010) finds

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that the firms that meet the earnings benchmarks through real earnings management have higher return on assets compared to the firms that do not adjust real operating activities and miss earnings targets. Chen, Rees and Sivaramakrishnan (2010) compare future operating performance of firms that meet analysts' forecasts through accruals management to firms that meet analysts' expectations through real operating activities management. They find empirical evidence that those firms that meet analysts' forecasts using real operating activities management rather than using accruals management outperform in the future.

I re-examine the impact of real earnings management on future financial performance by examining whether the practice has different consequences for firms that engage in the practice while under capital market pressure (i.e. public equity firms) versus firms that engage in the practice while insulated from capital market pressure (i.e. private equity firms with public debt). If the decision to alter operations in response to capital market pressure causes firms to deviate from a long-term profit maximization objective while similar decisions made in the absence of capital market pressure do not, then public equity firms should experience more adverse future performance effects from the practice than private firms. In a related study, Bharath et al. (2010) study whether earnings pressure of the stock market leads firms to make myopic decisions by examining the changes in plant productivity of firms that go private. They find no evidence that firms' plant productivity improves after opting out of the public equity market from which they conclude that the public equity market does not impair firms' operational decisions.

2.6 Hypothesis Development

As discussed in Section 2.1, the capital market exerts pressure on firms to meet various earnings benchmarks. One way to meet these benchmarks is through the temporary alteration of firms' operations. As discussed in Section 2.3, private firms with public debt do not face the same capital market pressure and, therefore, provide a suitable comparison group in order to isolate the effect of capital market pressure on firm behavior. To the extent capital market pressure leads firms to alter operations in order to meet earnings targets I expect this behavior to be more pronounced for public equity firms than for private firms with public debt. Accordingly, I test the following hypothesis, stated in the alternative form.

H1: Public equity firms exhibit more real operating activities manipulation to meet earnings benchmarks than private equity firms.

As discussed in section 2.4, bondholders find earnings informative, particularly as firms gravitate toward default. Therefore, private equity firms with public debt, although immune from capital market pressure exerted by equity markets, have incentives to meet relevant benchmarks in order to satisfy bondholders and obtain a lower cost of debt capital. 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.

H2: 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.

As discussed in section 2.4, Jiang (2007) and Coppens and Peek (2005) find that reporting a positive income is a more salient earnings benchmark for bondholders than reporting earnings growth. Based on this finding, 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.

H3: 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.

As discussed in section 2.5, there is contrasting evidence on the future performance impacts of real earnings management to meet earnings targets. While some studies find that the firms that meet their earnings targets through manipulating real activities suffer from adverse future firm performance (e.g. Yen 2008; Leggett et al. 2009; Kim and Sohn 2009), Gunny (2010) argues and finds evidence that real earnings management to achieve earnings targets results in an efficient allocation of resources and thus, does not result in decreases in future firm performance. I examine whether real earnings management to meet earnings targets has different future performance implications when it occurs under capital market pressure versus when it does not.

That is, I compare the effects on future performance of the practice for public equity firms and private firms with public debt. If private firms with public debt engage in real earnings management primarily to efficiently allocate resources rather than in response to capital market pressure then such behavior should have less negative future performance consequences than the same behavior by public equity firms who are more likely to be responding to capital market pressure and, therefore, deviating from a long-term profit maximization objective. Therefore, I test the following hypothesis to examine differences between private equity and public equity firms in the consequences of meeting earnings targets through real earnings management.

> *H4: Public firms that just meet the earnings benchmarks while engaging in real earnings management suffer more from adverse future firm performance than do their private equity counterparts that just meet earnings benchmarks while engaging in real earnings management.*

Chapter 3: The Model

3.1 Data and sample selection

The sample selection procedures are summarized in Table 1. My sample of firms is taken from Compustat for the years 1987-2009.[5] I exclude financial institutions (SIC code 6000-6999) and other regulated industries (SIC code 4800-4900). Regulated industries often face conflicting incentives to report lower income (Burgstahler and Dichev 1997). Typically, financial institutions are separately examined since their financial ratios and valuations metrics are different from general industries. The financial institutions' loan ratio, adequacy ratio, and liquidity ratio are strictly regulated and that financial leverage, as well as receivables deflated by total assets, is not meaningful (Fields et al. 2004). Thus, their earnings management is highly dependent on regulatory oversight (Shen and Chih 2005). 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, or have an S&P senior debt rating[6] 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).[7] 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.

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[5] 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.

[6] 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).

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

[Insert Table 1 here]

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. 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. Table 2 summarizes the representation of public equity and private equity with public debt in the sample. Private equity (public debt firm-years) firm-years comprise only about 11.3% of my sample[8] while public Equity firm-years comprise the remaining 88.7% of my sample. In this study, firms are classified as public equity firms if the firms publicly trade equity in a major stock exchange and these firms may or may not have publicly traded debt. Firms with access to public debt markets over my sample period are about 18% out of total observations on average.[9] Public debt

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[8] The percentage of private equity firm-year observations out of total observations is 3.9% before restricting my sample to have at least $50 million of total debt, similar to the sample distribution in Givoly et al. (2010). They report that 3.5% of their firm-year observations are private equity firm-years.
[9] The percentage of firms with access to public debt markets consists of 18% of total observations before restricting my sample to have at least $50 million of total debt, Similarly, Faulkender and Peterson (2006) report that the public debt sample consists of about 19% of their total sample over the period 1986-2000.

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. Panel A of Table 2 presents the percentage of private equity and public equity firm-year observations across the sample periods of 1987 and 2009. Panel B presents a sample distribution grouped by different real earnings management metrics. The sum of private firms and public firms may not be equal to the total number of firms since the firms can switch their firms' status over the sample period. Panel C of Table 2 shows industry distributions (2-digit SIC code) of the sample by ownership type. Panel D of Table 2 presents S&P debt rating categories for my sample firms. I partition sample firms with S&P credit ratings into the high default risk group if the firm has an investment grade rating (BBB- or above) and low default risk group if the firm has a speculative grade rating (BB+ or below). Of 26,996 firm-year observations with public debt, 42.44%[10] of the observations are classified as being in the high default group.

[Insert Table 2 here]

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[10] Givoly et al. (2010) report that 53% of private equity firm-year observations have non-investment grade debt while 22% of public equity firm-year observations have non-investment grade debt. I have 45% of private equity firm-year observations with non-investment grade debt and 42% of public equity firm-year observations with non-investment grade debt. Givoly et al. (2010) have the lower percentage of non-investment grade debt for public equity firms compared to my data because about 53% of their public equity firms with public debt do not have S&P senior debt rating. Excluding firm-year observations with non-rated debt, non-investment grade of public equity firm-year observations consists of 48%. High percentage of firms without S&P senior debt rating is due to the fact that they select firms with at least $1 million of total debt while I restrict the firms to have at least $50 million of total debt. Rating agencies issue debt ratings for all public debt issues with par values of at least $50 million.

I obtain an S&P credit rating data for the issuing firm from the Ratings section of Compustat North America Fundamentals Annual database.[11] I use the public bond rating as a proxy for the firm's financial distress (Plummer and Tse 1999). Where the firms have investment grade bonds (BBB+ or above), the firms have low default risk. Firms with speculative bonds are classified as high 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 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.

3.2 Research design

3.2.1 Myopic R&D curtailment model

To test whether the degree of real earnings management to meet the earnings thresholds differs by the firm's ownership type, I investigate whether the firm's propensity to engage in income-increasing real activities when facing small losses or small earnings decline relative to the prior year differs for public equity versus public debt firms. First, I focus on myopic R&D curtailment to avoid earnings disappointments as examined by Bushee (1998). I test whether a firm's decision to cut R&D expenditures to meet earnings targets varies between public debt and public equity firms. Under earnings pressure, short-sighted managers may decide to cut R&D expenditures to improve short-term earnings performance because the benefits of R&D usually

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[11] 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.

take a long time, often beyond their tenure (Dechow and Sloan 1991). Opportunistic decisions to cut R&D expenditures have been the subject of much research interest because it implies that the firm may be making sub-optimal operating decisions, sacrificing long-term value and growth prospects of the firm. I study how the degree of capital market pressure based on the firm's ownership type influences a firm's myopic behavior. The ownership type of the firm captures the degree of capital market pressure.

Managers are more likely to opportunistically cut R&D expenditures if they can meet the earning goals by doing so (Bushee 1998). The firm is suspected of managing earnings through myopic R&D curtailment if their pretax income reports small loss (Cheng 2004). Specifically, the firm is suspected of myopically cutting R&D expenditures if pretax income$_{t-1}$ < (pretax income + R&D expenditure)$_t$ ≤ (pretax income + R&D expenditures)$_{t-1}$. An indicator variable, SUSPECT1, equals one if the firm-year belongs to the above category and, zero otherwise. If the sum of pretax income and R&D expenditures in the current year is larger than the sum of pretax income and the R&D expenditures in the prior year, then the firm has no incentive to cut R&D expenditures to report earnings growth. If the sum of pretax income and R&D expenditures in the current year is less than the pretax income of the last year, then the firm cannot meet the earnings growth benchmark with R&D cuts. The firm reports small positive earnings if its pretax income is just right of zero.

Figure 1 presents the distribution of income before extraordinary items scaled by lagged total assets for near suspect firm-year observations. Earnings are divided into 30 intervals of a width of 0.005 over the range of - 0.075 to + 0.075 (Degeorge et al. 1999; Roychowdhury 2006; Givoly et atl. 2010).[12] The 16th earnings interval where scaled earnings are just right of zero

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[12] Following the bin definition suggested by Degeorge et al. (1999), the bin width is calculated as $2*2(IQR)n^{-1/3}$, where IQR is the inter-quartile range of the variable and n is the number of observations. The bin width using the

includes suspect firm-years. (a) of Figure 1 presents earnings distribution for both public and private firms combined and (b) and (c) present earnings distribution for private equity firms and public equity firms, respectively. (a), (b), and (c) of Figure 1 show the discontinuity at zero.[13] However, it is apparent that small positive earnings are less frequent for private equity firms. Figure 2 shows the earnings changes distribution over the 30 intervals of a width 0.005 over the range of -0.075 and +0.075. Earnings change is the change in income before extraordinary items deflated by lagged total assets. Similar to Figure 1, the 16th earnings change interval contains firms with small positive earnings in the period. Figure 2 presents a significantly high frequency of small positive earnings changes for public equity firms. Private equity firms exhibit different earnings distribution behavior. Private equity firms show high occurrence of small earnings declines from the prior year.

[Insert Figure 1 & 2 here]

Firms that go public with their debt are different from firms that go public with equity. A firm's choice to go public with their debt or equity is endogenous based on ex ante firm characteristics and affects firm's policies and operating decisions. I use the Heckman (1979) two-stage approach to control for endogeneity of a firm with respect to going public with debt versus with equity. I compute an inverse Mills ratio for all sample firms. In the first stage, I estimate the Probit model using factors that are related to a firm's choice of going public with

above formula for income deflated by lagged total assets and a change in income deflated by lagged total assets is 0.007 and 0.005 respectively. I use single-bin-width of 0.005 in this study. The use of a bin width of 0.007 leads to statistically similar results.
[13] Durtschi and Easton (2005) argue that the discontinuity at zero is due to scaling. I examine earnings distributions of unscaled net income and changes in net income and still find earnings discontinuity at zero and zero earnings growth. Eurtschi and Easton (2005) suggest checking the distributions of a deflator between the left of zero and the right of zero. I compute the mean difference of lagged total assets between the left of zero and the right of zero and find no significant difference difference between two groups.

debt. Following several studies (Katz 2009; Givoly et al. 2010), I consider size of the firm, leverage, book value of equity, sales growth, return on assets, quick ratio, operating cycle, firm age, net operating loss carryforwards, the ratio of property, plant and equipment to total assets, and a loss indicator variable to compute an inverse Mill's ratio for each firm.[14] Then, I include the inverse Mill's ratio as an additional control variable in the second stage.

To test the relationship between capital market pressure and myopic investment decisions, I examine whether private equity firms are more or less likely to engage in income-increasing real earnings management than public equity firms. The dependent variable is one if the firm cuts R&D expenditures relative to the prior year and, zero otherwise.[15] The logistic model takes the following form:

$$\text{Prob (CURTD)} = \beta_0 + \beta 1 \text{PRIVATE}_{i,t} + \beta_2 \text{SUSPECT1\_PRIVATE}_{i,t}$$
$$+ \beta_3 \text{SUSPECT1\_PUBLIC}_{i,t} + \beta_4 \text{SIZE}_{i,t} + \beta_5 \text{LEVERAGE}_{i,t}$$
$$+ \beta_6 \text{CSALES} + \beta_7 \text{CCAPX}_t + \beta_8 \text{PCRD}_{i,t} + \beta_9 \text{CIRD}_{i,t} + \beta_{10} \text{CGDP}_{i,t}$$
$$+ \beta_{11} \text{CFUND}_{i,t} + \beta_{12} \text{FCF}_{i,t} + \beta_{13} \text{DIST}_{i,t} + \beta_{14} \text{INV\_MILLS}_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where SUSPECT1 is an indicator variable that equals to one if firm-year shows small profits or small increase in earnings relative to prior year, and zero otherwise. PRIVATE is an indicator variable that equals one if the firm-year belongs to private equity-public debt category, and zero otherwise. SUSPECT1_PRIVATE and SUSPECT1_PUBLIC capture the difference in R&D curtailment between public equity firms and private equity firms. Control variables to control for

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[14] INV_MILLS equals the probability density function of the standard normal divided by the cumulative density function from the equation. For private equity firms, inverse Mills ratio is $\lambda(Z) = \phi(Z)/\Phi(Z)$ and for public equity firms it is $\lambda(Z) = -\phi(Z)/(1-\Phi(Z))$.

[15] I also used the difference between the current period R&D expenses and the 3-year average R&D expenses to smooth out prior year's myopic R&D cuts.

firm characteristics and R&D investing environment are explained in the next section. A finding that $\beta_3 > \beta_2$ would indicate that public equity firms are more likely to cut R&D to meet earnings benchmarks than private firms and would, therefore, support H1.

3.2.2 Real earnings management estimation models

Because current GAAP requires that R&D investments be expensed rather than capitalized, myopic managers have incentives to cut R&D expenses to meet the near-term earnings goal. However, managers may decide to manipulate other operating activities. 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:

$$\frac{CFO_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_t}{Asset_{t-1}} + \varepsilon_t \tag{2}$$

where Asset is the total assets of the period t, Sales 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 (2).

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:

$$\frac{COGS_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_t}{Asset_{t-1}} + \varepsilon_t \tag{3}$$

$$\frac{\Delta INV_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{\Delta Sales_t}{Asset_{t-1}} + k_3 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \tag{4}$$

where COGS is cost of goods sold in year t, ΔINV 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 (3) and (4), I estimate normal level of production costs (PROD) which is the sum of COGS and ΔINV.

$$\frac{PROD_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{Sales_t}{Asset_{t-1}} + k3 \frac{\Delta Sales_t}{Asset_{t-1}} + k4 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \tag{5}$$

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 COGS 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:

$$\frac{DISEXP_t}{Asset_{t-1}} = k_0 + k_1 \frac{1}{Asset_{t-1}} + k_2 \frac{\Delta Sales_{t-1}}{Asset_{t-1}} + \varepsilon_t \qquad (6)$$

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 (3), (5) and (6). 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, SUSPECT2, 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:

$$\text{Abnormal RM} = \Upsilon_0 + \Upsilon_1 \text{PRIVATE}_{i,t} + \Upsilon_2 \text{SUSPECT2\_PRIVATE}_{i,t}$$

$$+ \Upsilon_3 \text{SUSPECT2\_PUBLIC}_{i,t} + \Upsilon_4 \text{SIZE}_{i,t} + \Upsilon_5 \text{LEVERAGE}_{i,t} + \Upsilon_6 \text{ROA}_{i,t}$$

$$+ \Upsilon_7 \text{SALESGROWTH}_v + \Upsilon_8 \text{NOA}_{i,t} + \Upsilon_9 \text{LOSS}_{i,t} + \Upsilon_{10} \text{INV\_MILLS}_{i,t}$$

$$+ \varepsilon_{i,t} \qquad\qquad (7)$$

where Abnormal RD is three measures of real earnings management estimated from (2), (5) and (6) and an aggregate of three measures: abnormal cash flow from operations, abnormal production costs, abnormal discretionary expense, and an aggregate of abnormal cash flows, production costs and discretionary expenses. Regression equation (7) 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.

3.2.3 Propensity score matched-pair methodology

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

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[16] Francis and Lenox (2008) study selection problems in accounting research and suggest the propensity score methodology over the Heckman (1979) procedure.

3.2.4 Simultaneous equations model to test trade-off between accruals and real earnings management

Zang (2011) and Yang et al. (2010) both test the trade-off between two methods of earnings management using the simultaneous equations model. While Zang (2011) argues that firms in general prefer real earnings management, Yang et al. (2010) find that firms are more likely to use accruals management. They document that the managers choose between two types of earnings management based on the costs of such behavior (Zang 2011) and the firms' abilities in using either or both types of earnings management (Yang et al. 2010). Besides costs of each type of earnings management and the firms' abilities in using earnings management tools, I conjecture that the earnings distance from the actual earnings to the targeted earnings influences the firm's trade-off decisions. In other words, I examine whether managers' trade-off decisions between accruals management and real earnings management are related to the earnings performance of the firm that beat, meet, just miss, or miss earnings benchmarks. Managers are likely to use all the available earnings management tools when they believe that the earnings targets can be reached through earnings management. In contrast, if pre-managed earnings are so far from earnings goals that they cannot be reached with the use of available forms of earnings management, then the managers are less likely to aggressively manage earnings. In this case use of earnings management to reduce the gap between the actual and the target earnings, is likely to have less direct economic costs as well as less indirect costs in the form of regulatory scrutiny and litigation risk. Thus, accruals management and real earnings management are substitutes.

To test whether a firm's trade-off decision is affected by the earnings distance from the goals, I conduct the Hausman test separately for four earnings groups: beat, just meet, just miss

and miss firms. Firms are categorized as JUST MEET firms if (1) net income divided by total assets is greater than or equal to 0.005 but less than 0.005, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to 0 but less than 0.005. Firms are BEAT firms if (1) net income divided by total assets is greater than or equal to 0.005, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to 0.005 and they are not categorized as MEET firms. JUSTMISS firms are the firms where net income divided by total assets is greater than or equal to -0.005 but less than 0, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to -0.005 but less than 0 and (3) they are not categorized and MEET or BEAT firms.

Similar to Zang (2011), I examine the relationship between accruals management and real earnings management using simultaneous equations and test the endogeneity of real earnings management and accruals management with the Hausman test.

$$\text{Abnormal RM} = \phi_0 + \phi_1 \text{Abnormal Accruals}_{i,t} + \phi_2 \text{PRIVATE}_{i,t} + \phi_3 \text{SUSPECT\_PRIVATE}_{i,t}$$

$$+ \phi_4 \text{SUSPECT\_PUBLIC}_{i,t} + \phi_5 \sum \text{Control Variable of RM}$$

$$+ \phi_6 \sum \text{Other Controls} + \phi_6 \text{INV\_MILLS}_{i,t} + \phi_8 \text{PRIVATE}_{i,t} * \text{INV\_MILLS}_{i,t}$$

$$+ \upsilon_{i,t} \quad\quad\quad\quad\quad\quad\quad\quad (a)$$

$$\text{Abnormal AM} = \lambda_0 + \lambda_1 \text{Abnormal RM}_{i,t} + \lambda_2 \text{PRIVATE}_{i,t} + \lambda_3 \text{SUSPECT\_PRIVATE}_{i,t}$$

$$+ \lambda_4 \text{SUSPECT\_PUBLIC}_{i,t} + \lambda_5 \sum \text{Control Variable of AM}$$

$$+ \lambda_6 \sum \text{Other Controls} + \lambda_7 \text{INV\_MILLS}_{i,t} + \lambda_8 \text{PRIVATE}_{i,t} * \text{INV\_MILLS}_{i,t}$$

$$+ \nu_{i,t} \qquad\qquad\qquad\qquad\qquad\qquad\text{(b)}$$

The above equations are estimated using two-stage least squares. In the equation, Abnormal RM is real earnings management measures: Abnormal CFO, Abnormal PROD, or Abnormal DISEXP and Abnormal AM is discretionary accruals based on the modified Jones model (Dechow, Sloan and Sweeney 1995). In the first stage, I regress each endogenous variable on the exogenous variables and then compute predicted values of abnormal level of real activities and abnormal level of accruals. The predicted values of the two regressions are used as endogenous variables in the second stage regressions. Other controls are firm-specific control variables including size of the firm, ROA, sales growth, and loss firm indicator variable. SIZE is computed as the natural logarithm of total assets and controls for the size effect on the earnings management. Firms with high ROA are profitable firms and are less likely to manage earnings. Growing firms are smaller firms and they are expected to engage in more earnings management. LEVERAGE controls the factors that are associated with private firms. LEVERAGE is expected to be positively associated with earnings management because high leverage is associated with more debt covenants violations (Press and Weintrop 1990). Financially troubled firms are more likely to engage in earnings management and an indicator variable, LOSS, controls for the firms' financial distress. A firm's decision whether to remain private or public is not random I include inverse Mills ratio and an interaction term of PRIVATE dummy and inverse Mills ratio for additional control variables to correct for potential self-selection bias in the simultaneous equations. I estimate the Probit model using factors that are related to a firm's choice of going public with the debt size of the firm, leverage, book value of equity, sales growth, return on assets, quick ratio, operating cycle, firm age, net operating loss carryforwards, the ratio of

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property, plant and equipment to total assets, and a loss indicator variable (Katz 2009; Givoly et al. 2010).

I use the modified Jones model suggested by Dechow, Sloan, and Sweeny (1995). Total accruals (TA) are calculated as follows:

$$TA_{j,t} = EARN_{j,t} - CFO_{j,t},$$

Where $EARN_{j,t}$ is the earnings before extraordinary items and discontinued operations and $CFO_{j,t}$ is cash flow from operations. I use accruals from cash flow data since accruals estimation from balance sheet can be less accurate (Collins and Hribar 2002). Abnormal accruals for firm j in year t are estimated by following cross-sectional regression for 2-digit SIC industry group in year t:

$$\frac{TA_{j,t}}{Asset_{j,t-1}} = k_{0,t} \frac{1}{Assets_{j,t-1}} + k_{1,t} \frac{\Delta Rev_{j,t}}{Asset_{j,t-1}} + k_{2,t} \frac{PPE_{j,t}}{Asset_{j,t-1}} + \varepsilon_{j,t},$$

where $\Delta REV_{j,t}$ is firm j's change in revenues in year t and $PPE_{j,t}$ firm j's gross value of property, plant, and equipment in year t. The industry- and year-specific parameters are then used to estimate firm-specific normal accruals as a percent of lagged total assets for my sample firms:

$$NA_{j,t} = \hat{k}_{0,t} \frac{1}{Asset_{j,t-1}} + \hat{k}_{1,t} \frac{(\Delta REV_{j,t} - \Delta AR_{j,t})}{Asset_{j,t-1}} + \hat{k}_{2,t} \frac{PPE_{j,t}}{Asset_{j,t-1}},$$

Where $AR_{j,t}$ is firm j's change in accounts receivable in year t. Then, abnormal accruals for firm j in year t are the difference between the total accruals and the firm-specific normal accruals:

$$AA_{j,t} = \frac{TA_{j,t}}{Asset_{j,t-1}} - NA_{j,t}.$$

Then, the absolute value of abnormal accruals is the earnings quality measure. Larger absolute value of abnormal accruals indicates lower accruals quality. In other words, earnings quality is said to be lower when the absolute value of abnormal accruals is larger.

Factors that influence real earnings management and accruals management differ (Zang 2011). She argues that managers choose between accruals management and real earnings management based on the costs and benefits of two types of earnings management. Following Zang (2011), I consider proxies for the determinants of real earnings management such as Z-score, RDindustry, HHI, and OVERPRODUCE. Altman's Z-score measures the ex ante probability of distress (Graham 1996, 2000). A firm's financial health can affect managers' operating decisions. Managers' concerns to survive under financial distress dominate reporting concerns (Graham et al. 2006). The Z-Score Model (Altman 1968) is calculated as follows:

$$Z\_SCORE = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5$$

where X1 = working capital/total assets, X2 = retained earnings/total assets, X3 = earnings before interest and taxes/total assets, X4 = market value equity/book value of total liabilities, and X5 = sales/total assets. RDindustry is one if the industry is classified as an R&D intensive industry, and zero otherwise (Lev and Sougiannis 1996). High R&D intensive industries are chemicals and pharmaceutics (2-digit SIC code 28), machinery and computer hardware (2-digit SIC code 35), electrical and electronics (2-digit SIC code 36), transportation vehicles (2-digit SIC code 37), and scientific instruments (2-digit SIC code 38). Since earnings management using R&D is detrimental for their long-term well-being for R&D intensive firms, in a situation where

they can meet their earnings target by using either income-increasing R&D or income-increasing accruals, they are likely to use income increasing accruals for earnings management (Yang et al. 2010). R&D intensive firms are likely to manage earnings using R&D much more cautiously as R&D management is costly for them (Roychowdhury, 2003). OVERPRODUCE is a measure of overproduction (Zang 2011). Overproduction cost is lower where the firm's fixed cost of the cost of goods sold portion is high. OVERPRODUCE is the ratio of property, plant, and equipment to total sales. The level of competition is related to the cost of deviating from optimal operation levels. I expect that a firm in a more competitive industry bears a higher cost of deviating from an optimal business strategy. I use Herfindahl-Hirschman Index (HHI) to proxy for market competition. The HHI is computed as the following:

$$HHI_{jt} = \sum_{i=1}^{N_j} S^2_{ijt},$$

where S_{ijt} is the market share of firm i in industry j at time t. Market share is computed using sales of the firm in Compustat. I use 4-digit SIC codes for industry classifications. The HHI is widely used measure of industry concentration. The high value of the HHI indicates high industry concentration or less market competition. The HHI is closer to zero for industries consisting of huge numbers of small firms of relatively equal size and increases as the number of firms in industry decreases and the firms. size is dispersed.

Proxies for the factors that influence accruals management are SOX, LITIGATION, NOA, and BIG5. BIG5 is one if the company is audited by big 5 audit firms, and zero otherwise. Big five audit firms are likely to be more experienced, have more resources and have more reputation at risk. Therefore, big five audit firms are likely to diligently monitor and discipline managers. Empirical evidence shows that big audit firms are associated with lower levels of

discretionary accruals (Becker, DeFond, Jiambalvo, and Subramanyam 1998). Based on evidence provided by Cohen et al. (2007) of a switch toward more real earnings management than accruals management due to tighter auditor and regulatory scrutiny after the passage of Sarbanes-Oxley (SOX), I include SOX, which is a dummy variable equal to one if the fiscal is 2002 and later and, zero otherwise. NOA is a measure of a bloated balance sheet (Barton and Simko 2002). Barton and Simko (2002) argue that net operating assets capture the degree of the bloated balance sheet. Firms with higher NOAs are more constrained in their ability to manage earnings upwards through accruals. I measure NOA as net operating assets scaled by the current period sales. Firms operating in high litigation risk industry face more scrutiny from investors and auditors and thus, they are less likely to use discretionary accruals to inflate earnings. Consistent with prior research (Francis et al. 1994; Soffer et al. 2000; Ali and Kallapur 2001), I use an industry dummy variable (LITIGATION) to identify firms in high litigation-risk industries: biotechnology (SIC codes 2833-2836), computers (SIC codes 3570-3577 and 7370-7374), electronics (SIC codes 3600-3674), and retailing (SIC codes 5200-5961).

3.2.5 Zero earnings benchmark versus zero earnings growth benchmark

In regression equations (1) and (7), 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 3, 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_ZERO2 is an indicator variable equal to 1 if the firm has small pretax income, and zero otherwise. MEET_LAST2 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 firm, I run the following two regressions separately:

$$
\begin{aligned}
\text{Abnormal RM} = {} & \Upsilon_0 + \Upsilon_1 \text{PRIVATE}_{i,t} + \Upsilon_2 \text{MEET\_ZERO2\_PRIVATE}_{i,t} \\
& + \Upsilon_3 \text{MEET\_ZERO2\_PUBLIC}_{i,t} + \Upsilon_4 \text{SIZE}_{i,t} + \Upsilon_5 \text{LEVERAGE}_{i,t} \\
& + \Upsilon_6 \text{ROA}_{i,t} + \Upsilon_7 \text{SALESGROWTH}_{i,t} + \Upsilon_8 \text{NOA}_{i,t} + \Upsilon_9 \text{LOSS}_{i,t} \\
& + \Upsilon_{10} \text{INV\_MILLS}_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{8}
$$

$$
\begin{aligned}
\text{Abnormal RM} = {} & \Upsilon_0 + \Upsilon_1 \text{PRIVATE}_{i,t} + \Upsilon_2 \text{MEET\_LAST2\_PRIVATE}_{i,t} \\
& + \Upsilon_3 \text{MEET\_LAST2\_PUBLIC}_{i,t} + \Upsilon_4 \text{SIZE}_{i,t} + \Upsilon_5 \text{LEVERAGE}_{i,t} \\
& + \Upsilon_6 \text{ROA}_{i,t} + \Upsilon_7 \text{SALESGROWTH}_{i,t} + \Upsilon_8 \text{NOA}_{i,t} + \Upsilon_9 \text{LOSS}_{i,t} \\
& + \Upsilon_{10} \text{INV\_MILLS}_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{9}
$$

3.2.6 Real earnings management and firm's financial distress

To test H2 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). S&P assesses industry risk, evaluates management, and analyzes a firm's competitive position. S&P also evaluates overall financial risk by reviewing financial policy, profitability and capital structure and asset valuation. Additionally, off-balance sheet items such as operating leases,

guarantees, and other contracts and obligations are examined prior to issuing bond ratings. 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 an investment-grade rating (BBB- or above) from S&P and zero, otherwise. S&P ratings measure the financial strength of the firm (Plummer and Tse 1999; Easton et al. 2009). 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 (7) separately for high default risks firms and low default risks firms.

3.2.7 Time-series analysis

Private firms with publicly traded debt may decide to go public with equity. Appendix A presents an example of a firm that originally had private equity and public debt, but later issued equity to the public. Since my study examines whether capital market pressure from public equity ownership leads to more or less real earnings management to meet earnings targets, I study the changes of firms' real earnings management by comparing the extent of real earnings management to meet earnings targets before and after public equity offerings. To examine

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whether a firm that changed its status from a private equity firm to a public equity firm increases earnings management through real operating activities manipulations to meet or beat earnings benchmarks, I run time-series analysis comparing real earnings management behavior prior to and subsequent to initial public offerings. My sample of firms is smaller than other initial public offering studies since I only consider those firms that initially were private equity, but had publicly traded debts, and subsequently issued public equity. I examine abnormal levels of cash flows, production, and discretionary expenses for years -4 to +3 relative to the event year. The event year is 0 in the year of the public equity offering. I divide sample firm-years around the public equity offerings into four periods to examine short-term and long-term changes of earnings management behavior (Bharath 2010). In so doing, I have a control sample that consists of firms that publicly traded debts and have never issued public equity over the sample period from 1987 to 2009. I conjecture that firms that went public engage in more real earnings management to meet earnings targets. Specifically, I predict that those firms that issued public equity show positive abnormal production costs, negative abnormal operating cash flows and abnormal discretionary expenses to meet earnings benchmarks. I run the following regression model to study private equity firms' (with public debt) pre- and post-public equity offerings and its influence on real earnings management to meet the short-term earnings goals:

$$
\begin{aligned}
\text{Abnormal RM} = {} & \Upsilon_0 + \Upsilon_1 \text{SUSPECT}_{i,t} + \Upsilon_2 \text{BEFORE\_LT} + \Upsilon_3 \text{BEFORE\_ST} \\
& + \Upsilon_4 \text{AFTER\_ST} + \Upsilon_5 \text{AFTER\_LT} + \Upsilon_6 \text{SUSPECT*BEFORE\_LT} \\
& + \Upsilon_7 \text{SUSPECT*BEFORE\_ST} + \Upsilon_8 \text{SUSPECT*AFTER\_ST} \\
& + \Upsilon_9 \text{SUSPECT*AFTER\_LT} + \Upsilon_{10} \text{SIZE}_{i,t} + \Upsilon_{11} \text{LEVERAGE}_{i,t} \\
& + \Upsilon_{12} \text{ROA}_{i,t} + \Upsilon_{13} \text{SALTESGROWTH}_{i,t} + \Upsilon_{14} \text{NOA}_{i,t} + \Upsilon_{15} \text{LOSS}_{i,t}
\end{aligned}
$$

$$+\varepsilon_{i,t} \tag{10}$$

where BEFORE_LT is one for 3 or 4 years before public equity offerings, BEFORE_ST is one for years of 1 or 2 years before public equity offerings, and zero otherwise. AFTER_LT is one for the 2-year period of 2 and 3 years after public equity offerings and AFTER_ST is one for the event year and for the one year immediately after the public equity issuance.[17] I interact these dummy variables with an indicator variable SUSPECT3[18] to examine before-after changes of earnings management through real operating activities manipulations for suspect firm-years. If public firms are more likely to engage in real earnings management, then coefficient on SUSPECT3_AFTER_ST (Υ_8) and SUSPECT3_AFTER_LT (Υ_9) are expected to be significant and negative for Abnormal COF, Abnormal DISEXP, and Abnromal ALL groups, and should be significant but positive for Abnormal PROD group. Findings that $\Upsilon_6 > \Upsilon_9$, $\Upsilon_7 > \Upsilon_8$, and ($\Upsilon_6 + \Upsilon_7 > \Upsilon_8 + \Upsilon_9$) for Abnormal CFO, Abnormal DISEXP and Abnormal ALL indicate that public equity firms engage in real earnings management to a greater extent than private firms and would support H1. For Abnormal PROD sample, findings that $\Upsilon_6 < \Upsilon_9$, $\Upsilon_7 < \Upsilon_8$, and ($\Upsilon_6 + \Upsilon_7 < \Upsilon_8 + \Upsilon_9$) indicate that public equity firms are more likely than private equity firms to opportunistically overproduce in order to inflate current period income.

3.2.8 Consequence of real operating activities management for public and private equity firms

If managers opportunistically adjust normal levels of sales discounts and promotions, production, and investments to meet their near-term earnings goals, then one may expect that

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[17] As discussed in Bharath (2010), it is not clear whether the event year should be considered part of the post-public equity issuance period or not.
[18] I use 1% as a cut-off   instead of 0.5% for classifying suspect firm-year observation since it is based on the bin width equation suggested by Degeorge et al. (1999).

firms subsequently suffer from adverse operating performance as a result of suboptimal business decisions (Leggett et al. 2009; Sohn and Kim 2009). Here, I examine the consequence of meeting earnings targets while altering operating activities management by focusing on those firms that just meet the earnings benchmarks. I study how both the incidence and the extent of real operating earnings management affect these firms' future performance. First, I examine whether future operating performance is affected by firms that meet their earnings thresholds through real activities management (RM) or not. Second, I test whether the extent to which real earnings management affects subsequent firm performance differs between public and private equity firms.

To examine whether real earnings management affects future firm performance, I only consider firms that just meet their earnings goals. To determine whether these firms engaged in substantial earnings management I divide Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL into quintiles (Gunny 2010). If the firm-year observation is in the lowest residual quintile for Abnormal CFO, Abnormal DISEXP, and Abnormal ALL, or in the highest residual quintile for Abnormal PROD, then the variable RM is one, and zero otherwise. I measure a firm's future performance using an industry-adjusted ROA at year t+1. ROA is income before extraordinary items deflated by lagged total assets and this value is subtracted from industry mean based on the firm year and the industry (2-digit SIC code) to compute industry-adjusted ROA.

Because private equity firms with public debt in this subset of the sample have significantly more negative ROAs at year t-1 and year t (descriptive statistics results not tabulated) compared to public equity firms' ROAs, I use the propensity score matching methodology to allow fair comparison. I match each of the private equity firm-years that are in

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the suspect category with a firm-year in the public equity firm samples in the suspect category that are (1) in the same year, (2) in the same industry (2-digit SIC code), (3) have ROA within $\pm$ 25% difference, and (4) have the smallest propensity score difference. These procedures result in 660 pairs of the matched-firm years. To test whether real earnings management affects future performance and to examine whether the firm's ownership type exerts an influence, I estimate the following equation:

$$
\begin{aligned}
\text{AdjROA}_{i,t+1}\,(\text{Adj. CROA}_{i,t-1,\,i,t+1}) ={}& \Upsilon_0 + \Upsilon_1 \text{PRIVATE}_{i,t} + \Upsilon_2\,\text{RM\_PRIVATE}_{i,t} \\
& + \Upsilon_3 \text{RM\_PUBLIC}_{i,t} + \Upsilon_4 \text{SIZE}_{i,t} + \Upsilon_5 \text{LEVERAGE}_{i,t} \\
& + \Upsilon_6 \text{AdjROA}_{i,t} + \Upsilon_7 \text{SALES\_GROWTH}_{i,t} \\
& + \Upsilon_7 \text{LOSS}_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{11}
$$

where RM_t is one if a firm's abnormal cash flows and abnormal discretionary expenses is in the lowest residual quintile from equations (2) and (6) and abnormal production is in the highest residual quintile from equation (5), and zero otherwise. PRIVATE is one if the firm had privately held equity, and zero otherwise. All other variables are as defined earlier. If real earnings management while meeting benchmarks has more negative consequences for firms engaging the activity under capital market pressure then $\Upsilon_3 < \Upsilon_2$.

3.3 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. Private equity firms are more leveraged than public equity firms. Leverage (LEVERAGE) is measured as the ratio of the firm's total debt to total assets. Firms' investment decisions can be affected by the level of the total debt that is likely to be subject to covenants from bondholders. 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). Internal fund (INTFUND) represents the internal funds available for expenditures and projects. INTFUND is a sum of income before extraordinary items, R&D expenditures and depreciation. The firm is less likely to engage in earnings management

behavior if it has more internal funds.[19] 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.[20]

For the regression equation that tests the degree of myopic R&D cuts by ownership type, I include variables that capture available funds and investment opportunity sets (Bushee 1998). Prior year changes in R&D expenditures measures the pattern or trend of the firm's R&D expenditures. I compute changes in industry R&D intensity (CIRD) as changes in industry R&D spending to the total sales revenue.[21] I include changes in sales (CSALE) as a proxy for changes in available funds for R&D expenditures. Distance (DIST) measures the percentage of R&D cuts in order to meet the earnings benchmarks.

---

[19] INTFUND is highly correlated with other control variables (Table 3). For this reason, I do not include INTFUND in my regression models.
[20] 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.
[21] Industry is classified by the 2-digit SIC code.

Chapter 4: Empirical Findings

4.1 Descriptive statistics

Table 3 presents the correlations among firm characteristics. Panel A of Table 3 shows the correlations of the variables used to test Roychowdhury's (2006) real earnings management measures. Panel B of Table 3 presents correlations of the variables of the firms for the myopic R&D sample. Panel C shows correlations among variables that are used to predict private equity firms' innate characteristics. An indicator variable, PRIVATE, is positively correlated with LEVERAGE, PPEGT_AT and LOSS, and negatively correlated with BME, SALES_GROWTH, OPERATYING_CYCLE, 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. Panel D, Table 3 reports Pearson correlations for abnormal discretionary accruals and four metrics of real earnings management. There are positive associations between Abnormal RM measures and Abnormal AM. This indicates that managers who use accruals to manage earnings are also likely to manipulate real operations of the firm to reach earnings targets.

[Insert Table 3]

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

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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 4 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. Panel B of Table 4 reports descriptive statistics of propensity matched-pairs sample. After I match each private equity firm to the observation that is in the same year and industry, that has similar firm size and leverage ratio (within ± 25%), and has the closest propensity score, the differences in firm characteristics between private equity and public equity firms decline. This suggests that the treatment firms are well matched.

[Insert Table 4 here]

Panel C of Table 4 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

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private debt are the smallest, but have the most growth opportunities among three groups of the sample.

To control for endogeneity of issuing private equity, I employ a propensity score matched pair research design. Figure 3 shows the distribution of both unmatched and propensity score matched firms. The post-matching distribution of the propensity score is similar between treatment and control sample as compared to pre-matching samples.

[Insert Figure 3 here]

4.2. Empirical analysis

4.2.1 First-stage regression results

The first-stage probit regression results are provided in Table 5. Then, 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. These findings are consistent with the univariate analysis presented in Panel C of Table 4.

[Insert Table 5 here]

4.2.2 Myopic research and development (R&D) investment behavior

I present the regression results for test of H1 in Table 6 and Table 7. Panel A of Table 6 presents the results of the estimating equation (1) which examines the differential likelihood of cutting R&D to report small increases in earnings between two groups of firms, public equity and private equity (with public debt) firms. To analyze the relationship between myopic R&D cuts and firm's ownership type, I require that the sample have nonzero R&D expenses for the current and lagged periods. The analysis includes 413 firm-year observations of private equity firms and 10,119 firm-year observations of public equity firms. Columns 1 & 2 and columns 3 & 4 present regression results by separately estimating equation (1) for private equity and public equity firms. The regression model in the fifth column includes an indicator variable PRIVATE which equals one if the firm is a private equity firm but trades debt publicly, and zero otherwise. I also consider two indicator variables to test the differential effect of the firm's ownership type on the likelihood of real activities management. The dummy variable SUSPECT1_PRIVATE is one if the firm is suspected of engaging in R&D curtailment and is a private firm, and zero otherwise. Similarly, the dummy variable SUSPECT1_PUBLIC is one if the firm is suspected of engaging in R&D curtailment and is a public firm, and zero otherwise.

[Insert Table 6 here]

The coefficient on SUSPECT1 for a private equity sample is insignificant while the coefficient on SUSPECT1 for the public equity sample is significant at the 1% level. This means that the public equity firms are more likely to cut R&D expenditures to avoid zero or to improve current period earnings relative to the prior year. Regression in the third column confirms this

finding. Column five includes an inverse mills ratio to control for inherent attributes of the private equity with public debt firms. I focus on the coefficient on SUSPECT1_PRIVATE (β_2) and SUSPECT1_PRIVATE (β_3) to examine whether public equity firms and public debt firms exhibit a differential likelihood of myopic R&D curtailment. The coefficient on SUSPECT1_PRIVATE (β_2) is insignificant, indicating that private equity firms do not cut R&D expenditures to meet earnings benchmarks. By contrast, the coefficient on SUSPECT1_PUBLIC (β_3) is positive and significant at the 1% level, indicating that public equity firms do cut R&D expenditures to meet earnings benchmarks. The coefficient on the size of the firm, SIZE, and the coefficient on LEVERAGE are not significant. The coefficient on capital expenditure (CCAPX), which proxies for limited funds available for R&D investments (CCAPX), is negative and significant. The change in sales (CSALES) is a proxy for firm growth. Higher growth firms are more likely to opportunistically cut R&D, as evidenced by Bushee (1998). Industry-adjusted R&D capacity is negatively associated with R&D curtailment, but it is insignificant in explaining R&D investment behavior. When the firm has more free cash flows (FCF), the firm is less likely to cut R&D expenditures. Finally, the coefficient on INV_MILLS is negative and statistically significant at 1%, consistent with endogeneity that the likelihood of real earnings management by the private equity firms differs from such behavior by the public equity firms.[22] Marginal effects can be interpreted as follows. A change in independent variables by one standard deviation increases or decreases the probability of cutting R&D expenditures by standard deviation times the coefficient of the marginal effect.

Panel B of Table 6 presents results for the differential likelihood of cutting R&D to report small increases in earnings between three groups of firms: private equity (with public debt) firms,

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[22] Inferences are unaffected if I include the interaction of the inverse Mills Ratio with the PRIVATE (an indicator variable equals to one if private equity firm and, zero otherwise) variable in the regression.

public equity firms without publicly traded debt and public equity firms with publicly traded debt. The coefficient on SUSPECT1_PRIVATE (β_3) is insignificant while the coefficient on SUSPECT1_PUBLIC_EQUITY (β_4) and the coefficient on SUSPECT1_BOTH_PUBLIC are (β_5) both positive and significant at 1% levels. These regression results confirm findings in the two group analysis that the public equity firms are more likely to opportunistically cut R&D expenditures whether they have publicly traded debt or not.

4.2.3 Real earnings management for the full sample

Table 7 shows regression results of equation (7), 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 7. The first column is the regression result of the abnormal level of sales for two groups of firms. The coefficient on SUSPECT2_PRIVATE (Υ_2) is statistically insignificant, but the coefficient on SUSPECT2_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 the firms with publicly traded equity.

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 SUSPECT2_PRIVATE (Υ_2) is insignificant. The coefficient SUSPECT2_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

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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 interaction terms, SUSPECT2_PRIVATE (Υ_2) and SUSPECT2_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 SUSPECT2_PRIVATE (Υ_2) is positive and insignificant, but the coefficient on SUSPECT2_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.

[Insert Table 7 here]

Panel B of Table 7 presents results for the three group classification. The coefficient on SUSPECT2_PRIVATE (Υ_3) is insignificant except for Abnormal DISEXP sample, but the coefficient on SUSPECT2_PUBLIC_EQUITY (Υ_4) and SUSPECT2_BOTH_PUBLIC (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.

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4.2.4 Real earnings management for the propensity score matched-pairs

Table 8 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 8 are qualitatively similar to the results found for the full sample. The coefficients of SUSPECT2_PRIVATE (Υ_2) are insignificant for Abnormal CFO, Abnormal PROD, and Abnormal ALL models, but the coefficients on SUSPECT2_PUBLIC (Υ_3) are significant at 1% level for Abnormal CFO, Abnormal PROD, and Abnormal ALL models. The coefficients of SUSPECT2_PRIVATE (Υ_2) and SUSPECT2_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.

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.

[Insert Table 8 here]

Panel B of Table 8 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.

Given that managers can jointly use accruals management and real earnings management to reach their earnings goals, I test the robustness of my results to the simultaneous equations approach used by Zang (2011) and Yang et al. (2010). With equations (a) and (b) in Section 3.2.4 I use two-stage least squares and determine predicted values of the endogenous variables. Then, I include them along with the exogenous variables, the inverse Mills ratio and an interaction term of PRIVATE dummy and inverse Mills ratio in the second stage regressions. Table 9 reports the result of the simultaneous equations models (a) and (b). Panel A of Table 9 reports the results of the Hausman tests for the entire sample. The coefficients on Abnormal AM in the abnormal RM regression and the coefficients on Abnormal RM in the abnormal AM regressions are all significant. Further, all of Hausman (1978) tests reject the null hypothesis of the exogeneity of abnormal accruals and the exogeneity of abnormal real earnings management. This result suggests that discretionary accruals and abnormal real earnings management are partial substitutes and they are determined jointly. In addition, consistent with Givoly et al. (2010) Table 5 presents the significantly positive coefficient on SUSPECT2_PUBLIC for Abnormal AM (except the 6th column in Panel A, Table 9), indicating that public equity firms engage in more accruals management than do private equity firms.

[Insert Table 9 here]

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Panel B, Table 9 reports the results of the Hasuman test for the BEAT firms. Similar to full sample result, firms in this category seem to use accruals management and real earnings management simultaneously. Panel C, Table 9 presents the results for JUST MEET firms. The Hausman tests show mixed findings for four real earnings management measures. It seems that the managers use whatever earnings management tool is available to meet their earnings objectives. For JUST MISS firms, Hausman tests fail to reject the exogeneity of abnormal accruals in Abnormal RM equation and also fail to reject the exogeneity of abnormal real activates in Abnormal AM decisions. The coefficients on Abnormal RM and the coefficients on Abnormal AM are insignificant except Abnormal CFO and Abnormal ALL sub-samples. For JUST MISS firms, there is weak evidence that firms choose to manage accruals before managing real operations. Panel E of Table 9 presents results for MISS firms. Hausman tests fail to reject the exogeneity of abnormal accruals in Abnormal RM equation, but reject the exogeneity of abnormal real operating activities in Abnormal AM equation. This indicates that accruals management and real earnings management decisions are made sequentially. Accruals management precedes real earnings management in this case. Overall, firms with good earnings performance use both accruals and real earnings management jointly, but badly performing firms seem to prefer accruals management. Firms that just meet earnings benchmarks show mixed findings. This may be indicative of managers' reporting incentives to use whatever earnings management method is available to satisfy market expectations.

4.2.5 Zero earnings benchmark versus zero earnings growth benchmark

Table 10 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 likely to 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 10. 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.

[Insert Table 10 here]

Table 11 is the result of the regression (8) and the regression (9) 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 zero earnings growth benchmark than do the public equity firms.

[Insert Table 11 here]

4.2.6 High default risk firms versus low default risk firms

Table 12 and Table 13 present empirical findings that test Hypothesis 2 using real earnings metrics suggested by Bushee (1998) and Roychowdhury (2006), respectively. 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. Table 12 shows that private equity firms, compared to public equity firms, are less likely to cut R&D expenditures to beat earnings targets regardless of the level of default risk. Both for high default risk firms and low default risk firms, public equity firms near earnings benchmarks are more likely to cut R&D expenditures.

[Insert Table 12 here]

Table 13 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 SUSPECT2_PRIVATE and SUSPECT2_PUBLIC are significant in the direction of more real earnings manipulation. Unlike for the high default firm sample, the coefficients of SUSPECT2_PRIVATE are not significant for three real earnings management measures, but the coefficients of SUSPECT2_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.

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Table 14 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.

[Insert Table 13 & 14 here]

4.2.7 Time-series analysis

Table 15 presents the result of this time-series analysis that examines the change in real earnings management behavior of firms prior to and subsequent to initial public equity offerings. In the first column, the coefficients of SUSPCT2_AFTER_ST and SUSPECT_AFTER_LT are negative and significant at the 1% and 10% level respectively. But, none of the coefficients of SUSPECT2_BEFORE_LT and SUSPECT2_BEFORE_ST are significant. This result may be interpreted that pressure from the capital markets leads managers to engage in more sales manipulations to meet earnings benchmarks after they publicly issue equity. The result in the second column suggests similar inference. The coefficient of SUSPCT2_AFTER_ST is positive and significant at the 10% level. For Abnormal PROD, higher coefficient value means more production to spread out the cost of goods sold to more units that ultimately inflate earnings. However, regression results in the third column do not support more earnings management after

issuing public equity. The fourth column, an aggregate metric of real earnings management, reports the opposite. Overall, it seems that the capital market puts earnings pressures on the firms, but the findings are mixed to draw a solid conclusion from this intertemporal analysis.

[Insert Table 15 here]

4.2.8 Subsequent operating performance of firms engaged in real operating activities management

Hypothesis 4 tests that public equity firms suffer more from engaging in real earnings management since they face short-term earnings pressure from the capital market and therefore are more likely to deviate from normal course of operation to meet earnings targets. On the other hand, I conjecture that private equity firms alter their operations for the strategic reasons other than for the purpose of meeting stakeholders' earnings expectations. Table 16 and Table 17 present the evidence that supports the hypothesis 4. The coefficient on RM_PUBLIC (Υ_3) is negative and significant for all four real earnings management measures while the coefficient on RM_PRIVATE (Υ_2) is insignificant. Significantly negative coefficients on RM_PUBLIC (Υ_3) can be interpreted as public equity firms that just meet earnings benchmarks through real earnings management suffering from lower industry-adjusted ROA in year t+1 than the firms that just meet the earnings targets without manipulating operating activities. The insignificant coefficient on RM_PRIVATE indicates that private equity firms that engage in real earnings management to just meet the earnings benchmarks do not perform worse than the firms that meet the earnings benchmarks but do not engage in real earnings management. In summary real earnings management by public equity firms results in negative future firm performance. This

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may indicate that the public equity firms' real earnings management is not the result of firms' strategic operating decisions to perform better in the future, but rather the product of myopic managerial decisions to boost short-term earnings.

[Insert Table 16 & 17 here]

4.2.9 Supplemental analysis

To replicate Givoly et al. (2010) for the three group classification, I examine the influence of capital market pressure on managers reporting incentives to engage in income-increasing accruals management. I use a modified Jones model (1991) to estimate nondiscretionary portion of total accruals for every industry and year, and subtract nondiscretionary accruals from total accruals to compute discretionary accruals. The amount of Discretionary accruals (Abnormal AM) is the dependent variable of equation (7). Consistent with Givoly et al. (2010), I find that private equity firms are less likely to manage discretionary accruals in an attempt to inflate the current period earnings compared to public equity firms. The evidence still holds even if I further classify public equity firms into two groups: public equity firms without publicly traded debt and public equity firms with publicly traded debt.

[Insert Table 18 here]

As argued earlier, firms can choose between accruals management and real earnings management. Firms' choices depend on many factors including the costs and benefits of approaches, the need for earnings management and how far their pre-managed earnings are from the targets. In general, firms' level of accruals management and the extent of real earnings management have a positive relationship (see Panel D, Table 3). Additionally, recall that I find that firms jointly manage accruals and real operating activities as presented in Table 9. Although firms are likely to use both methods of earnings management together, managers must decide the extent of each type of earnings management in relation to the other method to meet the earnings benchmarks. I divide the level of abnormal accruals into four quintiles and then group firms into two categories. Firms belong to the high accruals group if they are at the top quintile and the rest of the firms are classified as the low accruals group. Then, I run a regression equation (7) separately for high accruals group and the low accruals group (results not tabulated). I find that firms' abnormal level of real earnings management in the high accruals group are statistically insignificant whether or not they are private equity or public equity firms. In contrast, I find that firms that belong to the low accruals group manage real operating activities. This may provide evidence that the firms jointly make accruals and real earnings management decisions, but they must decide on how much of which type of earnings management tool to be used in order to meet the earnings objectives

Chapter 5: 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.

In addition, I assess the performance implications of capital market-induced real earnings management, by examining its association with one-year ahead industry-adjusted return on assets (ROA). I find that public equity firms that just meet earnings benchmarks while altering real operating activities suffer from lower future industry-adjusted ROA while private equity firms that just meet earnings benchmarks while altering real operating activities do not. The finding for the public equity firms validates concerns that operating decisions made in response to capital market pressure may negatively impact future firm performance. On the other hand, the results for private equity firms indicate that alterations of operating activities made in the absence of capital market pressure are more likely to be strategically sound.

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.

Appendix A

Example of a firm's ownership change from private equity to public equity

Exco Resources 2006 Annual Report

Market information for our common stock

Prior to February 14, 2006, we were 100% owned by EXCO Holdings. Effective February 9, 2006, our common stock began trading on a "when issued" basis on the NYSE under the symbol "XCO".

The following table sets forth, for the periods indicated, the high and low sales prices per share of our common stock as reported by the NYSE:

	Common Stock	
	High	Low
Year ended December 31, 2006:		
First Quarter	$13.70	$11.81
Second Quarter	13.03	9.55
Third Quarter	15.00	10.05
Fourth Quarter	18.20	12.15
Year ended December 31, 2005:		
First Quarter	N/A	N/A
Second Quarter	N/A	N/A
Third Quarter	N/A	N/A
Fourth Quarter	N/A	N/A

8. Long-term debt and interim bank loan

	December 31,	
(in thousands)	2005	2006
Short-term debt:		
Interim bank loan	$350,000	$ —
Current portion of long-term debt	—	6,500
	$350,000	$ 6,500
Long term debt:		
EXCO credit agreements	$ 1	$ 339,000
EPOP Revolving Credit Facility	—	643,500
EPOP Senior Term Credit Agreement	—	643,500
Unamortized discount on EPOP Senior Term Credit Agreement	—	(3,180)
7¼% senior notes due 2011	444,720	444,720
Unamortized premium on 7¼% senior notes due 2011	17,081	14,113
Total	$461,802	$2,081,653

Appendix B

Variable Definitions

Variable	Definition
PRIVATE	Indicator variable equal to 1 if a firm has public debt (private equity), 0 otherwise
SUSPECT1	Indicator variable equal to 1 if (pretax income$_t$+R&D expenditures$_t$) < (pretax income$_{t-1}$+R&D expenditures$_{t-1}$) and (pretax income$_t$+R&D expenditures$_t$) > pretax income$_{t-1}$, 0 otherwise (See Bushee 1998 and Cheng 2004)
SUSPECT2	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 (see Roychowdhury 2006). SUSPECT3 is similar except that I use 1% at a cutoff point rather than 0.5%. SUSPECT2 is equal to 1 if the observations are either BEAT_ZERO2 or BEAT_LAST2.
BEAT_ZERO2	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_LAST2	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
CUT_RD	Indicator variable equal to 1 if R&D expense is cut relative to the prior year, 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
CSALES	Change in sales, calculated as logarithm of sales scaled by total assets less logarithm of lagged sales scaled by lagged total assets
CCAPX	Change in capital expenditures, calculated as logarithm of capital expenditures scaled by total assets less logarithm of lagged capital expenditures scaled by lagged total assets
PCRD	Prior year's R&D expense, calculated as logarithm of R&D expense scaled by total assets less logarithm of lagged R&D expense scaled by lagged total assets
CIRD	Change in R&D intensity, calculated as logarithm of R&D expense scaled by total sales less logarithm of lagged R&D expense scaled by lagged total sales
CFUND	Change in internal fund where internal fund is calculated as a sum of income before extraordinary items, R&D expenditures and depreciation, scaled by total sales
CGDP	Change in domestic gross product, calculated as logarithm of GDP at year less logarithm of GDP at year t-1
FCF	Cash from operations less average capital expenditure over the periods t-1 and t-3, scaled by lagged current assets; cash from operations is calculated as income before extraordinary items less changes in current assets plus changes in current liabilities plus changes in cash less changes in short-term debt plus depreciation
DIST	Distance between income before extraordinary items plus R&D expense and income before extraordinary items plus R&D expense for the previous period, divided by lagged R&D expense
BEFORE_LT	Indicator variable equal to 1 for -3 and -4 years before issuing public equity and 0 otherwise
BEFORE_ST	Indicator variable equal to 1 for -2 and -1 years before issuing public equity and 0 otherwise
AFTER_LT	Indicator variable equal to 1 for +2 and +3 years before issuing public equity

and 0 otherwise

AFTER_ST	Indicator variable equal to 1 for the event year and for +1 year before issuing public equity and 0 otherwise
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.
BVE	Book value of equity that is the sum of book value of equity, preferred stock and deferred taxes scaled by lagged total assets
ROA	Return on assets, calculated as income before extraordinary items divided by lagged total assets
Adj.ROA	Industry-adjusted return on assets (ROA), calculated as firm-specific ROA less median ROA for all firms in the same industry (2-digt SIC code) and year excluding the sample firm
CROA	Changes in ROA between years t-1 and t+1
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, zero 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, 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 1if S&P debt rating is an speculative grade (BBB- or below), 0 otherwise. The ratings range from AAA to D. These ratings reflect S&P's assessment of the creditworthiness of the debtor with respect to debt obligations. Debt ratings that are BB- or below are considered to be speculative.
INV_MILLS	Inverse Mills Ratio from Heckman (1979) two-stage sample selection correction procedure Following the Heckman (1979) procedure, in the first stage I estimate a PROBIT model with, as predictors, size (alternatively defined as the natural logarithms of total assets or sales), ratio of book value of equity to total assets, growth (in sales), leverage, profitability (operating income divided by net operating assets), net operating loss carryforwards, quick ratio, length of the operating cycle, firm age, capital expenditures (both divided by total assets), a dummy for loss firms, and audit quality (a dummy for the big national accounting firms). 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 to equation (5) as a control variable. (See Katz 2009; Givoly et al. 2010)
HHI	Herfindahl-Hirschman Index computed as the sum of the squared share of each company in total sales of the industry
Z_SCORE	Firm's Altman Z-score calculated as $Z = 1.2 X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + 1.0 X5$ where X1 = working capital/total assets, X2 = retained earnings/total assets, X3 = earnings before interest and taxes/total assets, X4 = market value equity/book value of total liabilities, and X5 = sales/total assets
SOX	Dummy variable equals 1 if the fiscal year is 2002 and later, 0 otherwise
LITIGATION	Dummy variable equals 1 if the firm belongs to one of the following industries: biotechnology (SIC 2833-2836), computer (SIC 3570-3577, 7370-7374), electronics (SIC 3600-3674), and retailing industry (SIC 5200-5961)
RDindustry	Dummy variable that equals 1 if a firm is classified as R&D intensive industry and 0 otherwise: chemicals and pharmaceutics (2-digit SIC code 28), machinery and computer hardware (2-digit SIC code 35), electrical and electronics (2-digit SIC code 36), transportation vehicles (2-digit SIC code 37), scientific instruments (2-digit SIC code 38). high R&D (biotechnology

is SIC 2830 - 2839, computer is SIC 3570 - 3579, high technology is SIC 3600 - 3699, and software is SIC 7370 - 7379)

OVERPRODUCE   Property, plant and equipment ratio to total assets

FIGURE 1

Firm-year observations (5,414 firm-years for private equity firms and 42,839 firm-years for public equity firms) are divided into earnings interval over -0.75 to +0.75 using income before extraordinary items divided by total assets. Each interval has a width of 0.005. Earnings interval 16 included the value between 0 and 0.005.

(a) Earnings Distribution near Zero Earnings for All Sample Firms
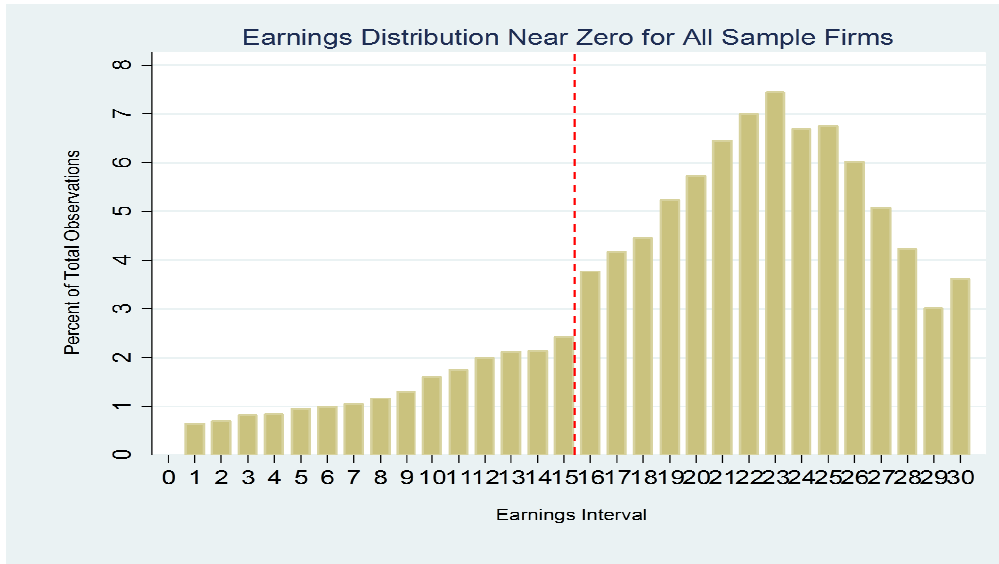
(b) Earnings Distribution near Zero Earnings for Private Equity Firms
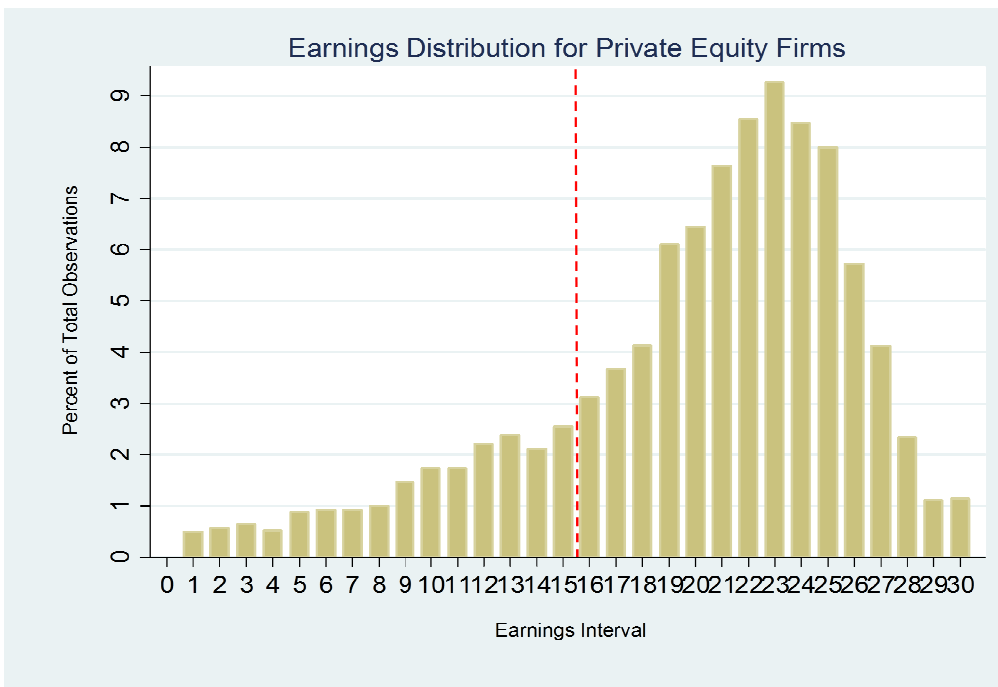
FIGURE 1 (Con't)

(c) Earnings Distribution near Zero Earnings for Public Equity Firms
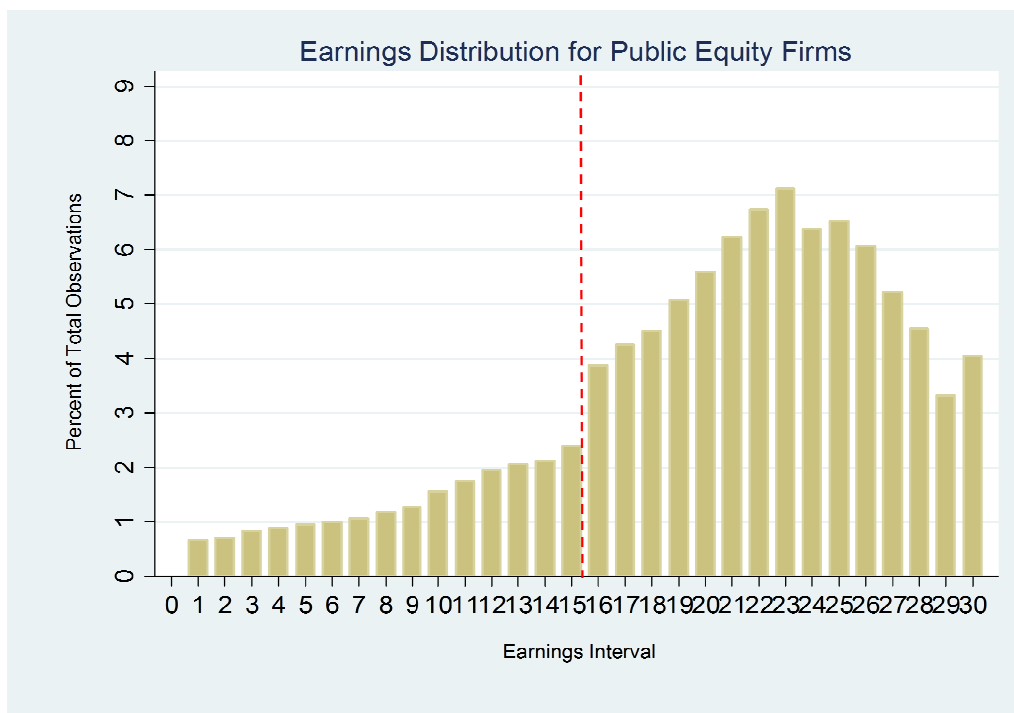
FIGURE 2

Firm-year observations (5,414 firm-years for private equity firms and 42,839 firm-years for public equity firms) are divided into earnings interval over -0.75 to +0.75 using changes in income before extraordinary items deflated by total assets between the year t and the year t+1. Each interval has a width of 0.005. Earnings interval 16 included the earnings changes between 0 and 0.005.

(a) Earnings Growth Distribution for All Sample Firms
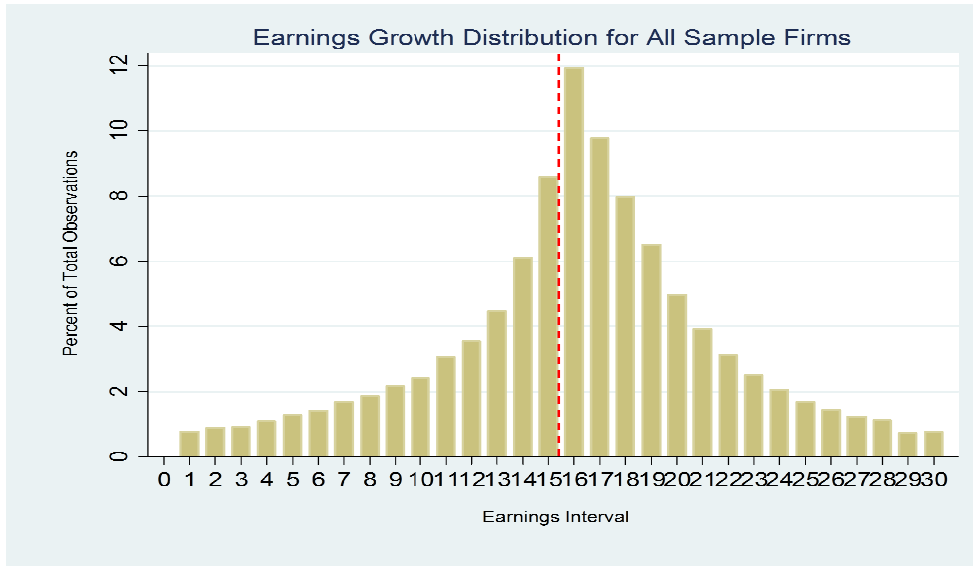
(b) Earnings Growth Distribution for Private Equity Firms
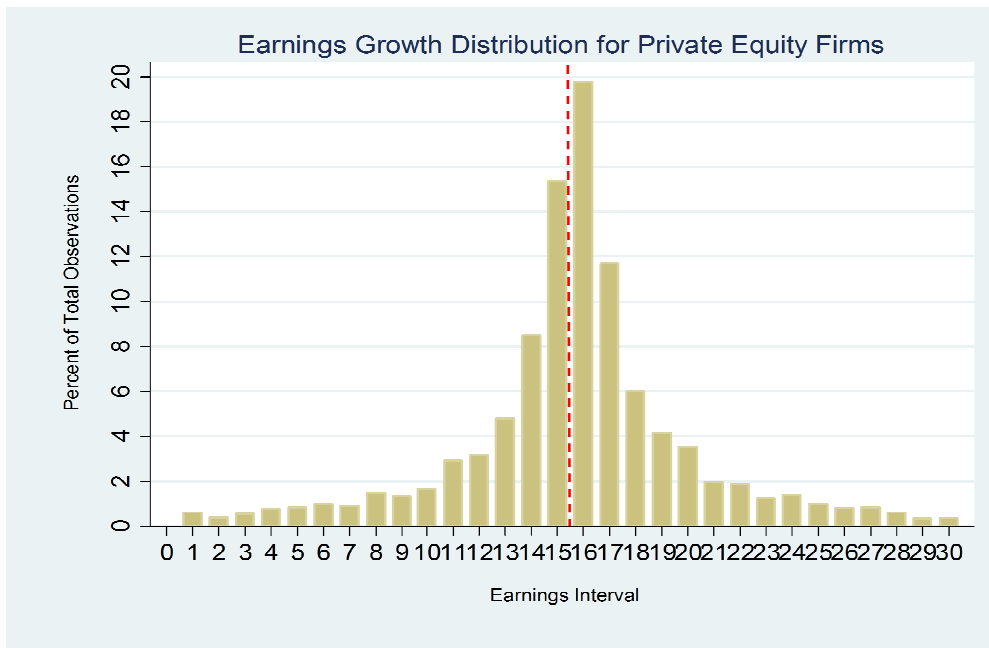
FIGURE 2 (Con't)

(c) Earnings Growth Distribution for Public Equity Firms
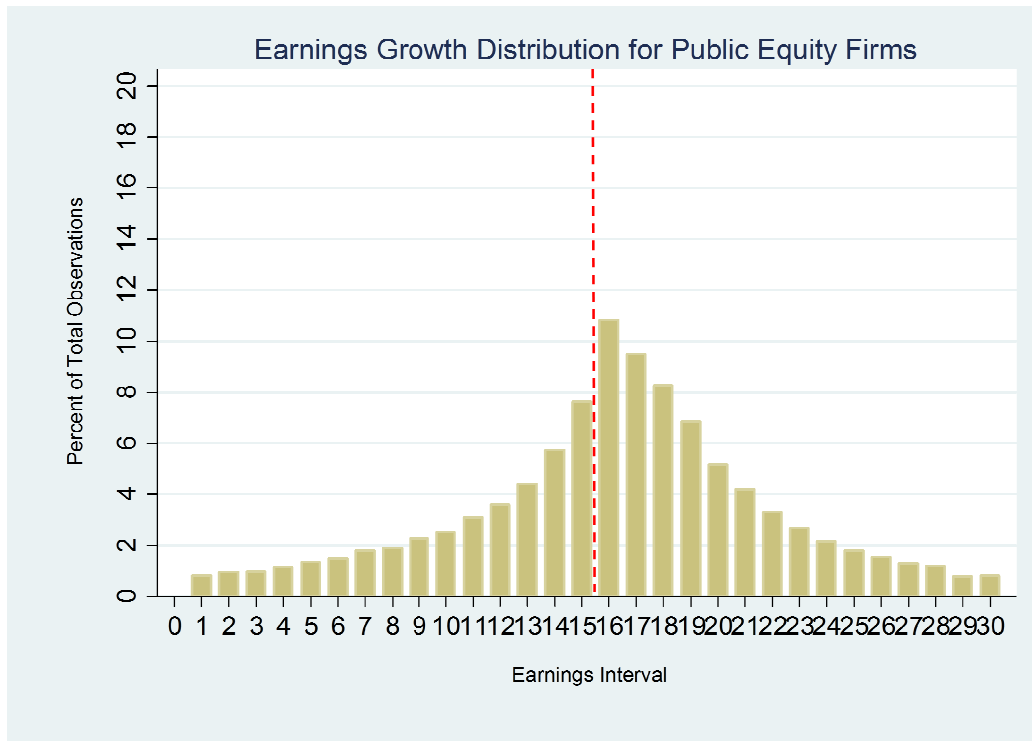
Figure 3 Propensity Score Distribution
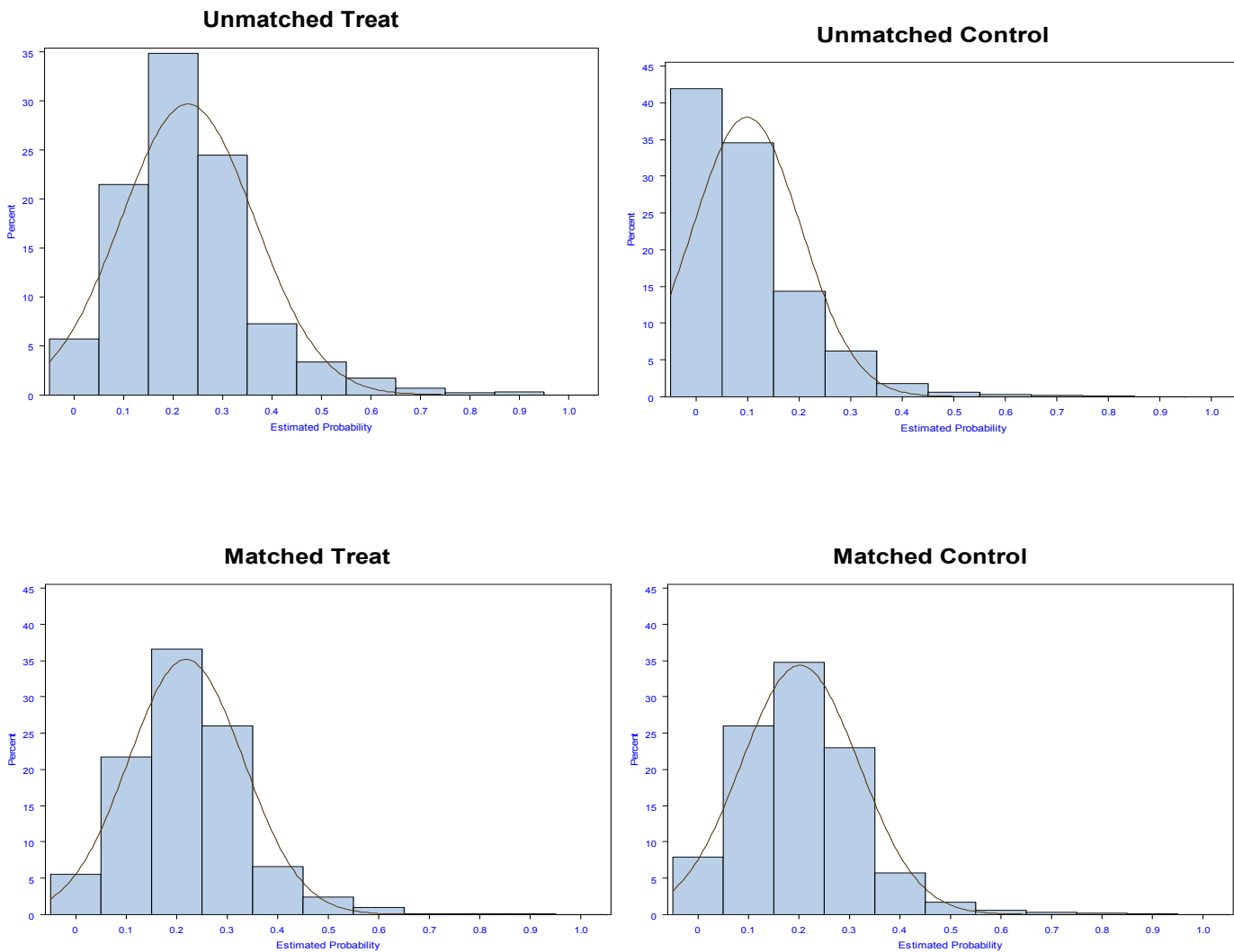
TABLE 1

Sample Selection

Sample Selection Procedure	No. of Firm-Year Obs.	No. of Firms
Total Compustat Observations from 1987-2009	254,426	26,200
Less: Financial Institutions (SIC codes 6000-6999)	(60,001)	(6,748)
Less: Regulated Industries (SIC codes 4800-4900)	(8,829)	(941)
Less: Missing variables & total debt $<$ 50 million	(137,793)	(19,452)
Final Sample Size	47,803	6,357

TABLE 2

Panel A: 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

TABLE 2 (Con't)

Panel B: Sample Distribution Grouped by Real Earnings Management Metrics

Ownership Type		R&D Sample	Abnormal CFO Sample	Abnormal PROD Sample	Abnormal DISEXP Sample	Abnormal ALL Sample	Total Sample
Private Firms	No. of Obs.	413	5,050	5,213	2,444	5,209	5,414
	No. of Firm	121	838	859	633	857	882
Public Firms	No. of Obs.	10,119	37,498	40,037	34,004	40,013	42,389
	No. of Firm	1,545	5354	5559	5,040	5,556	5,805
Total	No. of Obs.	10,532	42,548	45,250	36,448	45,222	47,803
	No. of Firm	1,628	5,897	6,101	5,427	6,098	6,357

Total number of firms may not equal to the sum of private firms and public firms since the firms in my sample can change their status over the sample period of 1987-2009.

Panel C: Industry Distributions of Sample Firms by Ownership Type

Industry (2-digit SIC codes)	Private Equity Firms		Public Equity Firms		Total Sample
	No. of Obs.	*% of Sample*	No. of Obs.	*% of Sample*	No. of Obs.
Mining and Construction (10-14, 15-17)	77	*1.7%*	4,350	*98.3%*	4,427
Manufacturing I (20-29)	704	*7.0%*	9,356	*93.0%*	10,060
Manufacturing II (30-39)	702	*6.1%*	10,863	*93.9%*	11,565
Transportation (40-49)	3,013	*31.4%*	6,589	*68.6%*	9,602
Retail & Wholesale Trade (50-59)	526	*8.8%*	5,433	*91.2%*	5,959
Services (70-89)	382	*6.5%*	5,454	*93.5%*	5,836
Other	10	*2.8%*	344	*97.2%*	354
Total	5,414	*11.3%*	42,389	*88.7%*	47,803

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TALBE 2 (Con't)

Panel D: Debt Rating Categories of Private Equity and Public Equity Firms

| S&P Rating | Rating Points | Private Equity Firms | | Public Equity Firms w/ Public Debt | | Total |
		No. of Obs.	*% of Sample*	No. of Obs.	*% of Sample*	No. of Obs.
AAA	21	73	*19.3%*	306	*80.7%*	379
AA+	20	32	*20.6%*	123	*79.4%*	155
AA	19	136	*19.8%*	552	*80.2%*	688
AA-	18	209	*25.3%*	616	*74.7%*	825
A+	17	341	*24.7%*	1,041	*75.3%*	1,382
A	16	406	*18.7%*	1,765	*81.3%*	2,171
A-	15	391	*20.2%*	1,549	*79.8%*	1,940
BBB+	14	502	*21.3%*	1,856	*78.7%*	2,358
BBB	13	529	*18.9%*	2,273	*81.1%*	2,802
BBB-	12	284	*14.6%*	1,662	*85.4%*	1,946
BB+	11	128	*10.0%*	1,155	*90.0%*	1,283
BB	10	194	*10.4%*	1,674	*89.6%*	1,868
BB-	9	307	*12.6%*	2,133	*87.4%*	2,440
B+	8	896	*29.3%*	2,164	*70.7%*	3,060
B	7	532	*34.9%*	992	*65.1%*	1,524
B-	6	177	*26.9%*	481	*73.1%*	658
CCC+	5	89	*35.0%*	165	*65.0%*	254
CCC	4	43	*34.4%*	82	*65.6%*	125
CCC-	3	15	*27.3%*	40	*72.7%*	55
CC/C	2	19	*33.9%*	37	*66.1%*	56
D/SD	1	30	*22.4%*	104	*77.6%*	134
Not Rated		81	*9.1%*	812	*90.9%*	893
Total		5,414	*20.1%*	21,582	*79.9%*	26,996

TABLE 3

Panel A: Pearson Correlations for the Real Earnings Management Measure Sample

	SIZE	LEVERAGE	ROA	NOA	INTFUND	SALES_GROWTH
LEVERAGE	-0.3512***					
ROA	0.2223***	-0.3831***				
NOA	-0.0051	0.1037***	-0.0949***			
INTFUND	0.5826***	-0.1724***	0.1712***	-0.0509***		
SALES_GROWTH	-0.0219***	-0.0698***	0.1829***	0.2899***	0.0115**	
LOSS	-0.2303***	0.3424***	-0.6546***	0.0403***	-0.1521***	-0.1904***

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

Panel B: Pearson Correlations for R&D Curtailment Sample

	SIZE	LEVERAGE	CSALES	CCAPX	PCRD	CIRD	CGDP	FCF
LEVERAGE	-0.3512***							
CSALES	0.0458***	0.0642***						
CCAPX	0.0205***	-0.0341***	0.1845***					
PCRD	0.0033	0.0041	-0.0772***	-0.0896***				
CIRD	-0.0412***	0.0379***	0.0224***	-0.0027	0.0196**			
CGDP	-0.1013***	0.0163***	0.0474***	0.0990***	-0.0458***	-0.0704***		
FCF	0.2261***	-0.3046***	-0.0242***	0.1615***	0.0120	-0.0303***	-0.0129***	
DIST	0.0126	-0.0216***	0.0023	-0.0040	0.0499***	-0.0175**	-0.0109	0.0675***

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

Table 3 (Con'd)

Panel C: Pearson Correlations between Private Firm-Year Indicator Variable and Firm Characteristics

	PRIVATE	SIZE	LEVERAGE	SALES_GROWTH	NOL	LOSS	FIRM_AGE	BIG5	OPERATING_CYCLE	QUICK	RNOA	CASH_AT
SIZE	0.0453***											
LEVERAGE	0.1807***	-0.3512***										
SALES_GROWTH	-0.0599***	-0.0219***	-0.0698***									
NOL	-0.1944***	-0.0865***	-0.0517***	0.0350***								
LOSS	0.0038	-0.2303***	0.3424***	-0.1904***	-0.0054							
FIRM_AGE	0.0049	0.3648***	-0.2161***	-0.0988***	-0.1132***	-0.1937***						
BIG5	0.0163***	0.1235***	-0.0492***	-0.0055	-0.0055	-0.0204***	0.0071					
OPERATING_CYCLE	-0.1025***	-0.0243***	-0.0318***	-0.1593***	0.0677***	0.0573***	-0.0048	-0.0375***				
QUICK	-0.0578***	0.0194***	-0.0100**	0.0682***	-0.0202***	0.0167***	-0.1610***	0.0213***	-0.1479***			
RNOA	0.0316***	0.1208***	-0.1495***	0.0990***	0.0207***	-0.3361***	0.0884***	0.0019	-0.0331***	-0.0355***		
CASH_AT	-0.1387***	-0.0469***	-0.0663***	0.1158***	0.0586***	0.0667***	-0.1530***	0.0088*	0.0755***	0.3655***	-0.0442***	
PPEGT_AT	0.0979***	0.0904***	-0.0178***	0.1356***	-0.1228***	-0.1095***	0.0812***	-0.0155***	-0.3175***	0.1187***	0.0513***	-0.1546***

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

Panel D: Pearson Correlations among Abnormal Accruals and Real Earnings Management Metrics

	Abnormal AM	Abnormal CFO	Abnormal PROD	Abnormal DISEXP
Abnormal CFO	-0.2554*			
Abnormal PROD	0.0231*	-0.3685*		
Abnormal DISEXP	-0.1115*	-0.0663*	-0.6633*	
Abnormal ALL	-0.1379*	0.4296*	-0.9167*	0.8242*

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

TABLE 4

Panel A: Descriptive Statistics of the Firms by Two Ownership Type (Two Groups): Full Sample

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***
QUICK	Mean	58.5%	62.2%	-0.037***
	Median	58.7%	62.3%	-0.036***
BVE	Mean	28.7%	45.4%	-0.167***
	Median	39.6%	45.7%	-0.062***
CSALES	Mean	0.000	-0.002	0.002
	Median	0.056	0.005	0.052**
CCAPX	Mean	-0.007	-0.051	0.044***
	Median	0.008	-0.025	0.033***
PCRD	Mean	-0.032	-0.022	-0.010
	Median	0.013	-0.002	0.016
CIRD	Mean	0.020	0.015	0.005***
	Median	0.025	0.025	0.000***
CFUND	Mean	-0.006	-0.004	-0.002***
	Median	0.000	-0.006	0.006***
FCF	Mean	0.018	0.022	-0.004***
	Median	0.022	0.028	-0.006***
DIST	Mean	-2.549	0.508	-3.057*
	Median	0.172	0.299	-0.127
OPERATING_CYCLE	Mean	94	123	-28.9***
	Median	81	102	-21.7***
CASH_AT	Mean	3.1%	9.5%	-0.064
	Median	1.0%	4.1%	-0.031***
CAPX_AT	Mean	6.1%	8.8%	-0.027***
	Median	5.1%	5.6%	-0.005***
PPEGT_AT	Mean	92.3%	77.0%	0.154***
	Median	100.3%	69.9%	0.303***
No. of Obs.		5,414	42,389	
No. of Firms		882	5,805	

*, **, 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. The variable definitions are in Appendix B.

TABLE 4 (Con't)

Panel B: Descriptive Statistics of the Firms by Ownership Type (Two Groups): Propensity Score Matched-Pairs

Variable		Private Equity Firms	Public Equity Firms	Difference in Mean / Median
SIZE	Mean	7.401	7.393	0.008
	Median	7.371	7.265	0.107
LEVERAGE	Mean	45.7%	46.6%	-0.009**
	Median	38.2%	40.8%	-0.026***
NOA	Mean	0.165	0.183	-0.018***
	Median	-0.020	0.004	-0.025*
SALES_GROWTH	Mean	2.2%	4.3%	-0.021***
	Median	3.4%	5.3%	-0.018***
ROA	Mean	2.1%	1.4%	0.007***
	Median	3.1%	3.3%	-0.002**
QUICK	Mean	58.5%	62.9%	-0.044***
	Median	58.6%	63.3%	-0.048***
BVE	Mean	33.6%	35.2%	-0.016**
	Median	42.1%	40.4%	0.016
CSALES	Mean	-0.004	0.005	-0.009*
	Median	0.008	0.008	-0.000
CCAPX	Mean	-0.009	-0.033	0.024**
	Median	0.008	-0.016	0.024***
PCRD	Mean	-0.035	-0.029	-0.006
	Median	0.009	0.009	0.001
CIRD	Mean	0.020	0.020	-0.001*
	Median	0.025	0.025	0
CFUND	Mean	-0.004	-0.030	0.026**
	Median	0.000	-0.008	0.008
FCF	Mean	0.019	0.011	0.009***
	Median	0.023	0.017	0.006***
DIST	Mean	-2.567	3.768	-6.335**
	Median	0.150	0.131	0.019
OPERATING_CYCLE	Mean	92	92	0.079
	Median	80	78	1.606*
CASH_AT	Mean	2.9%	5.2%	-0.023***
	Median	0.8%	1.9%	-0.011***
CAPX_AT	Mean	6.1%	7.3%	-0.012***
	Median	5.2%	5.9%	-0.007***
PPEGT_AT	Mean	94.6%	93.8%	0.008
	Median	104.0%	99.8%	0.042**
No. of Obs.		4,484	4,484	
No. of Firms		777	1,363	

*, **, 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. The variable definitions are in Appendix B.

TABLE 4 (Con't)

Panel C: Descriptive Statistics of the Firms by Ownership Type (Three Groups): Full Sample

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***
QUICK	Mean	58.5%	63.5%	61.0%	-0.050***	-0.025***
	Median	58.7%	64.0%	61.1%	-0.053***	-0.025***
BVE	Mean	0.287	0.490	0.420	-0.203***	-0.133***
	Median	0.396	0.487	0.434	-0.091***	-0.038***
CSALES	Mean	0.000	-0.004	0.000	0.003	-0.000
	Median	0.010	0.001	0.007	0.009***	0.002
CCAPX	Mean	-0.007	-0.063	-0.039	0.057***	0.033***
	Median	0.008	-0.039	-0.017	0.047	0.025***
PCRD	Mean	-0.032	-0.032	-0.015	0.000	-0.017
	Median	0.013	-0.007	0.000	0.020	0.013
CIRD	Mean	0.020	0.017	0.013	0.003***	0.006***
	Median	0.013	-0.007	-0.000	0.020***	0.013***
CFUND	Mean	-0.006	-0.049	-0.023	0.043***	0.016*
	Median	0.000	-0.015	0.001	0.015***	-0.001
FCF	Mean	0.018	0.012	0.029	0.005**	-0.012***
	Median	0.022	0.023	0.032	0.000	-0.010***
DIST	Mean	-2.549	0.813	0.272	-3.362	-2.820**
	Median	0.172	0.275	0.311	-0.102	-0.139
OPERATING_CYCLE	Mean	94	127	119	-33***	-25***
	Median	81	105	100	-24***	-20***
CASH_AT	Mean	3.1%	10.7%	8.4%	-0.076***	-0.053***
	Median	1.0%	4.1%	4.1%	-0.031***	-0.01***
CAPX_AT	Mean	6.1%	10.0%	7.7%	-0.039***	-0.016***
	Median	5.1%	5.8%	5.5%	-0.008***	-0.004***
PPEGT_AT	Mean	92.3%	76.8%	77.1%	0.156***	0.152***
	Median	100.3%	67.9%	72.0%	0.324***	0.283***
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.

TABLE 5

First-stage Regression of a Firm's Choice to Have Privately Held Equity

$PRIVATE_{i,t} = \alpha_0 + \alpha_1 SIZE_{i,t} + \alpha_2 LEVERAGE_{i,t} + \alpha_3 SALES\_GROWTH_{i,t} + \alpha_4 NOL_{i,t} + \alpha_5 LOSS_{i,t}$
$+ \alpha_6 FIRM\_AGE_{i,t} + \alpha_7 BIG5_{i,t} + \alpha_8 OPERATING\_CYCLE_{i,t} + \alpha_9 QUICK_{i,t}$
$+ \alpha_{10R} NOA_{i,t} + \alpha_{11} CASH\_AT_{i,t} + \alpha_{12} PPEGT\_AT_{i,t} + \varepsilon_{i,t}$

Variable	Dependent variable = PRIVATE
Intercept	-1.836***
	(-26.33)
SIZE	0.125***
	(19.27)
LEVERAGE	1.513***
	(38.52)
SALEGS_GROWTH	-0.464***
	(-12.39)
NOL	-0.604***
	(-33.93)
LOSS	-0.134***
	(-5.67)
FIRMAGE	-0.007***
	(-11.89)
BIG5	0.043
	(1.55)
OPERATING_CYCLE	-0.002***
	(-12.53)
QUICK	-0.246***
	(-5.36)
RNOA	0.401***
	(12.11)
CASH_AT	-3.958***
	(-25.21)
PPEGT_AT	0.145***
	(7.44)
Adj. R^2	17.41%
N	45,250

*, **, *** indicates 10%, 5%, and 1% significance, respectively. Variable definitions are in Appendix B. In this probit regression, I account for the possible endogeneity in the firm's decision to have privately held equity by using the Heckman (1979) two-stage procedure, following the similar approach used by and Katz (2009) and Givoly et al. (2010).

TABLE 6

Panel A: Logistic Regression of the Probability of Cutting R&D Expenditures Private Equity and Public Equity Firms (Two Groups)

$$\text{Prob (CUT\_RD}_{i,t}=1) = \beta_0 + \beta_1\text{PRIVATE}_{i,t} + \beta_2\text{SUSPECT1\_PRIVATE}_{i,t} + \beta_3\text{SUSPECT1\_PUBLIC}_{i,t} + \beta_4\text{SIZE}_{i,t}$$
$$+ \beta_5\text{LEVERAGE}_{i,t} + \beta_6\text{CSALES}_{i,t} + \beta_7\text{CCAPX}_{i,t} + \beta_8\text{PCRD}_{i,t} + \beta_9\text{CIRD}_{i,t} + \beta_{10}\text{CGDP}_{i,t}$$
$$+ \beta_{11}\text{CFUND}_{i,t} + \beta_{12}\text{FCF}_{i,t} + \beta_{13}\text{DIST}_{i,t} + \beta_{14}\text{INV\_MILLS}_{i,t} + \varepsilon_{i,t}$$

Variable		Private Equity Firms		Public Equity Firms		All Sample Firms	
		Coeff.	Marg. Effects	Coeff.	Marg. Effects	Coeff.	Marg. Effects
Intercept	β_0	-1.068		-1.079***		0.258	
		(-1.42)		(-7.49)		(1.25)	
SUSPECT1		**-0.062**	-0.014	**0.379***	0.077		
		(-0.28)		(6.67)			
PRIVATE	β_1					0.402***	0.082
						(2.84)	
SUSPECT1_PRIVATE	β_2					**-0.143**	-0.029
						(-0.64)	
SUSPECT1_PUBLIC	β_3					**0.421***	0.085
						(7.25)	
SIZE	β_4	0.131*	0.031	0.068***	0.014	0.021	0.004
		(1.92)		(4.42)		(1.27)	
LEVERAGE	β_5	0.092	0.022	0.437**	0.089	-0.162	-0.033
		(0.21)		(2.82)		(-0.98)	
CSALES	β_6	0.215	0.050	0.412***	0.084	0.305**	0.062
		(0.37)		(3.49)		(2.49)	
CCAPX	β_7	-0.728***	-0.170	-0.535***	-0.109	-0.609***	-0.124
		(-3.39)		(-9.51)		(-10.48)	
PCRD	β_8	0.518	0.121	0.632***	0.129	0.616***	0.125
		(1.30)		(8.58)		(7.93)	
CIRD	β_9	-0.809	-0.189	-0.21	-0.043	-0.253	-0.051
		(-1.16)		(-0.94)		(-1.18)	
CGDP	β_{10}	0.00	0.000	-0.001***	0.000	-0.001***	0.000
		(-0.80)		(-7.61)		(-7.27)	
CFUND	β_{11}	-0.091	-0.021	0.049	0.010	0.04	0.008
		(-0.62)		(1.16)		(0.95)	
FCF	β_{12}	-2.353	-0.550	-2.745***	-0.559	-2.667***	-0.541
		(-1.20)		(-8.75)		(-8.59)	
DIST	β_{13}	0.003	0.001	-0.001	0.000	0.00	0.000
		(1.03)		(-0.26)		(-0.10)	
INV_MILLS	β_{14}					-0.359***	-0.073
						(-9.19)	
LOG LIKELIHOOD		-277.466		-6176.553		-6238.633	
CHI-SQUARE		25.472		398.702		502.866	
N		413		10,119		10,532	

SUSPECT1_PRIVATE is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a private equity firm and zero, otherwise. SUSPECT1_PUBLIC is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a public equity firm and zero, otherwise.*, **, *** indicates 10%, 5%, and 1% significance, respectively. The p-values are computed using robust standard errors for firm clusters.SUSPECT1_PRIVATE is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a private equity firm and zero, otherwise. SUSPECT1_PUBLIC is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a public equity firm and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 6 (Con't)

Panel B: Logistic Regression of the Probability of Cutting R&D Expenditures Private Equity and Public Equity Firms (Three Groups)

$$Prob(CUT\_RD_{i,t}=1) = \beta_0 + \beta_1 PRIVATE_{i,t} + \beta_2 PUBLIC\_EQUITY_{i,t} + \beta_3 SUSPECT\_PRIVATE_{i,t} + \beta_4 SUSPECT1\_PUBLIC\_EQUITY_{i,t}$$
$$+ \beta_5 SUSPECT1\_BOTHC\_PUBLIC_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 LEVERAGE_{i,t} + \beta_8 CSALES_{i,t} + \beta_9 CCAPX_{i,t} + \beta_{10} PCRD_{i,t}$$
$$+ \beta_{11} CIRD_{i,t} + \beta_{12} CGDP_{i,t} + \beta_{13} CFUND_{i,t} + \beta_{14} FCF_{i,t} + \beta_{15} DIST_{i,t} + \beta_{16} INV\_MILLS_{i,t} + \epsilon_{i,t}$$

Variable		Private Equity Firms		Public Equity Firms		Public Equity Firms		All Sample Firms	
		Coeff.	Marg. Effects	Coeff.	Marg. Effects	Coeff.	Marg. Effects	Coeff.	Marg. Effects
Intercept	β_0	-1.068 (-1.42)		-1.096*** (-4.55)		-0.960*** (-4.66)		0.242 (1.11)	
SUSPECT1		**-0.062** (-0.28)	-0.018	**0.317*** (3.24)	0.062	**0.423*** (6.07)	0.089		
PRIVATE	β_1							0.411*** (2.87)	0.083
PUBLIC_EQUITY	β_2							0.024 (0.38)	0.005
SUSPECT_PRIVATE	β_3							**-0.143** (-0.64)	-0.029
SUSPECT_PUBLIC_EQUITY	β_4							**0.351*** (3.59)	0.071
SUSPECT_BOTH_PUBLIC	β_5							**0.465*** (6.60)	0.094
SIZE	β_6	0.131* (1.92)	0.029	0.053* (1.76)	0.011	0.067** (3.29)	0.016	0.021 (1.22)	0.004
LEVERAGE	β_7	0.092 (0.21)	0.020	0.525** (2.33)	0.098	0.293 (1.30)	0.085	-0.159 (-0.95)	-0.032
CSALES	β_8	0.215 (0.37)	0.054	0.490*** (3.18)	0.109	0.314 (1.62)	0.064	0.304** (2.49)	0.062
CCAPX	β_9	-0.728 (-3.39)	-0.160	-0.308*** (-4.09)	-0.064	-0.786*** (-9.11)	-0.164	-0.608*** (-10.46)	-0.123
PCRD	β_{10}	0.518 (1.30)	0.118	0.863*** (8.35)	0.173	0.448*** (4.02)	0.090	0.615*** (7.93)	0.125
CIRD	β_{11}	-0.809 (-1.16)	-0.166	-0.422 (-1.12)	-0.087	-0.146 (-0.52)	-0.022	-0.256 (-1.19)	-0.052
CGDP	β_{12}	0.000 (-0.80)	0.000	-0.001*** (-3.79)	0.000	-0.001*** (-6.28)	0.000	-0.001*** (-7.27)	0.000
CFUND	β_{13}	-0.091 (-0.62)	-0.018	-0.041 (-0.66)	-0.010	0.137** (2.36)	0.029	0.039 (0.94)	0.008
FCF	β_{14}	-2.353 (-1.20)	-0.578	-1.582*** (-4.04)	-0.293	-4.186*** (-8.84)	-0.848	-2.672*** (-8.59)	-0.542
DIST	β_{15}	0.003 (1.03)	0.001	0.000 (-0.16)	0.000	-0.002 (-0.45)	0.000	0.000 (-0.10)	0.000
INV_MILLS	β_{16}							-0.358*** (-9.18)	-0.073
LOG LIKELIHOOD		-277.47		-2419.9		-3724.83		-6238.12	
CHI-SQUARE		25.47		167.20		283.80		509.15	
N		413		4,044		6,075		10,532	

*, **, *** indicates 10%, 5%, and 1% significance, respectively. SUSPECT1_PRIVATE is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a private equity firm and zero, otherwise. SUSPECT1_PUBLIC_EQUITY is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a public equity firm with no publicly traded debt and zero, otherwise. SUSPECT1_BOTH_PUBLIC is one if firm-year observation is suspicious of R&D curtailment (SUSPECT1) and is a firm with both publicly traded equity and debt and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 7

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

Abnormal RM = $\Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 SUSPECT2\_PRIVATE_{i,t} + \Upsilon_3 SUSPECT2\_PUBLIC_{i,t} + \Upsilon_4 SIZE_{i,t}$
$+ \Upsilon_5 LEVERAGE_{i,t} + \Upsilon_6 ROA_{i,t} + \Upsilon_7 SALES\_GROWTH_{i,t} + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t}$
$+ \Upsilon_{10} INV\_MILLS_{i,t} + \varepsilon_{i,t}$

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)
SUSPECT2_PRIVATE	Υ_2	**0.003**	**-0.002**	**-0.025****	**0.003**
		(1.30)	(-0.47)	(-2.36)	(0.34)
SUSPECT2_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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 7 (Con't)

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

Abnormal RM = Υ_0+Υ_1PRIVATE$_{i,t}$ + Υ_2PUBLIC_EQUITY$_{i,t}$+ Υ_3SUSPECT2_PRIVATE$_{i,t}$ +Υ_4SUSPECT2_PUBLIC_EQUITY$_{i,t}$
    + Υ_5SUSPECT2_BOTH_PUBLIC$_{i,t}$ + Υ_6SIZE$_{it}$+ Υ_7LEVERAGE$_{i,t}$ + Υ_8ROA$_{i,t}$ + Υ_9SALES_GROWTH$_{i,t}$
    + Υ_{10}NOA$_{i,t}$ + Υ_{11}LOSS$_{i,t}$ + Υ_{12}INV_MILLS$_{i,t}$ + $\varepsilon_{i,t}$

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)
SUSPECT2_PRIVATE	Υ_3	**0.003**	**-0.003**	**-0.026****	**0.004**
		(1.52)	(-0.82)	(-2.49)	(0.45)
SUSPECT2_PUBLIC_EQUITY	Υ_4	**-0.009****	**0.020****	**-0.019****	**-0.039****
		(-4.78)	(4.27)	(-3.48)	(-4.64)
SUSPECT2_BOTH_PUBLIC	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: Υ_3= Υ_4		18.55***	13.70***	0.37	13.12***
F-test: Υ_3 = Υ_5		10.66***	2.07	2.62	2.1
F-test: Υ_4 = Υ_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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. 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. SUSPECT2_PRIVATE is 1 if the firm is a suspicious of engaging in earnings management and has private equity with public debt, and 0 otherwise. SUSPECT2_PUBLIC_EQUITY 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. SUSPECT2_BOTH_PUBLIC 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 B.

TABLE 8

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

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)
SUSPECT2_PRIVATE	Υ_2	**0.002**	**0.000**	**-0.027*****	**-0.005**
		(1.05)	(-0.07)	(-2.61)	-(0.66)
SUSPECT2_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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. 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 (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 8 (Con't)

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

Abnormal RM = $\Upsilon_0 + \Upsilon_1 PRIVATE_{i,t} + \Upsilon_2 PUBLIC_{i,t} + \Upsilon_3 SUSPECT2\_PRIVATE_{i,t}$
$+ \Upsilon_4 SUSPECT2\_PUBLIC\_EQUITY_{i,t} + \Upsilon_5 SUSPECT2\_PUBLIC\_BOTH_{i,t} + \Upsilon_6 SIZE_{i,t}$
$+ \Upsilon_7 LEVERAGE_{i,t} + \Upsilon_8 ROA_{i,t} + \Upsilon_9 SALES\_GROWTH_{i,t} + \Upsilon_{10} NOA_{i,t} + \varepsilon_{i,t}$

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)
SUSPECT2_PRIVATE	Υ_3	**0.001**	**0.000**	**-0.026****	**-0.005**
		(0.72)	(-0.01)	(-2.55)	(-0.72)
SUSPECT2_PUBLIC_EQUITY	Υ_4	**-0.013****	**0.021****	**-0.030****	**-0.043****
		(-3.70)	(2.67)	(-2.00)	(-3.08)
SUSPECT2_BOTH_PUBLIC	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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. 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. SUSPECT2_PRIVATE is 1 if the firm is a suspicious of engaging in earnings management and has private equity with public debt, and 0 otherwise. SUSPECT2_PUBLIC_EQUITY 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. SUSPECT2_BOTH_PUBLIC 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 B.

TABLE 9

Panel A: Hausman Test for Simultaneity versus Sequentiality of Abnormal Accruals and Abnormal Real Earnings Management Measures: Full Sample

The Hausman test is conducted by regressing Abnormal AM on the exogenous variables and the predicted value from the fist-stage regression and the actual Abnormal RM (Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL). Exogenous variables are cost factors of engaging in accruals management and other firm-specific control variables.

$$\text{Abnormal RM} = \phi_0 + \phi_1 \text{AbnormalAM} + \phi_2 \text{PRIVATE} + \phi_3 \text{SUSPECT\_PRIVATE} + \phi_4 \text{SUSPECT\_PUBLIC} + \phi_5 \sum \text{Control Variable of RM} + \phi_6 \sum \text{Other Controls} + \phi_7 \text{INV\_MILLS} + \phi_8 \text{PRIVATE*INV\_MILLS} + \upsilon$$

$$\text{Abnormal AM} = \lambda_0 + \lambda_1 \text{AbnormalRM} + \lambda_2 \text{PRIVATE} + \lambda_3 \text{SUSPECT\_PRIVATE} + \lambda_4 \text{SUSPECT\_PUBLIC} + \lambda_5 \sum \text{Control Variable of AM} + \lambda_6 \sum \text{Other Controls} + \lambda_7 \text{INV\_MILLS} + \lambda_8 \text{PRIVATE*INV\_MILLS} + \nu$$

Variable	Abnormal CFO Sample		Abnormal PROD Sample		Abnormal DISEXP Sample		Abnormal ALL Sample	
	Dependent Variable							
	Abnormal CFO	Abnormal AM	Abnormal PROD	Abnormal AM	Abnormal DISEXP	Abnormal AM	Abnormal ALL	Abnormal AM
Intercept	0.01	-0.035**	0.290***	0.174***	-0.368***	-0.169***	-0.670***	0.155***
	(0.73)	(-2.57)	(5.57)	(10.01)	(-7.40)	(-8.00)	(-5.80)	(8.79)
PRIVATE	0.005	-0.015	-0.084***	-0.125***	0.083***	0.106***	0.186***	-0.105***
	(0.83)	(-0.91)	(-3.40)	(-6.34)	(3.36)	(5.51)	(3.38)	(-5.90)
SUSPECT2_PRIVATE	-0.003	0.007	-0.003	0.015	-0.026	-0.036**	0.01	0.011
	(-0.65)	(0.70)	(-0.20)	(1.39)	(-1.15)	(-2.31)	(0.28)	(1.25)
SUSPECT2_PUBLIC	*-0.014****	*0.036****	*0.031****	*0.037****	*-0.030****	*-0.014****	*-0.063****	*0.027****
	(-6.98)	(6.20)	(4.00)	(6.35)	(-3.81)	(-2.84)	(-3.65)	(5.51)
Abnormal RM		2.741***		-1.587***		-1.185***		0.584***
		(36.11)		(-33.6)		(-23.16)		(19.06)
Abnormal AM	0.386**		-3.648***		2.440***		8.072***	
	(2.37)		(-11.1)		(7.02)		(13.12)	
Endogenous variable								
PredRM		-3.293***		1.669***		1.137***		-0.658***
		(-43.27)		(35.27)		(22.17)		(-21.45)
PredAM	-0.753***		3.855***		-2.557***		-8.749***	
	(-4.63)		(11.73)		(-7.35)		(-14.72)	
Common control var.								
SIZE	-0.001	0.003**	-0.023***	-0.008***	0.027***	0.006***	0.054***	-0.009***
	(-0.50)	(2.16)	(-4.45)	(-7.09)	(5.90)	(4.58)	(4.79)	(-8.92)
LEVERAGE	-0.018***	0.058***	-0.061***	-0.079***	0.043***	0.031***	0.059**	-0.007
	(-5.65)	(6.44)	(-4.94)	(-6.73)	(3.89)	(4.41)	(2.17)	(-0.98)
SALES_GROWTH	-0.001	-0.003	-0.084***	-0.104***	0.090***	0.072***	0.169***	-0.085***
	(-0.41)	(-0.54)	(-7.55)	(-10.92)	(9.50)	(7.51)	(6.86)	(-9.20)
ROA	-0.018	0.006	0.941***	0.030*	-0.831***	0.133***	-2.272***	0.139***
	(-0.26)	(0.31)	(3.60)	(1.77)	(-4.14)	(15.75)	(-3.92)	(14.24)

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LOSS	-0.027***	0.076***	-0.062**	0.053***	0.074***	-0.046***	0.154**	0.027***
	(-3.56)	(7.31)	(-2.22)	(6.34)	(3.15)	(-13.32)	(2.47)	(3.46)
INV_MILLS	0.005***	-0.010***	-0.031***	-0.044***	0.056***	0.055***	0.082***	-0.041***
	(5.33)	(-4.04)	(-8.75)	(-9.94)	(19.32)	(10.62)	(10.29)	(-7.89)
PRIVATE*INV_MILLS	-0.006	0.015	0.052***	0.082***	-0.060***	-0.067***	-0.112***	0.067***
	(-1.35)	(1.35)	(3.20)	(6.32)	(-4.04)	(-5.68)	(-3.11)	(5.74)
Var. for REM								
HHI	-0.000**		0.000*		-0.000*		-0.000***	
	(-2.23)		(1.67)		(-1.81)		(-2.89)	
OVERPRODUCE	-0.000***		0		0		-0.000*	
	(-6.44)		(1.00)		(-0.93)		(-1.76)	
RDIndustry	-0.001		0.029***		-0.032***		-0.073***	
	(-0.71)		(4.30)		(-6.62)		(-4.80)	
Z-score	0.001		-0.036***		0.033***		0.087***	
	(0.53)		(-3.64)		(4.19)		(3.96)	
Var. for AEM								
SOX		-0.002		0.010***		-0.007**		0.009***
		(-0.58)		(3.08)		(-2.45)		(3.73)
LITIGATION		-0.012***		-0.045***		0.045***		-0.040***
		(-2.75)		(-7.98)		(8.73)		(-6.88)
BIG5		-0.006		-0.012**		0.002		-0.010**
		(-1.23)		(-2.45)		(0.37)		(-2.54)
NOA		0.000***		0		0		0.000**
		(4.46)		(1.31)		(0.57)		(2.52)
N.	41451	41451	41616	41616	33795	33795	41614	41614
1st stage Adj. R2 (%)	22.24%	10.37%	22.06%	7.56%	22.56%	8.08%	22.06%	7.83%
2nd stage Adj. R2 (%)	28.45%	37.19%	8.97%	22.74%	8.16%	21.32%	12.23%	23.90%
Hausman simultaneity test:								
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. PredRM and PredAM are predicted values of the respective endogenous variable derived from the first-stage least squares regression. InvMills is the inverse Mills ratio that is estimated from the probit model using factors that are related to a firm's choice of going public with debt, but not with equity. Other variable definitions are in Appendix B.

TABLE 9 (Cont't)

Panel B: Hausman Test for Simultaneity versus Sequentiality of Abnormal Accruals and Abnormal Real Earnings Management Measures: Beat Firms

The Hausman test is conducted by regressing Abnormal AM on the exogenous variables and the predicted value from the fist-stage regression and the actual Abnormal RM (Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL). Exogenous variables are cost factors of engaging in accruals management and other firm-specific control variables.

Abnormal RM = ϕ_0 + ϕ_1AbnormalAM+ ϕ_2PRIVATE + $\phi_3\sum$Control Variable of RM + $\phi_4\sum$Other Controls + $\phi7$INV_MILLS + ϕ_8PRIVATE*INV_MILLS + υ

Abnormal AM = λ_0 + $\lambda1$AbnormalRM+ λ_2PRIVATE + $\lambda_3\sum$Control Variable of AM + $\lambda_4\sum$Other Controls + λ_7 INV_MILLS + λ_8 PRIVATE*INV_MILLS + ν

Variable	Abnormal CFO Sample		Abnormal PROD Sample		Abnormal DISEXP Sample		Abnormal ALL Sample	
	Dependent Variable							
	Abnormal CFO	Abnormal AM	Abnormal PROD	Abnormal AM	Abnormal DISEXP	Abnormal AM	Abnormal AM	Abnormal AM
Intercept	-0.012**	0.022***	0.176***	0.090***	-0.275***	-0.038***	-0.275***	0.080***
	(-2.56)	(6.21)	(15.38)	(12.20)	(-17.76)	(-3.04)	(-31.28)	(10.09)
PRIVATE	0.015***	-0.019***	-0.096***	-0.054***	0.157***	0.001	0.183***	-0.050***
	(3.15)	(-3.97)	(-8.15)	(-7.80)	(8.62)	(0.11)	(12.53)	(-7.06)
Abnormal RM		1.041***		-0.592***		-0.281***		0.238***
		(17.33)		(-13.66)		(-4.51)		(10.75)
Abnormal AM	0.517***		-2.325***		2.701***		-0.943***	
	(3.33)		(-6.29)		(6.40)		(-83.89)	
Endogenous variable								
PredRM		-1.676***		0.683***		0.267***		-0.306***
		(-27.83)		(15.71)		(4.27)		(-13.81)
PredAM	-1.093***		2.666***		-2.752***		1.706***	
	(-7.04)		(7.21)		(-6.52)		(289.10)	
Common control var.								
SIZE	0	-0.001***	-0.013***	-0.005***	0.025***	-0.002**	0.007***	-0.006***
	(0.05)	(-4.50)	(-7.16)	(-13.01)	(10.32)	(-2.26)	(8.37)	(-13.47)
LEVERAGE	-0.009**	0.025***	-0.038***	-0.025***	-0.023*	0.042***	0.137***	0.005
	(-2.13)	(10.15)	(-3.70)	(-4.82)	(-1.96)	(10.60)	(22.08)	(1.41)
SALES_GROWTH	-0.001	-0.010***	-0.096***	-0.052***	0.130***	-0.006	0.085***	-0.046***
	(-0.28)	(-4.96)	(-11.23)	(-16.80)	(12.08)	(-1.10)	(17.47)	(-15.02)
ROA	-0.014	0.172***	0.495***	0.137***	-0.960***	0.343***	0.919***	0.206***
	(-0.23)	(17.77)	(3.58)	(9.40)	(-6.09)	(53.97)	(80.65)	(17.10)

LOSS	-0.045***	0.053***	0.053***	0.029***	-0.020***	0.014***	-0.060***	0.027***
	(-20.21)	(17.96)	(9.61)	(11.58)	(-3.25)	(5.69)	(-14.56)	(10.58)
INV_MILLS	0.013***	-0.010***	-0.037***	-0.019***	0.046***	0.017***	0.110***	-0.018***
	(17.45)	(-10.08)	(-19.76)	(-10.46)	(21.63)	(5.61)	(66.43)	(-8.42)
PRIVATE*INV_MILLS	-0.010***	0.011***	0.059***	0.033***	-0.093***	-0.006	-0.126***	0.030***
	(-3.28)	(3.49)	(7.62)	(7.28)	(-8.81)	(-0.98)	(-14.24)	(6.43)
Var. for REM								
HHI	-0.000***		-0.000*		0		-0.000***	
	(-3.37)		(-1.93)		(1.64)		(-4.24)	
OVERPRODUCE	-0.000***		0.000**		-0.000**		-0.000***	
	(-8.49)		(2.21)		(-2.21)		(-2.79)	
RDIndustry	-0.004***		0.025***		-0.039***		-0.040***	
	(-2.97)		(7.75)		(-10.94)		(-17.39)	
Z-score	-0.001		-0.006***		0.014***		-0.013***	
	(-0.97)		(-3.01)		(6.43)		(-22.35)	
Var. for AEM								
SOX		0.001		0.006***		-0.001		0.006***
		(0.62)		(6.08)		(-0.64)		(5.91)
LITIGATION		-0.004***		-0.014***		0.013***		-0.014***
		(-3.49)		(-7.25)		(4.66)		(-6.57)
BIG5		-0.009***		-0.010***		-0.005**		-0.010***
		(-6.78)		(-6.10)		(-2.48)		(-5.83)
NOA		0.000***		0.000**		0		0.000**
N.	29270	29270	29391	29391	24035	24035	24035	24035
Ist stage Adj. R2 (%)	15.71%	9.27%	15.22%	9.29%	15.94%	6.53%	15.22%	9.72%
2nd stage Adj. R2 (%)	42.40%	46.20%	11.80%	17.80%	6.00%	15.20%	81.00%	20.50%
Hausman simultaneity test:								
p-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. Firms are BEAT firms if (1) net income divided by total assets is greater than or equal to 0.005, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to 0.005 and they are not categorized as MEET firms. PredRM and PredAM are predicted values of the respective endogenous variable derived from the first-stage least squares regression. INV_MILLS is the inverse Mills ratio that is estimated from the probit model using factors that are related to a firm's choice of going public with debt, but not with equity. Other variable definitions are in Appendix B.

TABLE 9 (Cont't)

Panel C: Hausman Test for Simultaneity versus Sequentiality of Abnormal Accruals and Abnormal Real Earnings Management Measures: Just Meet Firms

The Hausman test is conducted by regressing Abnormal AM on the exogenous variables and the predicted value from the fist-stage regression and the actual Abnormal RM (Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL). Exogenous variables are cost factors of engaging in accruals management and other firm-specific control variables.

Abnormal RM = $\phi_0 + \phi_1$AbnormalAM+ ϕ_2PRIVATE + $\phi_3\sum$Control Variable of RM + $\phi_4\sum$Other Controls + ϕ_7INV_MILLS + ϕ_8PRIVATE*INV_MILLS + υ

Abnormal AM = $\lambda_0 + \lambda_1$AbnormalRM+ λ_2PRIVATE + $\lambda_3\sum$Control Variable of AM + $\lambda_4\sum$Other Controls + λ_7 INV_MILLS + λ_8 PRIVATE*INV_MILLS + ν

Variable	Abnormal CFO Sample		Abnormal PROD Sample		Abnormal DISEXP Sample		Abnormal ALL Sample	
	Dependent Variable							
	Abnormal CFO	Abnormal AM	Abnormal PROD	Abnormal AM	Abnormal DISEXP	Abnormal AM	Abnormal ALL	Abnormal AM
Intercept	0.00	0.006	0.156***	0.008	-0.156***	-0.016	-0.261***	0
	(0.07)	(0.98)	(8.66)	(0.83)	(-5.56)	(-1.08)	(-7.81)	(-0.04)
PRIVATE	0.001	0.002	-0.070***	0	0.129***	0.008	0.157***	0.007
	(0.22)	(0.30)	(-3.69)	(0.04)	(3.28)	(0.47)	(4.46)	(0.80)
Abnormal RM		0.121		-0.025		-0.208***		-0.022
		1.42		-0.55		-2.89		-1.06
Abnormal AM	0.954***		-3.986***		0.978		6.357***	
	(4.05)		(-5.42)		(1.04)		(4.66)	
Endogenous variable								
PredRM		-0.767***		0.089*		0.193***		-0.032
		(-8.95)		(1.95)		(2.65)		(-1.53)
PredAM	-1.599***		4.340***		-1.066		-7.417***	
	(-6.77)		(5.90)		(-1.13)		(-5.43)	
Common control var.								
SIZE	-0.002**	-0.002***	-0.010***	-0.002***	0.010***	-0.001	0.017***	-0.002***
	(-2.45)	(-3.21)	(-4.87)	(-3.61)	(3.33)	(-0.67)	(4.45)	(-3.40)
LEVERAGE	0.002	0.009**	-0.073***	0.009	-0.002	0.012	0.052*	0.014**
	(0.33)	(2.08)	(-4.82)	(1.26)	(-0.08)	(1.57)	(1.86)	(2.42)
SALES_GROWTH	0	-0.013***	-0.083***	-0.015***	0.101***	0.001	0.153***	-0.013***
	(-0.10)	(-3.72)	(-5.82)	(-3.52)	(4.57)	(0.12)	(5.78)	(-3.03)
ROA	0.499***	0.053	-0.699***	0.097*	0.272*	0.210***	1.392***	0.168***
	(13.99)	(1.02)	(-6.26)	(1.76)	(1.75)	(5.31)	(6.72)	(3.57)

LOSS	0.005	0.001	-0.023**	0.001	0.006	0.004	0.030*	0.002
	(1.55)	(0.24)	(-2.57)	(0.14)	(0.51)	(0.88)	(1.76)	(0.55)
INV_MILLS	-0.002	0.006***	-0.016***	0.005***	0.040***	0.010***	0.042***	0.007***
	(-1.19)	(4.48)	(-2.92)	(2.76)	(6.61)	(2.94)	(4.18)	(3.64)
PRIVATE*INV_MILLS	0.002	-0.004	0.038***	-0.003	-0.086***	-0.012	-0.093***	-0.007
	(0.44)	(-0.96)	(2.80)	(-0.48)	(-3.73)	(-1.03)	(-3.72)	(-1.20)
Var. for REM								
HHI	-0.000***		0.000***		-0.000**		-0.000***	
	(-6.03)		(5.98)		(-2.44)		(-6.47)	
OVERPRODUCE	-0.001**		0.007***		-0.006**		-0.012***	
	(-2.00)		(3.79)		(-2.10)		(-3.72)	
RDIndustry	-0.008***		0.036***		-0.040***		-0.087***	
	(-3.51)		(5.28)		(-4.84)		(-6.89)	
Z-score	-0.004***		0.010***		-0.004*		-0.020***	
	(-6.80)		(6.03)		(-1.84)		(-6.14)	
Var. for AEM								
SOX		0.002		0.002		-0.001		0.002
		(1.27)		(1.03)		(-0.35)		(1.27)
LITIGATION		0.004**		0.003		0.006*		0.004*
		(2.10)		(1.26)		(1.89)		(1.77)
BIG5		0.001		0.001		-0.002		0
		(0.50)		(0.39)		(-0.46)		(0.12)
NOA		0.000**		0		0		0
		(2.10)		(1.38)		(0.97)		(1.19)
N.	4962	4962	4976	4976	3053	3053	4976	4976
Ist stage Adj. R^2 (%)	2.19%	14.81%	2.17%	10.68%	1.66%	6.19%	2.17%	11.27%
2nd stage Adj. R^2 (%)	49.90%	42.20%	12.70%	3.70%	6.20%	1.30%	16.30%	7.10%
Hausman simultaneity test:								
p-value	<0.0001	<0.0001	0.001	0.052	0.257	0.008	<0.0001	0.126

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. Firms are categorized as JUST MEET firms is if (1) net income divided by total assets is greater than or equal to 0.005 but less than 0.005, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to 0 but less than 0.005. PredRM and PredAM are predicted values of the respective endogenous variable derived from the first-stage least squares regression. INV_MILLS is the inverse Mills ratio that is estimated from the probit model using factors that are related to a firm's choice of going public with debt, but not with equity. Other variable definitions are in Appendix B.

TABLE 9 (Cont't)

Panel D: Hausman Test for Simultaneity versus Sequentiality of Abnormal Accruals and Abnormal Real Earnings Management Measures: Just Miss Firms

The Hausman test is conducted by regressing Abnormal AM on the exogenous variables and the predicted value from the fist-stage regression and the actual Abnormal RM (Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL). Exogenous variables are cost factors of engaging in accruals management and other firm-specific control variables.

Abnormal RM = $\phi_0 + \phi_1$AbnormalAM + ϕ_2PRIVATE + $\phi_3\sum$Control Variable of RM + $\phi_4\sum$Other Controls + ϕ_7INV_MILLS + ϕ_8PRIVATE*INV_MILLS + υ

Abnormal AM = $\lambda_0 + \lambda_1$AbnormalRM + λ_2PRIVATE + $\lambda_3\sum$Control Variable of AM + $\lambda_4\sum$Other Controls + λ_7 INV_MILLS + λ_8 PRIVATE*INV_MILLS + ν

Variable	Abnormal CFO Sample		Abnormal PROD Sample		Abnormal DISEXP Sample		Abnormal ALL Sample	
	Dependent Variable							
	Abnormal CFO	Abnormal AM	Abnormal PROD	Abnormal AM	Abnormal DISEXP	Abnormal AM	Abnormal ALL	Abnormal AM
Intercept	0.012	0.008	0.089**	0.01	-0.173***	-0.042	-0.231***	-0.067*
	(0.62)	(0.35)	(2.15)	(0.16)	(-3.37)	(-0.96)	(-2.86)	(-1.94)
PRIVATE	-0.006	-0.013	-0.048	-0.015	0.033	-0.002	0.111	0.01
	(-0.25)	(-0.48)	(-0.94)	(-0.47)	(0.51)	(-0.06)	(1.13)	(0.31)
Abnormal RM		-0.676***		-0.167		-0.267		-0.288**
		(-3.36)		(-0.29)		(-1.29)		(-2.46)
Abnormal AM	-0.016		0.421		-0.609		-1.159	
	(-0.06)		(0.77)		(-0.92)		(-1.09)	
Endogenous variable								
PredRM		0.133		0.165		0.235		0.236**
		(0.65)		(0.29)		(1.13)		(2.01)
PredAM	-0.435		-0.426		0.499		0.621	
	(-1.63)		(-0.78)		(0.75)		(0.58)	
Common control								
SIZE	-0.004**	-0.006***	0.001	-0.003	0.011**	0	0.005	-0.001
	(-2.03)	(-2.85)	(0.23)	(-1.31)	(2.25)	(0.09)	(0.71)	(-0.61)
LEVERAGE	0.002	-0.004	-0.083***	-0.01	-0.02	-0.014	0.054	0.01
	(0.13)	(-0.25)	(-3.11)	(-0.20)	(-0.59)	(-0.76)	(1.04)	(0.60)
SALES_GROWTH	-0.027***	-0.029***	-0.039**	-0.022	0.084***	0.01	0.094***	0.017
	(-3.14)	(-2.86)	(-2.19)	(-0.88)	(3.84)	(0.44)	(2.72)	(1.01)
ROA	0.211**	0.451***	-0.917***	0.139	0.39	0.328***	1.474***	0.632***
	(1.97)	(5.10)	(-4.17)	(0.30)	(1.52)	(3.23)	(3.45)	(3.81)

INV_MILLS	-0.003	0.009**	-0.026**	0.009	0.053***	0.022**	0.072***	0.024***
	(-0.59)	(2.00)	(-2.54)	(0.93)	(4.36)	(2.22)	(3.63)	(3.34)
PRIVATE*INV_MILLS	0.000	0.007	0.043	0.012	-0.012	0.006	-0.081	-0.01
	(-0.02)	(0.38)	(1.34)	(0.51)	(-0.29)	(0.27)	(-1.29)	(-0.46)
Var. for REM								
HHI	-0.000*		0.000		0.000		0.000	
	(-1.68)		(-0.26)		(-0.89)		(-0.66)	
OVERPRODUCE	-0.001		0		0		-0.001	
	(-1.32)		(0.31)		(-0.20)		(-0.53)	
RDIndustry	0.006		0.014		-0.035**		-0.045*	
	(1.00)		(1.19)		(-2.49)		(-1.94)	
Z-score	0.006***		0.003		0.001		0.003	
	(3.22)		(0.69)		(0.18)		(0.42)	
Var. for AEM								
SOX		-0.001		0		-0.006		-0.005
		(-0.25)		(-0.03)		(-0.88)		(-0.83)
LITIGATION		0.003		-0.009		0.007		0.023*
		(0.43)		(-0.33)		(0.60)		(1.81)
BIG5		0.001		-0.006		-0.005		0.007
		(0.17)		(-0.43)		(-0.50)		(0.71)
NOA		0.005***		0.006***		0.006***		0.005***
		(3.46)		(3.53)		(2.92)		(2.93)
N.	635	635	640	640	560	560	640	640
Ist stage Adj. R^2 (%)	3.83%	5.07%	3.84%	7.48%	3.42%	9.59%	3.84%	7.48%
2nd stage Adj. R^2 (%)	28.30%	27.40%	5.60%	2.70%	9.50%	3.10%	8.80%	6.30%
Hausman simultaneity test:								
p-value	0.105	0.517	0.439	0.771	0.454	0.261	0.561	0.045

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. JUSTMISS firms are the firms with net income divided by total assets is greater than or equal to -0.005 but less than 0, or (2) the change in net income divided by total assets between t-1 and t is greater than or equal to -0.005 but less than 0 and (3) they are not categorized and MEET or BEAT firms. PredRM and PredAM are predicted values of the respective endogenous variable derived from the first-stage least squares regression. INV_MILLS is the inverse Mills ratio that is estimated from the probit model using factors that are related to a firm's choice of going public with debt, but not with equity. Other variable definitions are in Appendix B.

TABLE 9 (Cont't)

Panel E: Hausman Test for Simultaneity versus Sequentiality of Abnormal Accruals and Abnormal Real Earnings Management Measures: Miss Firms

The Hausman test is conducted by regressing Abnormal AM on the exogenous variables and the predicted value from the fist-stage regression and the actual Abnormal RM (Abnormal CFO, Abnormal PROD, Abnormal DISEXP, and Abnormal ALL). Exogenous variables are cost factors of engaging in accruals management and other firm-specific control variables.

Abnormal RM = ϕ_0 + ϕ_1AbnormalAM+ ϕ_2PRIVATE + $\phi_3\sum$Control Variable of RM + $\phi_4\sum$Other Controls + ϕ_7INV_MILLS + ϕ_8PRIVATE*INV_MILLS + υ

Abnormal AM = λ_0 + λ_1AbnormalRM+ λ_2PRIVATE + $\lambda_3\sum$Control Variable of AM + $\lambda_4\sum$Other Controls + λ_7 INV_MILLS + λ_8 PRIVATE*INV_MILLS + ν

Variable	Abnormal CFO Sample		Abnormal PROD Sample		Abnormal DISEXP Sample		Abnormal ALL Sample	
	Dependent Variable							
	Abnormal CFO	Abnormal AM	Abnormal PROD	Abnormal AM	Abnormal DISEXP	Abnormal AM	Abnormal ALL	Abnormal AM
Intercept	0.074***	-0.431***	0.066*	0.188***	-0.131***	-0.289***	-0.124**	-0.228***
	(3.66)	(-15.32)	(1.95)	(10.35)	(-3.49)	(-12.36)	(-2.01)	(-9.12)
PRIVATE	-0.006	0.068***	-0.078***	-0.238***	0.102***	0.165***	0.158***	0.325***
	(-0.38)	(3.15)	(-3.09)	(-9.61)	(3.53)	(6.87)	(3.44)	(11.29)
Abnormal RM		6.582***		-3.452***		-1.931***		-2.322***
		(22.40)		(-22.09)		(-24.78)		(-16.78)
Abnormal AM	-0.02		-0.18		-0.607**		-0.318	
	(-0.12)		(-0.66)		(-2.06)		(-0.64)	
Endogeneous variable								
PredREM		-7.053***		3.582***		1.779***		2.188***
		(-23.96)		(22.86)		(22.61)		(15.79)
PredAEM	-0.177		0.326		0.41		-0.205	
	-1.08		1.19		1.39		-0.41	
Common control var.								
SIZE	-0.005**	0.017***	-0.004	-0.014***	0.005	0.011***	0.004	0.008***
	(-2.35)	(8.29)	(-1.13)	(-7.98)	(1.29)	(5.16)	(0.72)	(3.67)
LEVERAGE	-0.065***	0.366***	0.005	0.033***	-0.025	-0.051***	-0.090***	-0.247***
	(-5.63)	(18.24)	(0.24)	(3.25)	(-1.17)	(-4.94)	(-2.58)	(-15.30)
SALES_GROWTH	0	-0.013**	-0.046***	-0.171***	0.053***	0.105***	0.097***	0.223***
	(-0.10)	(-1.99)	(-6.70)	(-18.34)	(6.73)	(12.18)	(7.76)	(13.90)
ROA	0.068	-0.103***	-0.01	0.027***	0.042	-0.008	0.071	0.148***
	(1.12)	(-7.97)	(-0.10)	(3.38)	(0.39)	(-0.93)	(0.38)	(29.87)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
INV_MILLS	-0.022***	0.127***	-0.001	0.013***	0.045***	0.071***	0.025***	0.015***
	(-10.35)	(18.26)	(-0.42)	(4.20)	(11.61)	(15.52)	(3.86)	(4.42)
PRIVATE*INV_MILLS	0.005	-0.037***	0.040***	0.126***	-0.049***	-0.084***	-0.076***	-0.157***
	(0.53)	(-2.73)	(2.71)	(8.39)	(-2.98)	(-5.64)	(-2.85)	(-9.38)
Var. for REM								
HHI	0		-0.000**		-0.000***		0	
	(1.38)		(-2.28)		(-3.15)		(-0.30)	
OVERPRODUCE	-0.000***		0		0		0	
	(-3.91)		(-1.05)		(0.42)		(-0.46)	
RDIndustry	0.004		0.016***		-0.022***		-0.032***	
	(1.31)		(2.82)		(-3.49)		(-3.19)	
Z-score	-0.003		0		-0.004		-0.003	
	(-0.71)		(0.00)		(-0.53)		(-0.27)	
Var. for AEM								
SOX		-0.003		0.010**		0		-0.010**
		(-0.68)		(2.18)		(-0.08)		(-2.09)
LITIGATION		-0.002		-0.137***		0.079***		0.174***
		(-0.32)		(-16.91)		(11.49)		(14.03)
BIG5		0.054***		-0.002		0.011		-0.015**
		(7.57)		(-0.26)		(1.57)		(-2.16)
NOA		0.000***		-0.000**		0		-0.000***
		(14.15)		(-2.20)		(0.17)		(-2.66)
N.	6584	6584	6609	6609	6147	6147	6607	6607
Ist stage Adj. R^2 (%)	26.35%	7.94%	26.21%	2.82%	26.43%	15.06%	26.21%	3.27%
2nd stage Adj. R^2 (%)	16.30%	29.90%	4.10%	24.60%	17.10%	27.20%	9.40%	26.00%
Hausman simultaneity test:								
p-value	0.281	<0.0001	0.234	<0.0001	0.164	<0.0001	0.679	<0.0001

*, **, and *** indicates significance at 10%, 5%, and 1%, respectively. PredRM and PredAM are predicted values of the respective endogenous variable derived from the first-stage least squares regression. INV_MILLS is the inverse Mills ratio that is estimated from the probit model using factors that are related to a firm's choice of going public with debt, but not with equity. Other variable definitions are in Appendix B.

TABLE 10

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

Variable		BEAT_ZERO				BEAT_LAST			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL	Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.024**	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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. I run equation (8) and (9) 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

TABLE 11

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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. I run equation (8) and (9) 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 B.

TABLE 12

Logistic Regression of the Probability of Cutting R&D Expenditures for High Default vs. Low Default Firms

Variable		High Default Firms		Low Default Firms	
		Coeff.	Marg. Effects	Coeff.	Marg. Effects
Intercept	β_0	-0.072		1.258***	
		(-0.14)		(2.91)	
PRIVATE	β_1	0.225	0.046	0.667*	0.135
		(1.33)		(2.23)	
SUSPECT1_PRIVATE	β_2	**0.051**	0.010	**-0.673**	-0.136
		(0.20)		(-1.09)	
SUSPECT1_PUBLIC	β_3	**0.315****	0.064	**0.487****	0.099
		(2.30)		(5.71)	
SIZE	β_4	0.052	0.011	-0.002*	0.000
		(1.03)		(-0.06)	
LEVERAGE	β_5	0.000	0.000	-1.108**	-0.224
		(0.00)		(-2.63)	
CSALES	β_6	0.351	0.072	0.174	0.035
		(1.41)		(0.60)	
CCAPX	β_7	-0.828***	-0.169	-1.006***	-0.204
		(-7.38)		(-7.64)	
PCRD	β_8	0.485***	0.099	0.413**	0.084
		(3.32)		(2.26)	
CIRD	β_9	0.024	0.005	-0.337	-0.068
		(0.06)		(-0.99)	
CGDP	β_{10}	-0.001***	0.000	-0.001***	0.000
		(-4.08)		(-4.90)	
CFUND	β_{11}	0.152**	0.031	0.008	0.002
		(2.28)		(0.10)	
FCF	β_{12}	-2.489***	-0.509	-4.872***	-0.986
		(-3.79)		(-7.11)	
DIST	β_{13}	-0.003	-0.001	0.001	0.000
		(-1.08)		(1.09)	
INV_MILLS	β_{14}	-0.316***	-0.065	-0.585***	-0.118
		(-3.75)		(-6.19)	
LOG LIKELIHOOD		-1245.397		-2468.609	
CHI-SQUARE		137.6		270.195	
N		2,092		4,181	

*, **, *** indicates 10%, 5%, and 1% significance, respectively. I run equation (7) separately for high default firms and law default firms. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a private equity firm, and zero otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt, and zero otherwise. All other variable definitions are in Appendix B.

TABLE 13

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)
SUSPECT2_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)
SUSPECT2_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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. I run equation (7) separately for high default firms and low default firms. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 14

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)
SUSPECT2_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)
SUSPECT2_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

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. I run equation (7) 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 (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B.

TABLE 15

Before-After Analysis of Abnormal Real Earnings Management around Public Equity Offerings

Abnormal RM$_t$ = Υ_0+Υ_1SUSPECT2$_{i,t}$+ Υ_2BEFORE_LT + Υ_3BEFORE_ST +Υ_4AFTER_ST+Υ_5AFTER_LT
  + Υ_6SUSPECT3_BEFORE_LT + Υ_7SUSPECT3_BEFORE_ST +Υ_8SUSPECT3*AFTER_ST
  + Υ_9SUSPECT3_AFTER_LT + Υ_{10}SIZE$_{i,t}$ + Υ_{11}LEVERAGE$_{i,t}$ + Υ_{12}ROA$_{i,t}$+Υ_{13}SALTES_GROWTH$_{i,t}$
  + Υ_{14}NOA$_{i,t}$+Υ_{15}LOSS$_{i,t}$+ $\varepsilon_{i,t}$

Variable		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.032***	0.103***	-0.171***	-0.156***
		(2.77)	(3.35)	(-2.65)	(-2.62)
SUSPECT2	Υ_1	-0.003	0.006*	-0.024***	-0.015**
		(-1.42)	(1.73)	(-2.61)	(-2.20)
BEFORE_LT	Υ_2	-0.018**	-0.002	0.004	-0.004
		(-2.36)	(-0.09)	(0.20)	(-0.13)
BEFORE_ST	Υ_3	0.007	-0.015	0.016	0.033
		(0.99)	(-0.85)	(0.80)	(1.01)
AFTER_ST	Υ_4	-0.001	-0.013	-0.003	0.001
		(-0.16)	(-1.01)	(-0.19)	(0.03)
AFTER_LT	Υ_5	0.007	0.00	0.015	0.006
		(1.14)	(-0.03)	(0.83)	(0.20)
SUSPECT3_BEFORE_LT	Υ_6	-0.002	-0.034	0.02	0.03
		(-0.07)	(-1.12)	(0.58)	(0.51)
SUSPECT3_BEFORE_ST	Υ_7	-0.012	0.026	-0.04	-0.089**
		(-1.31)	(1.16)	(-1.53)	(-2.25)
SUSPECT3_AFTER_ST	Υ_8	**-0.023***	**0.037***	**0.025**	**-0.056**
		(-2.70)	(1.77)	(0.97)	(-1.36)
SUSPECT3_AFTER_LT	Υ_9	**-0.019***	**0.007**	**0.019**	**-0.02**
		(-1.82)	(0.26)	(0.73)	(-0.43)
SIZE	Υ_{10}	-0.006***	-0.002	0.015**	0.006
		(-4.53)	(-0.68)	(2.18)	(0.96)
LEVERAGE	Υ_{11}	0.003	-0.148***	0.093**	0.181***
		(0.29)	(-5.25)	(2.11)	(3.24)
ROA	Υ_{12}	0.307***	-0.495***	-0.018	0.744***
		(7.19)	(-5.37)	(-0.21)	(4.95)
SALEGS_GROWTH	Υ_{13}	-0.015**	-0.011	0.112***	0.045**
		(-2.15)	(-1.10)	(5.27)	(2.17)
NOA	Υ_{14}	0.002	-0.004	-0.009*	0.002
		(1.40)	(-1.11)	(-1.72)	(0.38)
LOSS	Υ_{15}	-0.014***	0.023**	-0.017	-0.061***
		(-3.32)	(2.51)	(-1.56)	(-3.75)
Adj. R^2		16.00%	11.80%	4.00%	8.20%
N		4,836	5,004	2,595	4,999

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. This is regression result of equation (10). I examine abnormal levels of cash flows, production, and discretionary expenses for event years (t-4, t+3) relative to the event year. The event year is 0 in the year of the public equity offering. BEFORE_LT is one if (t+3, t+4) and BEFORE_ST is one (t-2, t-1), and zero otherwise. AFTER_LT is one if (t+2, t+3) and AFTER_ST is one if (t, t+1),and zero otherwise. All other variable definitions are in Appendix B.

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TABLE 16

Future Operating Performance in t+1 to Real Operating Activities Management

$$AdjROA_{t+1}=\Upsilon_0+ \Upsilon_1PRIVATE_{i,t}+ \Upsilon_2RM\_PRIVATE_{i,t}+ \Upsilon_3RM\_PUBLIC_{i,t}+\Upsilon_4SIZE_{i,t}+ \Upsilon_5LEVERAGE_{i,t}$$
$$+ \Upsilon_6AdjROA_{i,t}+ \Upsilon_7SALES\_GROWTH_{i,t}+ \Upsilon_8LOSS_t+\varepsilon_{i,t}$$

Variable		Dependent variable: Adj.ROA$_{t+1}$			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.004	0.003	0.001	0.005
		(0.47)	(0.38)	(0.12)	(0.57)
PRIVATE$_t$	Υ_1	0.000	0.000	0.001	-0.001
		(-0.25)	(0.04)	(0.44)	(-0.41)
RM_PRIVATE$_t$	Υ_2	**-0.014**	**-0.021**	**-0.037**	**-0.022**
		(-1.38)	(-1.06)	(-1.64)	(-1.08)
RM_PUBLIC$_t$	Υ_3	**-0.025****	**-0.024***	**-0.033***	**-0.037****
		(-2.34)	(-1.75)	(-1.68)	(-2.20)
SIZE$_t$	Υ_4	0.001	0.001	0.001	0.001
		(0.99)	(0.94)	(0.66)	(0.71)
LEVERAGE$_t$	Υ_5	-0.034**	-0.034***	-0.023*	-0.032**
		(-2.56)	(-2.59)	(-1.82)	(-2.45)
Adj.ROA$_t$	Υ_6	0.789***	0.812***	0.795***	0.761***
		(8.67)	(8.95)	(9.04)	(8.60)
SALEGS_GROWTH$_t$	Υ_7	0.002	0.005	0.001	0.001
		(0.19)	(0.64)	(0.12)	(0.10)
LOSS$_t$	Υ_8	-0.029	-0.022	-0.023	-0.023
		(-1.24)	(-0.99)	(-1.09)	(-1.06)
Statistical Test:					
F-test: $\Upsilon_2 = \Upsilon_3$		0.56	0.02	0.02	0.32
N.		1,320	1,320	1,320	1,320
Adj. R^2		24.0%	24.0%	24.0%	24.0%

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. This regression (equation 11) tests future firm performance consequence of real earnings management. In this regression, I only consider firm-year observations that have $0< IBEI_t$/total assets$_t<=0.005$ or $0< (IBEI_{t+1}-IBEI_t)$/total assets$_t<=0.005$. Dependent variable is industry-adjusted ROA based on the same 2-digit SIC code and the year. In this subsample, 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 660 pairs of the matched-firm years. RM_PUBLIC$_t$ is 1 if the observation is a public equity firms and is belong to highest quintile of real earnings management and 0 otherwise. RM_PRIVATE$_t$ is 1 if the observation is a private equity firms and is belong to highest quintile of real earnings management, and 0 otherwise. All other variable definitions are in Appendix B.

TABLE 17

Changes in Operating Performance from t-1 to t+1 to Real Operating Activities Management

$AdjCROA_{t-1,t+1}=\Upsilon_0 + \Upsilon_1PRIVATE_{i,t} + \Upsilon_2RM\_PRIVATE_{i,t} + \Upsilon_3RM\_PUBLIC_{i,t}+ \Upsilon_4SIZE_{i,t} + \Upsilon_5LEVERAGE_{i,t}$
$+ \Upsilon_6AdjROA_{i,t}+ \Upsilon_7SALES\_GROWTH_{i,t} + \Upsilon_8LOSS_{i,t} + \varepsilon_{i,t}$

Variable		Dependent variable: Adj.CROA$_{t-1,t+1}$			
		Abnormal CFO	Abnormal PROD	Abnormal DISEXP	Abnormal ALL
Intercept	Υ_0	0.001	-0.002	-0.001	0.001
		(0.09)	(-0.18)	(-0.08)	(0.07)
PRIVATE$_t$	Υ_1	0.002	0.004**	0.004*	0.003*
		(1.07)	(2.13)	(1.90)	(1.66)
RM_PRIVATE$_t$	Υ_2	**-0.005**	**-0.023**	**-0.034**	**-0.019**
		(-0.51)	(-1.20)	(-1.55)	(-0.94)
RM_PUBLIC$_t$	Υ_3	**-0.022****	**-0.01**	**-0.036****	**-0.026**
		(-2.02)	(-0.73)	(-1.97)	(-1.50)
SIZE$_t$	Υ_4	0.00	0.00	0.00	0.001
		(0.28)	(0.31)	(-0.09)	(0.11)
LEVERAGE$_t$	Υ_5	-0.018	-0.015	-0.007	-0.016
		(-1.06)	(-0.93)	(-0.48)	(-0.92)
Adj.ROA$_t$	Υ_6	-0.026	0.00	-0.05	-0.049
		(-0.28)	(0.00)	(-0.52)	(-0.50)
SALEGS_GROWTH$_t$	Υ_7	-0.002	0.00	-0.003	-0.002
		(-0.19)	(0.03)	(-0.30)	(-0.18)
LOSS$_t$	Υ_8	-0.023	-0.017	-0.017	-0.017
		(-0.93)	(-0.70)	(-0.74)	(-0.74)
Statistical Test:					
F-test: $\Upsilon_2 = \Upsilon_3$		1.4	0.31	0.00	0.08
N.		1,296	1,296	1,296	1,296
Adj. R^2		2.00%	1.60%	3.60%	2.30%

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. This regression (equation 11) tests future firm performance consequence of real earnings management. In this regression, I only consider firm-year observations that have 0< IBEI$_t$/total assets$_t$<=0.005 or 0< (IBEI$_{t+1}$-IBEI$_t$)/total assets$_t$<=0.005. Dependent variable is industry-adjusted changes in ROA from t-1 to t+1. In this subsample, 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 ROA within ± 25%, and (4) have the smallest propensity score difference. These procedures result in 660 pairs of the matched-firm years. Since some observations are missing industry-adjusted changes in ROA from t-1 to t+1, the sample for this regression is 1,296. RM_PUBLIC$_t$ is 1 if the observation is a public equity firms and is belong to highest quintile of real earnings management and 0 otherwise. RM_PRIVATE$_t$ is 1 if the observation is a private equity firms and is belong to highest quintile of real earnings management and 0 otherwise. All other variable definitions are in Appendix B.

TABLE 18

Panel A: Cross-sectional Regressions of Abnormal Accruals and Firm's Ownership Type (Two Groups)

Abnormal AM = $\Upsilon_0 + \Upsilon_1 PRIVATE2_{i,t} + \Upsilon_2 SUSPECT2\_PRIVATE_{i,t} + \Upsilon_3 SUSPECT2\_PUBLIC_{i,t} + \Upsilon_4 SIZE_{i,t} + \Upsilon_5 ROA_{i,t} + \Upsilon_6 SALES\_GROWTH_{i,t} + \Upsilon_7 NOA_{i,t} + \Upsilon_8 NOA_{i,t} + \Upsilon_9 LOSS_{i,t} + \Upsilon_{10} INV\_MILLS_{i,t} + \varepsilon_{i,t}$

Variable		Full Sample Abnormal Accruals	Propensity-score Matched Sample Abnormal Accruals
Intercept	Υ_0	0.019**	-0.044***
		(2.01)	(-4.15)
PRIVATE	Υ_1	0.001	0.005**
		(0.51)	(2.45)
SUSPECT2*PRIVATE	Υ_2	**0.002**	**0.00**
		(1.36)	(0.05)
SUSPECT2*PUBLIC	Υ_3	**0.010***	**0.006***
		(8.64)	(3.25)
SIZE	Υ_4	-0.006***	-0.001
		(-9.37)	(-0.69)
LEVERAGE	Υ_5	0.010**	0.036***
		(2.19)	(4.84)
ROA	Υ_6	0.565***	0.602***
		(22.88)	(14.86)
SALEGS_GROWTH	Υ_7	-0.043***	-0.023***
		(-12.15)	(-4.76)
NOA	Υ_8	0.004***	0.002**
		(4.00)	(2.43)
LOSS	Υ_9	0.018***	0.018***
		(6.60)	(3.90)
INV_MILLS	Υ_{10}	-0.002	0.007**
		(-0.59)	(2.46)
Statistical Test:			
F-test: $\Upsilon_2 = \Upsilon_3$		12.86***	5.53**
Adj. R^2		17.70%	26.10%
N		42,598	8,604

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B. For propensity-score matched sample, 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.

TABLE 18 (Con't)

Panel B: Cross-sectional Regressions of Abnormal Accruals and Firm's Ownership Type (Three Groups)

Abnormal AM = $\Upsilon_0 + \Upsilon_1 PRIVATE2_{i,t} + \Upsilon_2 PUBLIC\_EQUITY_{i,t} + \Upsilon_3 SUSPECT2\_PRIVATE_{i,t}$
$+ \Upsilon_4 SUSPECT2\_PUBLIC\_EQUITY_{i,t} + \Upsilon_5 SUSPECT2\_BOTH\_PUBLIC_{i,t} + \Upsilon_6 SIZE_{i,t} + \Upsilon_7 LEVERAGE_{i,t}$
$+ \Upsilon_8 ROA_{i,t} + \Upsilon_9 SALES\_GROWTH_{i,t} + \Upsilon_{10} NOA_{i,t} + \Upsilon_{11} LOSS_{i,t} + \Upsilon_{12} INV\_MILLS_{i,t} + \varepsilon_{i,t}$

		Full Sample	Propensity-score Matched Sample
Variable		Abnormal Accruals	Abnormal Accruals
Intercept	Υ_0	0.012	-0.049***
		(1.33)	(-4.61)
DEBT_ONLY	Υ_1	0.003*	0.007***
		(1.71)	(3.66)
EQUITY_ONLY	Υ_2	0.005***	0.007**
		(2.96)	(2.10)
SUSPECT2_PRIVATE	Υ_3	**0.002**	**0.00**
		(1.27)	(0.00)
SUSPECT2_PUBLIC_EQUITY	Υ_4	**0.009***	**0.005**
		(4.91)	(1.38)
SUSPECT2_PUBLIC_BOTH	Υ_5	**0.010***	**0.007***
		(7.10)	(3.20)
SIZE	Υ_6	-0.005***	0
		(-8.64)	(-0.14)
LEVERAGE	Υ_7	0.010**	0.036***
		(2.20)	(4.92)
ROA	Υ_8	0.565***	0.603***
		(22.90)	(14.91)
SALEGS_GROWTH	Υ_9	-0.043***	-0.023***
		(-12.17)	(-4.76)
NOA	Υ_{10}	0.004***	0.002**
		(3.74)	(2.19)
LOSS	Υ_{11}	0.019***	0.018***
		(6.63)	(3.92)
INV_MILLS	Υ_{12}	-0.002	0.007**
		(-0.70)	(2.29)
Statistical Test:(p-value)			
F-test: $\Upsilon_3 = \Upsilon_4$		7.18***	1.55
F-test: $\Upsilon_3 = \Upsilon_5$		13.84***	5.14**
F-test: $\Upsilon_4 = \Upsilon_5$		0.14	0.07
Adj. R^2		17.80%	26.20%
N		42,548	8626

*, **, *** indicates 10%, 5%, and 1% significance, respectively. The t-values are computed using robust standard errors for firm clusters. . SUSPECT_PRIVATE is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a private equity firm and zero, otherwise. SUSPECT_PUBLIC is one if the firm is suspicious in engaging real earnings management (SUSPECT2) and a public equity firm with or without publicly traded debt and zero, otherwise. All other variable definitions are in Appendix B. For propensity-score matched sample, 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.

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