Earnings Management and Stock Market Listing

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Abstract

We provide the first large sample comparison of earnings management by Japanese listed and unlisted firms. Based on the theoretical predictions by Stein (1989), we empirically examine whether managers' myopic behaviors exist through inflating current earnings at the expense of long-term earnings. We find that listed firms are more likely to engage in earnings management. We also find that firm managers are more likely to manage earnings as the information content of current earnings about future earnings (stock price) increases. More importantly, we note that this manipulation is pronounced only for listed firms. This is the first study that empirically shows the market pressure for raising stock price induces earnings manipulation.

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1. Introduction

In this paper, based on the theoretical model developed by Stein (1989), we empirically examine how the desire to achieve a high stock price induces managers to behave myopically, inflating current earnings at the expense of longer term earnings. To do so, we compare the earnings management between public and private firms. As Givoly et al. (2010) discuss, while both public and private firms have incentive to manage earnings (e.g., to avoid violating earnings-based debt-covenants, to meet certain performance benchmarks, due to earnings based compensation), the incentive is less pronounced among private equity firms since capital market considerations are not a concern for them. Therefore, we directly examine whether capital market considerations affect a firm's earnings management by comparing Japanese public and private firms.

More specifically, we focus on whether greater sensitivity to future projections to current earnings leads to more earnings inflation. If earnings are more informative about future earnings, managers' incentive to manipulate investors' expectations (and the firm's share price) increases. Therefore, earnings sensitivity and earnings management has a positive correlation. On the other hand, the positive correlation does not exist among unlisted firms because there is no stock price which managers care about.

We choose Japanese firms as our sample for several reasons. First, the Japanese Financial Instruments and Exchange Act (J-FIEA) mandates that all companies which meet under certain criteria (e.g., liquidity, diverse ownership, etc.) must file annual securities reports. This is the Japanese analog of the U.S. Securities and Exchange Commission's 10-K filing. Other than whether or not stocks are traded on the market, the regulation environment surrounding the two types of firms is identical (accounting standards, independent audits, disclosure regulations, tax laws). Therefore, the Japanese setting allows us to conduct an experiment on the pure effect of listing status on managers' myopic behavior regarding earnings manipulation.

Furthermore, comprehensive data on ownership structure is available, even for unlisted firms. Extant research has shown possible confounding effects of being listed and agency costs caused by ownership separation (Jesnsen and Meckling, 1976), however the research suffered from a lack of ownership data for unlisted firms (Givoly et al., 2010). By controlling firms' ownership, we overcome this issue.

Finally and more importantly, Bolton et al. (2006) show that myopic behavior (short-termism) is also induced by managers' personal stake (i.e., stock-based executive compensation). Taking advantage of the Japanese setting in which the level of stock-based compensation is relatively low, we examine how stock price pressure leads to managers' manipulation even though there is relatively lower personal incentive to do so.

We find that listed firms are more likely to engage in earnings management. This result is consistent with Givoly et al. (2010), supporting opportunistic behavior hypothesis. The result implies that that short-term pressure exerted on listed firms leads them to manage their earningsmore than their unlisted counterparts. We also find that as the information of current earnings about future earnings (thus about stock price) increases, managers are more likely to engage in earnings management. However, this manipulation is pronounced only for listed firms.

This paper expands on the extant literature by precisely investigating the pure trading effects of being listed and by adding international evidence on accounting quality between private and public firms (Beatty et al., 2002; Ball and Shivakumar, 2005; Burgstahler et al., 2006; Givoly et al., 2010; Hope et al., 2013).We also add empirical evidence to the broad short-termism discussion. Asker et al. (2015) showed that short-term market pressure causes lower investment levels for listed firms compared to the unlisted counterparts. However, Bakke et al. (2012) found that stock market listing increases investment. The authors argued that the liquidity benefit for public companies motivate them to invest more than private companies. Gilje and Taillard (2016) showed that private firms are less responsive to investment opportunities compared to public firms and suggested that access to capital is important when explaining differences between the investments of public and private firms. In a recent Japanese study, Orihara (2017) found that the market liquidity-monitoring trade-off of listings had heterogeneous effects on a firm's investment, depending on its nature. In this paper, we focus primarily on the accounting information quality between listed and unlisted firms.

The remainder of this paper is organized as follows. Section 2 introduces the institutional background. Section 3 shows theoretical background and develops testable

hypotheses. Section 4 explains the research methodology, the data, and variables used in our empirical study. Section 5 presents our empirical findings. Section 6 provides concluding remarks.

2. Institutional Background and Literature Review

2.1. Institutional background

Japanese Financial Instruments and Exchange Act (J-FIEA, hereafter) requires a firm to submit an "Annual Securities Report" if a firm fall under any of the categories specified in the following items (J-FIFA Article 24):

(i) Securities listed in a Financial Instruments Exchange;

(ii) Securities specified by a Cabinet Order as those of which the state of distribution can be regarded as being equivalent to Securities referred to in the preceding item;

(iii) Securities of which Public Offering or Secondary Distribution were subjected to the main clause of Article 4 (1) or (2) or the main clause of Article 23-8 (1) or (2) (excluding those specified in the preceding two items); or

(iv) Securities issued by the company, if the number of its holders is not less than the number specified by a Cabinet Order (1,000)

We define a firm which falls under (i) or (ii) as a listed public firm and a firm which falls under (iii) or (iv) as an unlisted firm. Other than whether or not stocks are traded on the market, the regulation environment surrounding the two types of firms is identical. For example, the financial statements which are included in an annual securities report shall be prepared in accordance with the manner generally accepted fair and proper (J-FIFA Article 193): J-GAAP, IFRS, US-GAAP[1]. Furthermore, the

[1] Regulation on Terminology, Forms, and Preparation Methods of Financial Statements Article 1 & Regulation on Terminology, Forms, and Preparation Methods of Consolidated Financial Statements Article 93,94,95

financial statements are required an audit certification by a certified public accountant or audit protection of investors (J-FIFA Article 193-2). Listed and unlisted firms are subject to the same tax laws. Finally, the disclosure regulations surrounding the two types of firms are similar.

Previous research (Soderstrom and Sun, 2007; Ahmed et al., 2013) revealed the regulation environment (e.g., disclosure regime, accounting standards, or auditing services) could affect accounting numbers. The Japanese setting allows us to conduct an experiment on the pure effect of listing status on managers' myopic behavior regarding earnings manipulation, since listed and unlisted firms in Japan are under the same regulatory environment. Finally, we restrict listed and unlisted firms to firms who never have experienced IPO nor delisting to rule out the effect of those on accounting numbers.

2.2. Literature review

Growing body of literature focus on private firms' earnings quality. Beatty et al. (2002) find that U.S. public banks report managed earnings than private banks. On the other hand, Hope et al. (2013) and Kim and Yasuda (2017), using U.S. and Japanese private firms, respectively, find that private firms are more likely to manage earnings. However, these studies do not clearly address whether the results derived from public ownership or other regulation factors such as accounting standards, audit, or disclosure requirements, since those factors surrounding private firms in which these studies focus on are not necessarily the same with the factors surrounding public firms.

Ball and Shivakumar (2005) and Burgstahler et al. (2006) focus on European setting because private firms and public firms are under the same accounting rules and both are required to be audited. They find that earnings quality of private firms are lower than that of public firms. However, these studies did not control the reporting and disclosure requirements surrounding private and public firms. Givoly et al. (2010) compare U.S. firms with publicly traded equity and those with privately held equity that have publicly traded debt. Since both types of firms are subject to identical SEC reporting and disclosure requirements, they additionally control the disclosure factor to examine how the ownership structure affects earnings management.

In this study, we also control potential regulation factors that could affect firms' myopic behavior by comparing listed and unlisted firms under J-FIEA. Since the regulation environment surrounding the two types of firms is identical (accounting standards, independent audits, disclosure regulations, tax laws), Japanese setting allows us to examine pure trading effect on earnings management.

Furthermore, comprehensive data on ownership structure is available, even for unlisted firms. Extant research has shown possible confounding effects of being listed and agency costs caused by ownership separation (Jesnsen and Meckling, 1976), however the research suffered from a lack of ownership data for unlisted firms (Givoly et al., 2010). By controlling firms' ownership, we overcome this issue.

Finally and more importantly, Bolton et al. (2006) show that myopic behavior (short-termism) is also induced by managers' personal stake (i.e., stock-based executive compensation). Taking advantage of the Japanese setting in which the level of stock-based compensation is relatively low, we examine how stock price pressure leads to managers' manipulation even though there is relatively lower personal incentive to do so.

3. Theoretical Background and Hypothesis Development

3.1. Theoretical background

Our empirical hypotheses are built on the theoretical insights of Stein (1989) on myopic behaviors of firm managers. In his model, the publicly observed earnings e_t takes the form:

$$(1) \quad e_t = e_t^n + b_t - c(b_{t-1})$$

where e_t^n is the firm's "natural" earnings and $c(b_{t-1})$ represents the cost function indicating the earnings that must be given up in period t as a result of "borrowing" at t-1. Thus, there is an increasing marginal cost to borrowing against future earnings, and the

firm's true long-run value is maximized when these borrowings are zero. We note that the amount of borrowing b_t is not observable by outside investors.

Stein (1989) assume that managers are interested in not only long-run earnings but also current stock prices. More concretely, mangers maximize the following utility function:

(2) $U_t = e_t + \pi P_t + (1-\pi)e_{t+1}/(1+r)$

where P_t is the market stock price and the sum of discounted values of the expected earnings of the future: $P_t = \sum_{j=1}^{\infty} \frac{E_t[e_{t+j}]}{(1+r)^j}$. The managers might sell a fraction π of their shares at the market price. This gives them an incentive to manipulate the current stock price in the hope that investors will raise their expectations of future cash flows. The remaining (1-π) will be held by managers indefinitely. Thus, the managers choose reported earnings to maximize their utility, which is driven by both short-run and long-run incentives.

In order to maximize utility, it is shown in Stein (1989) that the following first order condition must be satisfied:

(3) $-c'\left(\bar{b}\right) = [(1+r)/(1-\pi)][1+\pi\alpha_0/r]$

That is, the manager chooses a level of manipulation such that the longer-term cost (the left hand side of equation 3) of a manipulation equals the short-run gain. If π=0, the manager cares only about the present value of earnings and the first-best value of b is chosen. Increasing π above zero leads to increased myopic behavior. More importantly, this myopia also depends on α_0, which indicates the sensitivity of its stock price to its current earnings. That is, the extent of a firm's earnings manipulation depends on the sensitivity of its stock price to its current earnings per share. As the future projections to current earnings are increased, i.e., current earnings become more

informative about future earnings, the managers are more inclined to engage in earnings management to manipulate investors' expectations.

Although Stein (1989) is not a newly advocated theory, the model is paid attention from the context of myopic discussion by comparing public and private firms' behavior. For example, Asker et al. (2015) address myopic issue regarding firms' investment behavior not just by examining public firms but by comparing public firms and private firms. They find that public firms are less responsive to change in investment opportunities especially in industries in which earnings response coefficient to stock price is higher. In addition, while earnings response coefficient do not affect private firms' investment sensitivity, it does affect public firms' sensitivity. Taken together, the results imply that market pressure distort investment decisions. In this study, we also compare listed and unlisted firms by applying Stein (1989)'s model to identify manager's motivation to manipulate the current earnings.

3.2. Hypotheses development

Listing status has costs and benefits. On the positive side, it reduces the cost of obtaining funds by broadening the scope of investors (Welch, 1989; Brave, 2009). However, it creates uncertainty in ownership by exposing management to uncertainty regarding shareholder intervention (e.g., proxy fight). This uncertainty can affect managerial decisions on firm behavior. Related to these conflicting effects, there are two conflicting predictions on the quality of financial statements between listed and unlisted firms.

The demand for high-quality information of earnings is presumably higher for listed firms, because the accounting information is the main source for equity holders. Listed firms are also incentivized to disclose precise financial statuses to reduce cost of equity and litigation risk (Skinner, 1997). These arguments support the demand hypothesis which is originally advocated by Ball and Shivakumar (2005).

On the other hand, managers of listed firms are under continuous pressure from investors to meet performance benchmarks. For example, managers are motivated to manage earnings to meet analysts' forecasts (Degeorge, et al., 1999). In contrast,

unlisted firms are not generally exposed to these market pressures. Therefore, the listing status can provide managers the short-term pressure needed to distort earnings. Therefore, listed firms are more incentivized to manage earnings than unlisted counterparts. This is known as the opportunistic behavior hypothesis. To summarize, as Givoly et al. (2010) discuss, while both public and private firms have incentive to manage earnings (e.g., to avoid violating earnings-based debt-covenants, to meet certain performance benchmarks, due to earnings based compensation), the incentive is less pronounced among private equity firms since capital market considerations are not a concern for them. Therefore, the listing status can provide managers the short-term pressure leading earnings distortion. In contrast, unlisted firms are not generally exposed to these market pressure. Therefore, our first hypothesis is expressed as below:

H1: *Listed firms engage in more earning management than unlisted firms.*

Given that short-termism is a key driver of the differences of earning management between listed and unlisted firms, we can derive more predictions of how short-termism impact manager incentives to manipulate earnings. The most important implication of the model in Stein (1989) is that the myopia depends on α_0, which indicates the degree to which current earnings are a good predictor of future earnings (we call this as earnings sensitivity in this study). As the future projections to current earnings are increased, i.e., as earnings becomes more informative about future earnings, and so the firm's share price, the manager's incentive to manipulate investors' expectations by inflating earnings increases for listed firms. However, this is not the case with unlisted firms that has not stock price which manager care about.

Stein (1989) point out that the matured firms whose current earnings has more information about future earnings may feel considerably greater short-term earnings pressure than start-up companies whose current earnings are likely to provide little information about future earnings. Therefore, our second hypothesis is expressed as below:

H2: *The impact of listed status on earning management is more pronounced for firms with higher earnings sensitivity.*

4. Research design

4.1. Model specification

To investigate whether stock price pressure affect managers' earnings manipulation, the following regression model is used:

$$\begin{aligned}(4)\ Earnings\ management_{i,t} = {} & \beta_0 + \beta_1\ Listed_{i,t} \\ & + \beta_2\ Earnings\_sensitivity_{i,t} \\ & + \beta_3\ Listed_{i,t} \times Earnings\_sensitivity_{i,t} \\ & + \beta \cdot Control\ variables_{i,t} + \varepsilon_{i,t.}\end{aligned}$$

where *Listed* is a dummy variable that takes a value of one if a firm is a listed firm, and zero if a firm is an unlisted firm. We expect the coefficient of *Listed* to be positive if listed firms are more likely to manipulate earnings.

4.2. Measure of earnings management

We focus on discretionary accruals, which are broadly adopted as an earnings management measure in prior literature. We calculate discretionary accruals using the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). We estimate the following model:

$$(5)\ Accruals_{i,t} = \gamma_0 + \gamma_1\ (1/Assets_{i,t-1}) + \gamma_2\ (\Delta Rev_{i,t} - \Delta Rec_{i,t}) + \gamma_3\ PPE_{i,t} + \gamma_4\ ROA_{i,t} + \varepsilon_{i,t}$$

where *Accruals* are total accruals as defined by the change in current assets minus the change in current liabilities, minus the change in cash and cash equivalents, plus the change in the debt in current liabilities, and minus the depreciation expense (Δcurrent

assets – Δcurrent liabilities – Δcash + Δshort term debt – depreciation expense). Total accruals is divided by lagged total assets.

Assets is the natural log of total assets. We include $1/Assets_{i,t}$ to control the relationship between accruals and firm size (Jones, 1991). *ΔRev* and *ΔRec* represent the change in total sales scaled by lagged total assets and the change in accounting receivables, which is also scaled by lagged total assets. *PPE* is the depreciation expense scaled by lagged total assets.

Because accruals are correlated with firm performance (Dechow et al., 1995, 1998; Barth et al., 2001), we include a performance variable in equation (5). Kothari et al. (2005) also proved that accruals measured after controlling the effect of performance enhance the reliability of inferences from earnings management research. To consider the performance effect, we include *ROA*, the net income before extraordinary items divided by lagged total assets, in the model. Following Kothari et al. (2005), we include a constant term in equation (5). We also estimate the model for each industry-year.

Discretionary accruals are calculated as the residuals of equation (5) (*disc_Accruals*). We estimate the model for each fiscal year across all the firms in each two-digit of JSIC code-based industry. We excluded all firm-year observations where there are fewer than fifteen observations in any two-digit JSIC code in any given fiscal year. Higher *disc_Accruals* indicates higher levels of earnings borrowing from the next period's earnings.

We additionally conduct analyses using an alternative earnings management measure through real activities manipulation (real earnings management). If a firm offers price discounts to boost sales, then the cash inflow per sale from these additional sales is lower because the margins decline. Firms also might over-produce goods to lower the cost per unit, which leads to better operating margins due to the decreased cost of goods sold. However, because over-production incurs additional cash outflow, cash flows from operations are lower than normal given the sales level.

Therefore, we focus on abnormal cash flow as a real earnings management measure. equation (6) expresses normal cash flow from operations as a linear function of sales and change in sales (Roychowdhury, 2006):

(6) $CFO_{i,t} = \delta_0 + \delta_1 (1/Assets_{i,t-1}) + \delta_2 Sales_{i,t} + \delta_3 \Delta Sales_{i,t} + \varepsilon_{i,t}$

where *CFO* is cash flow from operations divided by lagged total assets. *Sales* and *ΔSales* are sales and change in sales divided by lagged total assets. We adopt the residuals of equation (6) as the abnormal levels of cash flow from operations (*abnor_CFO*). We estimate the model for each fiscal year across all the firms in each two-digit of JSIC code-based industry. We excluded all firm-year observations where there are fewer than fifteen observations in any two-digit JSIC code in any given fiscal year. Lower *abnor_CFO* indicates higher levels of earnings borrowing from the next period's earnings.

4.3. Measure of earnings sensitivity

Asker et al. (2014) use earnings response coefficients as a proxy of α_0. However, stock price is not available for unlisted firms. Therefore, alternatively, we focus on α_0 of equation (6) in Stein (1989). Specifically, we calculate α_0 using following specification:

(7) $Earnings_{i,t} = \alpha + \alpha_0 Earnings_{i,t-1} + \alpha_1 Earnings_{i,t-2} + \alpha_2 Earnings_{i,t-3} + \varepsilon_{i,t}$

where *Earnings* is operating income divided by lagged total assets. We conducted several regressions using different timeline. As shown in panel A of Table 1, α_0 in columns 3, 4, and 5 are identical while those in columns 1, 2, and 3 quiet differ. Thus, we include three periods of past earnings to get the estimate of α_0. In this paper, we call the estimate as earnings sensitivity (*Earnings_sensitivity*). We estimate the model for each firm-year that have ten consecutive earnings observations. We take the lagged value following Stein and Wang (2016).

We additionally confirm that the estimate of earnings sensitivity in this study is positively related to earnings response coefficients (*ERC*) in listed firms. *ERC* is measured by the model in Kothari and Sloan (1992).

(8) $P_{i,t} / P_{i,t-1} = \mu_0 + \mu_1 X_{i,t} / P_{i,t-1} + \varepsilon_{i,t}$

where, $P_{i,t} / P_{i,t-1}$ is one plus the buy-and-hold return over the years t-1 to t. $X_{i,t} / P_{i,t-1}$ is income per share before extraordinary items divided by the price at the beginning of the fiscal year. We calculate the model for each firm-year that have ten consecutive earnings and price observations. The result is reported in panel B of Table 1.

【Table 1 here】

As earnings sensitivity increases, current earnings have more information content about future earnings, the managers have more incentive to boost investors' expectations (and the firm's share price) for listed firms. Therefore, we expect positive relationship between *Earnings_sensitivity* and earnings management for listed firms. However, there is no stock price that managers care about for unlisted firms, earnings sensitivity would not affect the manager's manipulation. Thus, we will find no relationship between *Earnings_sensitivity* and earnings management for unlisted firms.

4.4. Control variables

Based on previous studies, we include control variables associated with firms' accruals quality (Dechow and Dichev, 2002; Dechow et al., 2010; Hope et al., 2013). *Size* is the natural log of total assets. There are mixed results on the relationship between firm size and earnings management. If larger firms have incentive to decrease earnings in response to greater regulatory scrutiny, then larger firms' earnings quality is relatively lower than that of smaller firms (Jensen and Meckling, 1976; Watts and Zimmerman, 1986). However, if firm size is associated with the fixed costs of maintaining adequate internal control over financial reporting, then larger firms' earnings quality is relatively higher than that of smaller firms (Ball and Foster, 1982). Therefore, the association between firm size and earnings management is an empirical question.

Roa is the return on assets, which is calculated as income before extraordinary items divided by lagged total assets. *Loss* is an indicator variable that takes the value of one if a firm's net income is lower than 0, and zero otherwise. Prior studies provide evidence that firms with poor performance are more likely to engage in earnings management to meet their targets. Therefore, we predict the coefficient of *Roe* shows a negative sign but that of *Loss* shows a positive sign.

Higher debt dependency is also associated with earnings management, especially when the firm is closer to debt covenant restriction. We include *Leverage*, which is defined as total assets divided by equity. We expect a positive relationship between *Leverage* and earnings management. *Need* is the proxy for firms' need of new and long capital, which is calculated as the change in equity and long-term debt. If a firm engages in earnings management when it needs new capital (Kothari et al., 2016), then the coefficient is expected to be positive.

Growth is the change in total assets divided by lagged total assets. *Opcycle* is the operating cycle, calculated as (360/(sales/averaged accounting receivables)) + (360/(cost of goods sold/average inventory)). The variable *Inventory* is inventory divided by total assets. We predict these variables are positively associated with the measure of earnings management in this study. We include *Age* is the natural log of years since incorporation. Finally, we also include lagged discretionary accruals (*lag Dac_Accruals*) to control accrual reversals. This variable is expected to be negative.

As discussed in Givoly et al. (2010), ownership concentration could affect earnings management and the effects may differ between listed and unlisted firms. Higher ownership concentration may create the ability and incentive for managers to manipulate earnings, it could effectively monitor management by major shareholders at the same time. Previous studies show that the management ownership is related with earnings management (Shuto & Iwasaki, 2014). Therefore, we consider these two ownership characteristics: top 10 shareholder's ownership (*Top10own*) as a proxy of ownership concentration and management ownership (*Managerown*).

We winsorize all continuous variables at the top and bottom of the 1% level. We include year and industry (JSIC two-digit) fixed effects and calculate robust standard errors. Appendix lists all the variables and their definitions.

4.5. Sample selection

We use Astra Manager database which collects financial data from fiscal year 1979 (fiscal year which ends in March 1980). The most recent fiscal year we are able to obtain is fiscal year 2018 (fiscal year which ends in March 2019). Since, we use change in accounting data to calculate accruals, our sample period is from FY 1980 to 2018.

We do not include financial-related firms, because the interpretation of their financial statement information differs from that of nonfinancial firms. We also limited sample who adopt J-GAAP to control any potential effects of accounting standards on accounting numbers (Soderstrom & Sun, 2007; Ahmed et al., 2013). We extracted 145,166 nonfinancial firm-year observations (107,884 for listed and 37,282 for unlisted firms) during the sample period. To focus on the pure trading effect, we excluded 78,486 observations (59,242 for listed and 19,244 for unlisted firms) who have experienced IPO or delisting during the sample period. After deleting observations with no necessary data for our regressions, 50,982 observations remained (41,410 listed and 9,482 unlisted firms).

We also focus on whether the effects of earnings sensitivity on earnings management differ between listed and unlisted firms (Tables 6-9). Since we need thirteen subsequent years are necessary to calculate earnings sensitivity, the sample size decreases to 21,212 (17,538 listed and 3,674 unlisted firms).

We use unconsolidated financial statements data until FY1998 and consolidated financial statement data since FY1999. Unconsolidated financial statement data is used be a primary information until the new consolidated reporting system starts in March 2000 (so-called Japanese Accounting Big Bang). Therefore, it is reasonable to think managers' myopic behavior should be reflected on unconsolidated financial statements data. Shuto (2009) also find that earnings management shift from unconsolidated to consolidated data surrounding Japanese Accounting Big Bang.

5. Empirical results

5.1. Descriptive statistics

Table 2 and Table 3 are descriptive statistics and correlation matrix, respectively.

【Table 2 here】

【Table 3 here】

Table 2 shows that listed firms are more likely to inflate earnings using both of accruals and real activities management (Rows 1 and 2). In addition, the earnings sensitivity in listed firms is higher than that in unlisted firms (Row 3).

Table 2 also shows that the firm's characteristics differ between listed and unlisted firms. Based on the table, the ownership structure is more concentrated in unlisted firms (Row 4). And, unlisted firms are smaller and younger than listed firms (Rows 6 and 14). Unlisted firms are less profitable but more debt dependent (Rows 7, 8, and 9). Additionally, unlisted firms have fewer inventories. Thus, their operating cycle is shorter than that of listed firms (Rows 12 and 13). Furthermore, unlisted firms have less growth opportunity and require less capital than listed firms (Rows 10 and 11). Some of unlisted firm's characteristics are consistent with the findings of prior studies (Helwege and Packer, 2003; Katz, 2009; Givoly et al., 2010; Hope et al., 2013). These statistics force us to control the firm's characteristics in our regressions.

5.2. Earnings management between listed and unlisted firms

Table 4 shows the regression results comparing earnings management between listed and unlisted firms. Columns 1, 2, and 3 are the results of the pooled sample differing combinations of independent variables. Column 4 show the result in sample with public debt (corporate bond in this study) to compare the results in Givoly et al. (2010). Since prior studies find that firms are more likely to engage in earnings management to avoid loss, we also include the results considering a loss avoidance behavior. We define *Kinky* as a dummy variable that takes one if a firm's net income divided by assets is larger than zero and smaller than 0.0028, zero if it is larger than -0.0028 and smaller than zero (Shuto & Iwasaki, 2015). Column 5 is the results for *Kinky* sample, and column 6 is the results without *Kinky* sample. The statistical

significance of each coefficient estimate is based on robust standard errors, shown in parentheses under each estimated coefficient.

【Table 4 here】

The coefficient of *Listed* is significantly positive in column 1. The results hold the same when we include control variables (column 2) and ownership variables (column 3). The results indicate that managers in listed companies are more likely to engage in earnings management compared to managers in unlisted companies supporting our hypothesis. We also have result which is consistent with Givoly et al. (2010) in column 4. On the other hand, *Listed* is insignificant in column 5. There might be no different in manipulating earnings between listed and unlisted firms when firms have incentive to avoid a loss. Therefore, we conduct analysis based on variables and sample in column 6.

For control variables in column 3, the coefficient of *Top10own* is negative and significant, implying that concentrated ownership effectively monitor managers' opportunistic behavior. On the other hand, the coefficient of *Managerown* shows significantly positive sign. The more managers have stocks, the more incentive to manipulate earnings for their own personal stake. The coefficient on *Size* is negative and significant, implying that larger firms are less likely to engage in earnings management. The coefficient on *Roa* and is negatively significant indicating that firms with lower performance are more likely to manage reported earnings. However, *Loss* is also negatively significant indicating that once a firm reports loss, the incentive to manage earnings decreases. Or it may imply the probability of bigbath. Both *Growth* and *Need* show positive signs, implying that firms with higher probability of growth and, thus, in higher need of capital are more likely to manage earnings. The coefficients on *Opcycle* and *Inventory* are significantly positive, suggesting that firms with longer operating cycle and bigger inventories are more likely to manage earnings. The results are consistent with those reported by Hope et al. (2013). *Age* is not significant. Finally, the coefficient of *lag_disc_Accruals* is negatively significant showing accruals reversal. We also conducted sample analyses using alternative earnings management (*abnor_CFO*, real earnings management), the results hold the same (the results are not tabulated).

Next, we move on to confirm whether a going public induces increased earnings management. Table 5 reports the results using sample that have experienced IPO during the sample period.

【Table 5 here】

Row 1 of Table 5 shows that the coefficients of *IPO* are significantly positive in all columns, indicating that earnings management in the period of after IPO increases. The results confirm that listed firms are more likely to manipulate earnings upward. The results hold the same with real earnings management (the results are not tabulated).

5.3. Earnings sensitivity and earnings management

Table 6 shows the results on the relationship between earnings sensitivity and earnings management. The sample size is smaller than that of column 6 in table 4 because there need to be thirteen consecutive years to estimate earnings sensitivity. Columns 1 and 4 are results of the pooled sample, column 2 and 3 are the results for listed and unlisted firms, respectively.

【Table 6 here】

The coefficient of *Listed* in column 1 is significant and positive. However, interestingly, that in column 4 is insignificant. The coefficient of *Listed* in column 4 shows the result when current earnings has no information about future earnings (*Earnings_sensitivity*=0). Therefore, there is no earnings distortion for a listed firm whose earnings are uninformative about future earnings and so have no effect on its share price, since the manager cannot manipulate investors' expectations.

While the coefficient of *Earnings_sensitivity* in column 2 is positively significant, that in column 3 is insignificant. Similarly, while the coefficient of *Earnings_sensitivity* in column 3 (the result for unlisted firms) is not significant, its interaction with *Listed* in

column 3 is positively significant (the result for listed firms). As earnings becomes more informative about future earnings, and so the firm's share price, the manager's incentive to manipulate investors' expectations by inflating earnings for listed firms. However, this is not the case with unlisted firms that has no stock price which manager care about.

5.4. Sample selection bias

The results of Table 2 force us to consider the sample selection bias. Previous studies also pointed out that there are differences in firm's characteristics between listed and unlisted firms. Therefore, in this section, we deal with the sample selection bias using matched sample regressions and Heckman two-stage procedure.

Columns 1 and 2 in Table 7 presents the results with matched sample based on firm size, earnings sensitivity, industry, and year. Columns 3 and 4 are the results with inverse mills ratio (*imills*). Following Heckman (1979), a probit model is estimated with the natural log of total assets (*Size*), sales growth (*Salesgrowth*), total assets divided by equity (*Leverage*); operating cycle (*Opcycle*); income before extraordinary items divided by lagged total assets (*Roa*); current assets excluding inventory and prepaid expenses divided by current liabilities (*Quickratio*), natural log of years from foundation (*Age*) in the first stage (Ball & Shivakumar, 2005; Givoly et al., 2010).

【Table 7 here】

While we do not have significant results from the matched sample analyses, we have the qualitative same results with Heckman two-stage procedures.

Finally, we also consider the effect of auditor on earnings management. Because auditor information is available only for listed firms and it is obtainable since FY1999 (the data is extracted from Nikkei CD-ROM, *Kansahozin & Kansahoshu*), we did not include auditor related variable in our main analysis. Column 5 is the result with *Big4* variable using listed firms sample. *Big4* is a dummy variable that takes one if a firm is audited by any of big auditor (Azusa, Pwc Arata, Shinihon, and Tohmatsu), zero

otherwise. The coefficient of *Big4* is not significant. More importantly, *Earnings_sensitivity* is positively significant for listed firms after controlling auditor related variable.

5.5. Additional earnings management measure

Table 8 shows the regression with alternative earnings management measure: real earnings management. While the implications from the results are qualitatively similar to those from accruals earnings management, the effects of earnings sensitivity on real earnings management are less pronounced. That is, the interaction of *Listed* and *Earnings_sensitivity* is not significant.

【Table 8 here】

5.6. Considering stock-based compensation

Bolton et al. (2006) shows that myopic behavior (short-termism) is also induced by manager's personal stake (i.e., stock-based executive compensation). Although, the level of stock-based compensation is relatively low in Japan, there is an increased number of firms who introduced stock option (however, the ratio of stock-based compensation out of total compensation is still low). Table 9 reports the results when we exclude firms who issued stock option. Since the data on issuing stock option is available from FY2003 (the data is extracted from Nikkei NEEDS CGES), the observation number is smaller than that in Table 6. Basically, we hold the same qualitative results as Table 6.

【Table 9 here】

6. Conclusions

In this paper, we empirically examined whether managers' myopic behaviors exist through inflating current earnings at the expense of long-term earnings based on the

theoretical predictions by Stein (1989). Taking advantage of Japanese setting, we compared the earnings management between listed and unlisted firms under J-FIEA.

We found that listed firms are more likely to engage in earnings management. We also found that firm managers are more likely to manage earnings as the information content of current earnings about future earnings (stock price) increases. We note that this manipulation was not pronounced for unlisted firms. The results hold the same after considering sample selection bias and by using alternative earnings management measures. The results imply that the market pressure is a primary reason of earnings distortion.

Appendix. Variables and Definitions

	Variables	Definitions
1.	*disc_Accruals*	Residuals of performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005): $Accruals_{i,t} = \gamma_0 + \gamma_1 (1/Assets_{i,t-1}) + \gamma_2 (\Delta Rev_{i,t} - \Delta Rec_{i,t}) + \gamma_3 PPE_{i,t} + \gamma_4 ROA_{i,t} + \varepsilon_{i,t}$ where *Accruals* is total accruals as defined by the change in current assets minus the change in current liabilities, minus the change in cash and cash equivalents, plus the change in the debt in current liabilities, and minus the depreciation expense (Δcurrent assets–Δcurrent liabilities–Δcash + Δshort term debt–depreciation expense). Total accruals is divided by lagged total assets. *Assets* is the natural log of total assets. We include $1/Assets_{i,t}$ to control the relationship between accruals and firm size (Jones, 1991). *ΔRev* and *ΔRec* represent the change in total sales scaled by lagged total assets and the change in accounting receivables, which is also scaled by lagged total assets. *PPE* is the depreciation expense scaled by lagged total assets. *ROA* is the net income before extraordinary items divided by lagged total assets. Following Kothari et al. (2005), we include a constant term. We estimate the model for each fiscal year across all the firms in each two-digit of JSIC code-based industry. We excluded all firm-year observations where there are fewer than fifteen observations in any two-digit JSIC code in any given fiscal year.
2.	*abnor_CFO*	Residuals of the following model (Roychowdhury, 2006): $CFO_{i,t} = \gamma_0 + \gamma_1 (1/Assets_{i,t-1}) + \gamma_2 Sales_{i,t} + \gamma_3 \Delta Sales_{i,t} + \varepsilon_{i,t}$ where *CFO* is cash flow from operations divided by lagged total assets. *Sales* and *ΔSales* are sales and change in sales divided by lagged total assets. We estimate the model for each fiscal year across all the firms in each two-digit of JSIC code-based industry. We excluded all firm-year observations where there are fewer than fifteen observations in any two-digit JSIC code in any given fiscal year.
3.	*Earnings_sensitivity*	Estimates of α_0 of the Stein (1989). We calculate α_0 in the following model:

		$Earnings_{i,t} = \alpha + \alpha_0 Earnings_{i,t-1} + \alpha_1 Earnings_{i,t-2} + \alpha_2 Earnings_{i,t-3} + \varepsilon_{i,t}$ where *Earnings* is operating income divided by lagged total assets. We calculate the model for each firm-year that have ten consecutive earnings observations. We take the coefficients of α_0 of the model as an estimate of α_0. Additionally, we take the lagged value following Stein and Wang (2016).
4.	*Listed*	Dummy variable that takes one if a firm is a listed firm, zero otherwise
5.	*Top10own*	Portion of the firm's share owned by top 10 shareholders
6.	*Managerown*	Portion of the firm's share owned by the management
7.	*Size*	Natural log of total assets
8.	*Roa*	Return on assets calculated as income before extraordinary items divided by lagged total assets.
9.	*Loss*	Dummy variable that takes one if net income is lower than zero, zero otherwise
10.	*Leverage*	Total assets divided by equity
11.	*Need*	Firm's need for new capital that is calculated by the change in equity and long-term debt
12.	*Growth*	Growth in total assets calculated as change in total assets divided by lagged total assets
13.	*Opcycle*	Operating cycle is calculated by (360 / (sales / averaged accounting receivables)) + (360 / (cost of goods sold / average inventory))
14.	*Inventory*	Inventory divided by lagged total assets
15.	*Age*	Natural log of years since incorporation
16.	*lag_disc_Accruals*	Lagged *disc_Accruals*
17.	*IPO*	Dummy variable that takes one for the period after IPO, zero for the period before IPO
18.	*imills*	Inverse mills ratio. Following Heckman (1979), a probit model is estimated with *Size* (natural log of total assets), *Salesgrowth* (change in sales divided by lagged sales), *Leverage* (total assets divided by equity), *Roa* (income before extraordinary items divided by lagged total assets), *Quickratio* (current assets excluding inventory and prepaid expenses divided by current liabilities), *Opcycle* (operating cycle), *Age* (natural log of years from foundation) in the first stage (Ball & Shivakumar, 2005; Givoly et al., 2010). We computed inverse mills ratio by using the estimates of a probit model for each sample firm-year.
19.	*ERC*	Earnings response coefficients. We calculate earnings response coefficients in the following model (Kothari & Sloan,1992): $P_{i,t} / P_{i,t-1} = \beta + \beta_1 X_{i,t} / P_{i,t-1} + \varepsilon_{i,t}$

	where, $P_{i,t} / P_{i,t-1}$ is one plus the buy-and-hold return over the years t-1 to t. $X_{i,t} / P_{i,t-1}$ is income per share before extraordinary items divided by the price at the beginning of the fiscal year. We calculate the model for each firm-year that have ten consecutive earnings and price observations.
20. *Big4*	Dummy variable that takes one if a firm is audited by any of big auditor (Azusa, Pwc Arata, Shinihon, and Tohmatsu), zero otherwise

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Table 1. Estimates of Earnings Sensitivity

This table presents the results for estimating earnings sensitivity in different timelines. The coefficient of $Earnings_{t-1}$ is the estimate of earnings sensitivity in this study. *Earnings* is operating income scaled by lagged assets. Since earnings sensitivity does not change by adding period after column (3), we estimate earnings sensitivity using model in column (3) for each firm-year that have ten consecutive earnings observations. We take the lagged value following Stein and Wang (2016). *ERC* is an earnings response coefficients. We calculate earnings response coefficients model in Kothari & Sloan (1992). ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

Panel A.

	Dependent variable: Earnings $_t$				
	(1)	(2)	(3)	(4)	(5)
1. *Earnings* $_{t-1}$	0.759***	0.684***	0.675***	0.675***	0.675***
	(322.60)	(190.81)	(187.78)	(187.89)	(187.72)
2. *Earnings* $_{t-2}$		0.097***	0.042***	0.042***	0.042***
		(27.80)	(10.05)	(10.09)	(10.10)
3. *Earnings* $_{t-3}$			0.080***	0.077***	0.077***
			(24.27)	(23.02)	(22.84)
4. *Earnings* $_{t-4}$				0.004***	0.004***
				(6.88)	(6.85)
5. *Earnings* $_{t-5}$					0.000
					(0.72)
Constant	0.009***	0.008***	0.007***	0.007***	0.007***
	(48.45)	(41.80)	(36.66)	(36.50)	(36.45)
Observations	97,710	97,710	97,710	97,710	97,710
Adj. R-squared	0.516	0.520	0.522	0.523	0.523

Panel B.

	Dependent variable: ERC $_t$
6. *Earnings_sensitivity*	2.898***
	(3.59)
Constant	9.176***
	(20.71)
Firm fixed effect	YES
Observations	26,011
Adj. R-squared	0.002

Table 2. Descriptive Statistics

Panel A. Decriptive statistics					
	Unlisted public firms		Listed public firms		t-test (t-value)
	Mean	Std. Dev.	Mean	Std. Dev.	
	(1)	(2)	(3)	(4)	
1. *disc_Accruals*	-0.0024	0.0464	-0.0004	0.0484	-3.75***
2. *abnor_CFO*	-0.0009	0.0610	-0.0043	0.0609	4.98***
3. *Earnings_sensitibvty*	0.5233	0.4127	0.5513	0.4256	-3.88***
4. *Top10own*	0.5710	0.2264	0.4704	0.1424	54.73***
5. *Managerown*	0.0930	0.1068	0.0267	0.0560	85.10***
6. *Size*	9.5787	1.3944	11.0105	1.4689	-86.41***
7. *Roa*	0.0339	0.0511	0.0400	0.0451	-11.48***
8. *Loss*	0.1869	0.3898	0.1523	0.3593	8.32***
9. *Leverage*	5.3917	6.4537	3.8164	4.2173	29.35***
10. *Need*	0.0406	0.1845	0.0493	0.1796	-4.21***
11. *Growth*	0.0226	0.1029	0.0298	0.1087	-5.84***
12. *Opcycle*	112.1386	94.3072	155.6751	79.0281	-46.58***
13. *Inventory*	0.0817	0.0986	0.1338	0.0932	-48.55***
14. *Age*	70.8284	17.2119	78.5197	18.9789	-36.20***

Table 3. Correlation Matrix

Panel B. Correlation matrix														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	*disc_Accruals*	1													
2.	*abnor_CFO*	-0.790	1												
3.	*Earnings_sensitivity*	0.011	0.020	1											
4.	*Top10own*	-0.011	0.029	-0.005	1										
5.	*Managerown*	-0.005	0.009	-0.024	0.189	1									
6.	*Size*	0.011	0.054	0.078	-0.247	-0.331	1								
7.	*Roa*	-0.008	0.417	0.034	-0.013	-0.054	0.249	1							
8.	*Loss*	-0.048	-0.163	0.011	0.016	0.041	-0.154	-0.515	1						
9.	*Leverage*	0.009	-0.101	-0.012	0.088	0.082	-0.033	-0.271	0.185	1					
10.	*Need*	0.125	0.021	-0.007	0.013	-0.003	0.067	0.321	-0.306	-0.103	1				
11.	*Growth*	0.141	0.003	-0.003	-0.007	-0.007	0.110	0.384	-0.269	-0.108	0.505	1			
12.	*Opcycle*	0.050	-0.090	0.061	-0.045	-0.027	0.086	-0.021	0.048	-0.012	-0.016	-0.029	1		
13.	*Inventory*	0.076	-0.128	0.005	-0.022	-0.065	0.138	0.021	0.016	0.044	0.046	0.097	0.642	1	
14.	*Age*	0.022	-0.047	0.015	-0.136	-0.157	0.250	-0.025	-0.024	0.032	0.017	0.007	0.073	0.057	1

Table 4. Earnings Management between Listed and Unlisted firms

This table shows the results comparing earnings management between listed and unlisted firms. The dependent variable is a proxy for earnings management (*disc_Accruals*), which is measured by the residuals of the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). *Listed* is a dummy variable that takes one if a firm is a listed firm, zero otherwise. We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	Dependent variable: disc_Accruals					
	Pooled sample			*Bond sample* (Givoly et al. 2010)	*Sample that avoid loss*	*Excluding sample that avoid loss*
	(1)	(2)	(3)	(4)	(5)	(6)
1. *Listed*	0.003***	0.003***	0.003***	0.004***	0.000	0.003***
	(4.51)	(3.96)	(3.86)	(3.09)	(0.17)	(4.23)
2. *Top10own*			-0.003**	-0.006**	-0.005	-0.003**
			(-2.28)	(-2.50)	(-0.90)	(-2.19)
3. *Managerown*			0.007**	-0.001	0.016	0.007*
			(1.97)	(-0.11)	(1.39)	(1.76)
4. *Size*		-0.000***	-0.000**	-0.002***	0.000	-0.000**
		(-2.60)	(-2.51)	(-7.72)	(0.25)	(-2.54)
5. *Roa*		-0.103***	-0.104***	-0.121***	-0.214***	-0.097***
		(-14.49)	(-14.52)	(-9.40)	(-2.93)	(-13.19)
6. *Loss*		-0.005***	-0.005***	-0.005***	0.000	-0.005***
		(-7.33)	(-7.38)	(-4.23)	(0.18)	(-6.76)
7. *Leverage*		0.000***	0.000***	0.000***	0.000	0.000**
		(3.23)	(3.43)	(2.80)	(1.40)	(2.53)
8. *Need*		0.035***	0.035***	0.042***	0.025***	0.036***
		(17.48)	(17.52)	(13.07)	(3.81)	(17.28)
9. *Growth*		0.065***	0.065***	0.080***	0.139***	0.060***
		(16.79)	(16.72)	(12.99)	(8.94)	(15.10)
10. *Opcycle*		0.000***	0.000***	0.000***	-0.000*	0.000***
		(7.14)	(6.83)	(3.89)	(-1.68)	(7.50)
11. *Inventory*		0.027***	0.027***	0.022***	0.039***	0.026***
		(7.15)	(7.22)	(3.57)	(2.70)	(6.74)
12. *Age*		0.000	0.000	0.000*	-0.000	0.000*
		(1.52)	(1.55)	(1.82)	(-1.00)	(1.71)
13. *lag_disc_Accruals*		-0.041***	-0.042***	-0.022**	-0.051**	-0.042***
		(-7.26)	(-7.29)	(-2.47)	(-2.47)	(-7.12)
Constant	-0.002	-0.014***	-0.013***	0.005	0.003	-0.014***
	(-1.25)	(-5.16)	(-4.15)	(0.96)	(0.26)	(-4.39)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,892	50,892	50,892	20,287	3,321	47,571
Adj. R-squared	0.001	0.058	0.058	0.084	0.091	0.057

Table 5. Earnings Management for IPO sample

This table presents the results for sample that goes public during the sample period. The dependent variable is a proxy for earnings management (*disc_Accruals*), which is measured by the residuals of the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). *IPO* is a dummy variable that takes one for the period after IPO, zero for the period before IPO. We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	Dependent variable: disc_Accruals		
	(1)	(2)	(3)
1. *IPO*	0.030***	0.016***	0.017***
	(12.39)	(5.63)	(5.43)
2. *Top10own*			0.009
			(1.04)
3. *Managerown*			0.015**
			(2.00)
4. *Size*		-0.002	0.000
		(-1.15)	(0.16)
5. *Roa*		-0.168***	-0.192***
		(-6.61)	(-7.05)
6. *Loss*		-0.039***	-0.043***
		(-4.18)	(-4.61)
7. *Leverage*		-0.000	-0.000
		(-0.08)	(-0.38)
8. *Need*		0.037***	0.036***
		(6.65)	(6.18)
9. *Growth*		0.036***	0.046***
		(3.35)	(3.99)
10. *Opcycle*		0.000***	0.000***
		(3.67)	(3.83)
11. *Inventory*		0.102***	0.085***
		(6.94)	(5.53)
12. *Age*		-0.000	-0.000
		(-0.11)	(-0.09)
13. *lag_disc_Accruals*		-0.026	-0.006
		(-1.33)	(-0.28)
Constant	-0.025	-0.043	0.006
	(-0.85)	(-0.75)	(0.25)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	4,918	4,144	3,603
Adj. R-squared	0.037	0.126	0.139

Table 6. Earnings Management and Earnings Sensitivity

This table presents the results for the effects of earnings sensitivity on earnings management between listed and unlisted firms. The dependent variable is a proxy for earnings management (*disc_Accruals*), which is measured by the residuals of the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). *Listed* is a dummy variable that takes one if a firm is a listed firm, zero otherwise. *Earnings_sensitivity* is the degree to which current earnings are a good predictor of future earnings which is estimated by α_0 of equation (7). We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	Dependent variable: disc_Accruals			
	Pooled sample	*Listed sample*	*Unlisted sample*	*Pooled sample*
	(1)	(2)	(3)	(4)
1. *Listed*	0.003***			0.001
	(2.64)			(0.62)
2. *Earnings_sensitivity*		0.003***	-0.001	-0.001
		(3.41)	(-0.72)	(-0.63)
3. *Listed×Earnings_sensitivity*				0.004**
				(1.97)
4. *Top10own*	-0.001	0.000	0.000	-0.001
	(-0.55)	(0.00)	(0.09)	(-0.49)
5. *Managerown*	-0.002	0.004	-0.005	-0.002
	(-0.30)	(0.29)	(-0.53)	(-0.22)
6. *Size*	-0.000	-0.000	0.001	-0.000
	(-1.04)	(-1.37)	(1.49)	(-1.29)
7. *Roa*	-0.098***	-0.110***	-0.072***	-0.100***
	(-8.87)	(-8.77)	(-2.86)	(-9.04)
8. *Loss*	-0.006***	-0.006***	-0.007***	-0.006***
	(-5.97)	(-5.01)	(-3.08)	(-6.04)
9. *Leverage*	0.000*	0.000**	-0.000	0.000*
	(1.65)	(2.25)	(-0.25)	(1.69)
10. *Need*	0.023***	0.028***	0.006	0.023***
	(7.07)	(7.76)	(0.90)	(7.07)
11. *Growth*	0.066***	0.073***	0.035***	0.066***
	(10.90)	(10.76)	(2.58)	(10.93)
12. *Opcycle*	0.000***	0.000***	0.000***	0.000***
	(7.18)	(6.70)	(3.17)	(7.01)
13. *Inventory*	0.021***	0.024***	-0.014	0.021***
	(3.32)	(3.49)	(-0.69)	(3.41)
14. *Age*	0.000**	0.000***	-0.000	0.000**
	(2.10)	(3.17)	(-1.58)	(2.11)
15. *lag_disc_Accruals*	-0.050***	-0.059***	-0.034	-0.051***
	(-5.63)	(-5.97)	(-1.55)	(-5.67)
Constant	-0.015***	-0.018***	-0.003	-0.014***
	(-3.40)	(-3.41)	(-0.23)	(-3.10)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	21,212	17,538	3,674	21,212
Adj. R-squared	0.046	0.056	0.027	0.046

Table 7. Sample Selection Bias

This table reports the robustness check. The dependent variable is a proxy for earnings management (*disc_Accruals*), which is measured by the residuals of the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). *Listed* is a dummy variable that takes one if a firm is a listed firm, zero otherwise. *Earnings_sensitivity* is the degree to which current earnings are a good predictor of future earnings which is estimated by α_0 of equation (7). We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The sample is matched by size, earnings sensitivity, industry, and fiscal years. We additionally include inverse mills ratio (*imills*) to consider the sample selection bias. Following Heckman (1979), a probit model is estimated with the natural log of total assets, sales growth, total assets divided by equity; operating cycle; income before extraordinary items divided by lagged total assets; current assets excluding inventory and prepaid expenses divided by current liabilities, natural log of years from foundation in the first stage (Ball & Shivakumar, 2005; Givoly et al., 2010). *Big4* is a dummy variable that takes one if a firm is audited by any of big auditor (Azusa, Pwc Arata, Shinihon, and Tohmatsu), zero otherwise. The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	Dependent variable: disc_Accruals				
	Matched sample		*Heckman two-stage procedure*		*Listed sample*
	(1)	(2)	(3)	(4)	(5)
1. *Listed*	0.002	-0.000	0.003***	0.001	
	(1.37)	(-0.00)	(4.05)	(0.65)	
2. *Earnings_sensitivity*		-0.002		-0.001	0.003***
		(-0.93)		(-0.63)	(2.68)
3. *Listed×Earnings_sensitivity*		0.003		0.004**	
		(1.32)		(1.96)	
4. *Top10own*	-0.003	-0.003	-0.003**	-0.001	0.006*
	(-0.96)	(-0.96)	(-2.24)	(-0.46)	(1.74)
5. *Managerown*	-0.000	-0.000	0.007*	-0.002	0.015
	(-0.02)	(-0.01)	(1.79)	(-0.23)	(0.87)
6. *Size*	0.000	0.000	-0.001*	-0.000	-0.000
	(0.38)	(0.34)	(-1.89)	(-0.46)	(-0.13)
7. *Roa*	-0.103***	-0.103***	-0.097***	-0.100***	-0.091***
	(-5.36)	(-5.38)	(-13.13)	(-9.04)	(-6.03)
8. *Loss*	-0.006***	-0.006***	-0.005***	-0.006***	-0.004***
	(-3.63)	(-3.63)	(-6.70)	(-6.05)	(-2.81)
9. *Leverage*	0.000	0.000	0.000**	0.000	0.000
	(0.60)	(0.59)	(2.35)	(1.24)	(0.93)
10. *Need*	0.011**	0.011**	0.036***	0.023***	0.029***
	(2.33)	(2.35)	(17.28)	(7.07)	(6.23)
11. *Growth*	0.059***	0.059***	0.060***	0.066***	0.055***
	(6.33)	(6.33)	(15.05)	(10.93)	(6.84)
12. *Opcycle*	0.000***	0.000***	0.000***	0.000***	0.000***
	(3.10)	(3.07)	(6.42)	(6.50)	(6.76)
13. *Inventory*	0.017	0.017	0.026***	0.021***	0.025***
	(1.46)	(1.52)	(6.73)	(3.41)	(2.88)
14. *Age*	-0.000	0.000	0.000	0.000**	0.000***
	(-0.02)	(0.00)	(1.24)	(2.07)	(3.85)
15. *lag_disc_Accruals*	-0.045***	-0.045***	-0.042***	-0.051***	-0.076***
	(-3.07)	(-3.07)	(-7.13)	(-5.66)	(-6.25)
16. *imills*			-0.002	0.001	
			(-0.63)	(0.27)	
17. *Big4*					-0.001
					(-0.80)
Constant	-0.007	-0.006	-0.011*	-0.015**	-0.031***
	(-0.90)	(-0.77)	(-1.89)	(-2.04)	(-4.60)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	7,588	7,588	47,571	21,212	11,673
Adj. R-squared	0.031	0.031	0.057	0.046	0.051

Table 8. Alternative Earnings Management and Earnings Sensitivity

This table report the results for real earnings management. The dependent variable is a proxy for real earnings management (*abnor_CFO*), which is measured by the residuals of the model developed in Roychowdhury (2006). *Listed* is a dummy variable that takes one if a firm is a listed firm, zero otherwise. *Earnings_sensitivity* is the degree to which current earnings are a good predictor of future earnings which is estimated by α_0 of equation (7). We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	Dependent variable: abnor_CFO			
	Pooled sample	*Listed sample*	*Unlisted sample*	*Pooled sample*
	(1)	(2)	(3)	(4)
1. *Listed*	-0.006***			-0.006***
	(-5.01)			(-3.47)
2. *Earnings_sensitivity*		-0.002***	0.001	-0.001
		(-2.70)	(0.30)	(-0.58)
3. *Listed×Earnings_sensitivity*				-0.001
				(-0.35)
4. *Top10own*	0.005**	0.004	0.006	0.005**
	(2.11)	(1.43)	(1.62)	(2.11)
5. *Managerown*	-0.004	-0.007	-0.001	-0.005
	(-0.54)	(-0.46)	(-0.08)	(-0.58)
6. *Size*	-0.000	0.000	-0.002***	-0.000
	(-1.18)	(0.51)	(-3.61)	(-0.99)
7. *Roa*	0.728***	0.757***	0.682***	0.729***
	(54.57)	(50.97)	(22.07)	(54.70)
8. *Loss*	0.007***	0.007***	0.008***	0.007***
	(6.39)	(5.45)	(3.25)	(6.46)
9. *Leverage*	-0.000**	-0.000***	0.000	-0.000**
	(-2.13)	(-2.64)	(0.53)	(-2.17)
10. *Need*	-0.025***	-0.032***	-0.004	-0.025***
	(-6.89)	(-7.83)	(-0.56)	(-6.89)
11. *Growth*	-0.077***	-0.086***	-0.036**	-0.077***
	(-11.78)	(-11.81)	(-2.44)	(-11.79)
12. *Opcycle*	-0.000	-0.000	-0.000	-0.000
	(-0.67)	(-0.65)	(-0.11)	(-0.57)
13. *Inventory*	-0.068***	-0.068***	-0.046**	-0.068***
	(-10.09)	(-9.28)	(-2.16)	(-10.12)
14. *Age*	-0.000***	-0.000***	0.000	-0.000***
	(-3.17)	(-3.19)	(0.15)	(-3.17)
15. *lag_abnor_CFO*	0.039***	0.026***	0.068***	0.039***
	(4.58)	(2.77)	(3.31)	(4.59)
Constant	0.005	-0.002	0.005	0.005
	(1.05)	(-0.28)	(0.41)	(1.07)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	21,212	17,538	3,674	21,212
Adj. R-squared	0.254	0.259	0.270	0.254

Table 9. Earnings Management and Earnings Sensitivity: No Stock Option sample

This table reports the results excluding firms that issue stock option to their mangers or employees. The dependent variable is a proxy for earnings management (*disc_Accruals*), which is measured by the residuals of the performance-matched modified Jones model (Dechow et al., 1995, 1998; Kothari et al., 2005). *Listed* is a dummy variable that takes one if a firm is a listed firm, zero otherwise. *Earnings_sensitivity* is the degree to which current earnings are a good predictor of future earnings which is estimated by α_0 of equation (7). We include firm characteristics as control variables: natural log of total assets (*Size*); return on assets *(Roa*); net income loss dummy (*Loss*); total assets divided by equity (*Leverage*); firm's need for new capital (*Need*); asset growth (*Growth*); operating cycle (*Opcycle*); inventory divided by total assets (*Inventory*); natural log of years from foundation (*Age*). We also included lagged discretionary accruals (*lag_disc_Accruals*) to control accrual reversals. We also top 10 shareholder's ownership (*Top10own*) and management ownership (*Managerown*). The values in parentheses are t-statistics estimated based on robust standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

	stock option=0			
	Pooled sample	*Listed sample*	*Unlisted sample*	*Pooled sample*
	(1)	(2)	(3)	(4)
1. *Listed*	0.003*			0.002
	(1.91)			(0.95)
2. *Earnings_sensitivity*		0.002**	0.001	0.000
		(2.10)	(0.31)	(0.14)
3. *Listed×Earnings_sensitivity*				0.002
				(0.87)
4. *Top10own*	0.004	0.007*	0.004	0.004
	(1.47)	(1.93)	(0.78)	(1.49)
5. *Managerown*	-0.003	0.005	-0.011	-0.003
	(-0.37)	(0.31)	(-0.87)	(-0.33)
6. *Size*	0.000	0.000	0.001*	0.000
	(1.52)	(1.21)	(1.71)	(1.33)
7. *Roa*	-0.096***	-0.106***	-0.074**	-0.099***
	(-6.30)	(-6.15)	(-2.08)	(-6.50)
8. *Loss*	-0.006***	-0.007***	-0.005**	-0.006***
	(-4.11)	(-3.69)	(-1.96)	(-4.20)
9. *Leverage*	-0.000	-0.000	-0.000	-0.000
	(-1.37)	(-0.94)	(-0.62)	(-1.35)
10. *Need*	0.027***	0.032***	0.012	0.027***
	(5.64)	(5.82)	(1.18)	(5.62)
11. *Growth*	0.039***	0.041***	0.030	0.040***
	(4.55)	(4.20)	(1.56)	(4.58)
12. *Opcycle*	0.000***	0.000***	0.000***	0.000***
	(6.39)	(5.41)	(2.97)	(6.23)
13. *Inventory*	0.020**	0.022**	-0.015	0.020**
	(2.06)	(2.10)	(-0.48)	(2.11)
14. *Age*	0.000***	0.000***	-0.000	0.000***
	(3.22)	(4.26)	(-1.50)	(3.23)
15. *lag_disc_Accruals*	-0.073***	-0.084***	-0.056*	-0.073***
	(-5.58)	(-5.72)	(-1.94)	(-5.60)
Constant	-0.027***	-0.032***	-0.012	-0.026***
	(-4.83)	(-4.42)	(-0.71)	(-4.55)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	10,594	8,554	2,040	10,594
Adj. R-squared	0.040	0.045	0.040	0.040