

Theoretical and Empirical Analysis of Earnings Management

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Abstract

Earning management is a controversial topic nowadays. This paper combines theoretical analysis and empirical analysis. This paper will focus on five motivations to analyze the forms of earnings management. Next, the empirical evidence will be displayed to show the relationships between motivations and earnings management in the real company or some specific industry, proving the practicality of these motivations. Apart from that, empirical methods used to detect earnings management will be analyze critically.

Keywords

Earning Management; Motivations; Empirical Evidence; Empirical Method.

1. Introduction

It is said that Earnings are regarded as the basis for sustainability and growth for the corporations. Investors are likely to invest their capitals to the firms with higher earnings. Because of that, earnings management prevails among the listed companies. However, earnings management may decrease the quality of firms' financial information. Thus, earnings cannot reflect actual operation of the firms, which may hurt the interests of investors strongly.

So, it is important to study the earnings management and its motivations. Based on our researches, in this paper, there are five significant motivations of earnings management: bonus plan hypothesis, debt hypothesis, political cost hypothesis, CEO turnovers and analyst forecast. Each of them may stimulate the incoming-increasing or income-decreasing earnings management behaviour.

2. Motivations of Earnings Management

2.1. Bonus Plan Hypothesis

Based on the assumption that individuals are self-interest, Jung and Dobbin (2016) state that when there is an inconsistent opinion between shareholders and managers among firm decisions, the managers are likely to scarify shareholder's interest and act as their own benefits. In 1985, Healy states that managers usually use bonus scheme to manage the earnings. Under the bonus plan hypothesis, executives may receive bonus only when the firm's earnings fall within a certain range. To be specific, a percentage bonus is paid to executives for every dollar of profits above the "lower bound" and below the "upper bound". If the profits well below the limit, there will be no bonus to the executives. And profits higher than the upper bound also do not get any extra bonus benefit to the executives (Healy 1985, p.122).

Watts (1977) and Zimmerman (1978) point out that managers' goals are acquire maximize bonus.

So, bonus schemes give a way for them to increase or decrease their earnings by processing discretionary accruals.

According to Healy (1985), if managers believe that the current year's income is well below the "lower bound", they are likely to "take a bath" by using income-decreasing accruals. Under.

The case, managers are less likely to earn a bonus. Therefore, they tend to manipulate earnings decreasing as all those discretionary accruals will be reversed.

However, if the income just blew the “lower bound” a little, the managers may have an incentive to manipulate earnings to increase the possibility of earning a bonus. Moreover, if the firm’s income is higher than the “upper bound”, the managers may want to decrease the income to the upper limit. It is because the higher amounts of income will not attract an extra bonus. Usually, executives will reserve the accruals in the future to get bonus maximum.

2.2. Debt Hypothesis

According to debt hypothesis, the existence of debt covenants may encourage managers to do income-decreasing or income-smoothing. The essential of the debt covenants begin with the agency problem of the debtor-creditor relationship.

In this Relationship, creditor lends money to firms and debtholders make a decision about investment under the loan contract. As for the debtors, they care about the profit and prefer high return project because high risk may result in high profit. But the creditors prefer safer opinion, the goal is just to get their money back and earn an interest in revenue (Daher & Ismail 2018, p.188). In order to attract more investment at a lower cost, the debtors enter into the debt covenants (Zmijewski & Hagerman 1981, p. 135).

In the debt covenant, the coverage ratio and leverage ratio are both the important determination of covenant. Normally, breach a restriction of debt covenant is a serious technical default on the loan. The lenders are likely to enforce repayment of the balance of the loan immediately and make the situation of the corporation even worse. Under these circumstances, firms have the incentive to increase earnings to solve this problem (Roberts & Sufi 2009, p.182).

In details, firms achieve this goal by increasing income in bad years and decreasing income in good years. Increasing income in bad years can reduce the possibility of breaching debt covenants. Thus, the firm may show their ability and responsibility to the public and get more chance to attract investment from the debt-holders (Bartov 1993, p.843) (DeFond & Jiambalvo 1994, p.160). Usually, as Defond and Jiambalvo (1994) state that, in the years prior to the violations, firms that close to the limit of debt covenants (high default) are likely to change accounting procedures to manage the profits.

But things are different when a firm severely defaults, under this situation, they know it can not avoid breaching the debt covenants. As Jha states that the firm is likely to manage the earnings downward to acknowledge their financial difficulty and improve their bargaining power in the renegotiation of the new loans (DeFond & Jiambalvo 1993, p.418).

2.3. Political Cost Hypothesis

Watts and Zimmerman (1986) describe the political cost theory as using wealth transferring politics by authorities may result in the extra political cost of the corporations.

Based on this theory, Siegfried (1972) also points out that especially the large corporations with high profits or some industry monopolies are likely to attract more public scrutiny and visibility, which indicates higher political cost.

To be specific, the public may more careful with the behaviours of these corporations and argue the exploiting of other parties because of the high exposure of those large companies. (Cahan, Chavis & Elmendorf 1997, p.42) Moreover, in order to cater to the public’s ideas, some politicians may take actions against those companies in order to win support across the constituency, which may induce the increased taxes, increased wages claims, products boycotts with those large corporations. (Ferreiro & Gómez 2014, p.110).

Preventing wealth transferring from corporations, those firms with relatively larger size are intended to use accounting choice to decrease the earnings strongly. That's why the political cost is an important motivation for earning management. (Ben et al. 2016, p.392).

2.4. CEO Turnover

CEO turnover is also an essential motivation of earnings management, which may lead to income-increasing or income-decreasing behaviour.

Smith (1993) states that there are two types of CEO departure, including retirement and termination. As Pourciau (1993) points out that earnings management is less likely to occur when the departing CEO is retired. It is because the decision of the executives' retirement is guard by the firm and the retired executives usually remains a member of the shareholders. Under this situation, there is a consistent interest between the retired CEOs and the new CEOs, which both hope for the good performance of the firm. In a word, it is unnecessary for them to do the earnings management around the executive changes.

As for the termination of the former CEO, they might be forced to resign by the board or voluntary to resign. In the first circumstances, CEO may struggle to keep their job and reduce the possibility of forced resigning by earning increasing. (Dechow, Kothari & Watts 1998, p.146-148).

The situation might be a little different when the CEOs voluntary to resign. Under this situation, they are likely to do income-increasing by Accrual management and reductions in R & D expenditures to achieve higher bonus payment. Based on the earnings-increasing, the outgoing CEO will gain high reputations which may improvrr their completeness in the job market. At the same time, they will be praised for the good performance during their employment (Dechow, Kothari & Watts 1998, p.144).

As for the new coming CEOs, they may reduce income in their first year by taking income-decreasing accruals based on the following reasons according to the "big bath" theory (Moore 1973, p.102). Firstly, the new CEOs could blame the poor performance of corporations on the prior CEO. Those poor performances of previous years may create a lower benchmark in the future. In other words, the new CEOs could make less effort to realize the earnings increasing which shows their successful management skills. Secondly, because those accruals could be reversed in the future, the managers who are holding the stock call options can enter to the call contract more easily and achieve more benefit during vesting period (Strong & Meyer 1987, p. 648) (Murphy & Zimmerman 1993, p.276).

2.5. Analyst Forecast

In order to meet analysts' forecast, the management tends to do income-increasing earnings manipulation (Panye & Robb 2000, p.375).

It is very important for a company to be consistent with the forecast, when the firm's performance is below the analyst forecast, it may disappoint the market and the investors. Thus, fundraising capacity will decrease which directly impact the operation and profitability of the firm. Moreover, managers have a strong desire to do income-increasing aiming to avoid disappointing investors.

However, when the earnings are higher than the expectation of analysts, the management is less likely to downward earnings to achieve analysts' forecast (Skinner, 1994). The firm with unexpected increases in earnings will have a positive influence on the stock market, which indicates an upward of the firm's stock price. Thus, the managers will get more bonus and receive high praise. But if the profits exceed their expectation largely, managers may process income-decreasing accruals as they can reserved these profits in future bad years (Matsunaga, Shevlin & Shores 1992, p.44).

3. Empirical Evidence

In this section, some empirical results were gathered to support the association between each motivations and the specific earning management behaviours.

3.1. Bonus Plan Hypothesis

Healy (1985) proposed bonus-maximization hypothesis by examining discretionary accruals to manipulate earnings using aggregated firm-level financial data.

Guidry, Leone and Rock (1999) then developed the sample focusing on business units of the U.S. division. In their studies, they proved that in order to get the maximum bonus, managers may process accounting accruals to manage the earnings.

3.2. Debt Hypothesis

To test the debt hypothesis, Defond and Jiambalvo (1994) do the research with sample selected form firms breaching the covenants and found evidence that firms are likely to manipulate the earnings to avoid violating covenants.

Moreover, Sweeney (1994) provides supportive evidence with 130 violating debt-covenants firms when doing the research in a specific area of accounting-based accruals. This is consistent with what we've discussed above.

Different from two researches above, Dichev and Skinner (2002) use a large sample to prove the debt-covenant hypothesis, selecting sample with firms just below the covenant threshold and an above the threshold. They discover those companies are likely to manipulate earnings just y above the limit set by the creditors.

According to financially distressed firms, Aggi and Lee (2002) show, by using yearly data,

After violation of the debt-covenant, the managers may manipulate the earnings downward to get lower requirements of debt-convenant.

3.3. Political Costs Hypothesis

Many researchers supporting the political cost hypothesis. For example, Cahan, Chavis and Elmendorf (1997) provide evidence that U.S. firms reduce their discretionary accruals while they are exposed to political costs. Moreover, Hall (1993) and Hall and Stammerjohan (1997) strength the point by using the sample of gas companies. They prove managers tend to avoid political costs during the 2011 Arab Spring by reducing reported earnings.

However, there are also limitations about these researches, since those researches only prove the limited political actions and do not confirm whether the political violations are the only reason for the earning management.

3.4. Chief Executive Officer (CEO) Turnovers

Choi, Kwak and Choe (2014) take a sample of 403 CEO turnovers and 806 CEO non-turnover firms in Korea to examine the relationship between CEO turnovers and earnings management. They find a subsequent upward earning management by the outcoming CEO as well as upward earning management by the departing CEO. These evidences perfectly prove the theory with chief executive officer turnovers, which indicates the new CEOs tend to blame poor financial performance on previous CEOs and the departing CEO want to highlight their good performance in the firms.

It also needs to be stated that there is no empirical evidence that routine executives change will incentive the managers to do earnings management.

3.5. Analyst Forecast

Moreover (2001) provides empirical evidence that firms use charge reversals to meet analysts' forecast, whelh their performance area near or just little below the analyst' forecast.

In reality market, earnings per share (EPS) usually used by analysts to do the earnings forecasts. As Das and Zhang (2003) states that, under their researches, they found around 54% of firms are likely to overestimated their EPS more than one cents higher to meet or beat the analysts' performance. They point out that the beating of analysts' forecast could reflect a positive reaction of marking premium. Skinner and Sloan (1999) document also assume that failing to meet analysts' forecast has dramatically negative effect on stock prices.

4. Empirical Methods to Detect Earning Management

Discretionary accruals are generally considered a proxy of earning manipulation behaviour. There are several models applied by prior researches to detect earning management via estimating discretionary accruals. Nevertheless, they do have weaknesses.

4.1. The Healy Model

Healy (1985) assumes systematic earning management occurs in every period and tests for earning management by comparing mean total accruals among relative involving variables (Dechow, Sloan & Sweeney 1995, p.197). The logical behind is that Healy uses long-run mean total accruals represent the nondiscretionary accruals then calculating discretionary accruals, which implies nondiscretionary accruals are constant over time. However, Kaplan (1985) considers that nondiscretionary accruals should change along with the changes in economic circumstances under accrual accounting process. As a result, the model fails to detect the fluctuation of nondiscretionary accruals affected by economic circumstances, suggesting biased estimation. Dechow, Sloan and Sweeney (1995, p.198) point out the failure without considering the impact of economic circumstances on non-discretionary accruals 'will cause inflated standard errors due to the omission of relevant (uncorrelated) variables.'

4.2. The Jones Model

Jones's study (1991) relaxes the assumption of constant nondiscretionary accruals in Healy's model. Attempting to control the influence of economic circumstances on nondiscretionary accruals, she constructs a liner function where change in revenues and gross property, plant and equipment are regressed on total accruals and the residual in function denotes discretionary accruals (Dechow, Sloan & Sweeney 1995; Stubben 2010; Höglund 2012). But, here, serious limitation is that Jones Model assumes revenues are nondiscretionary, which is unrealistic. Imagine a manager accrues sales revenues near the year-end but has no cash received, it stimulates reflection on the collectability of cash and reality of sales. This situation illustrates the existence of discretionary component of sales. Ibrahim (2005, p.19) states weakness of Jones model comes from omitted part (change in receivables) not captured by sales, therefore, causing inability to detect the sales-based manipulation.

4.3. The Modified Jones Model

The most famous method to detect earning management must be the Modified Jones Model. It eliminates measurement error of old version which ignore the discretionary component of revenue-based accruals. Acknowledging credit revenues may be discretionary, Jones modifies original regression model to a function of 'total accruals = $a + b_1(\text{change in revenue} - \text{change in receivables}) + b_2(\text{PPE})$ ' using change in cash revenues replace change in total revenues by deducts change in receivables from the change in revenue in the event period (Dechow, Sloan & Sweeney 1995, p.199; Ibrahim 2005, p.19; Stubben 2010, p.698). There are still some flaws though Modified model performs better after adjustment. Peasnell, Pope and Young (2000, p.315) claim that relatively accurate regression parameters of modified Jones model require long time observation to accumulate data, which may cause survivorship bias and coefficient b_1 and b_2 keep stable over time may be inappropriate. In addition, studies discover the

asymmetry for sales change, indicating accrual process is actually non-linear. Banker et al. (2019, pp.1-2) argue that 'by forcing a linear specification on this non-linear effect, the modified Jones model overestimates discretionary accruals for moderate sales changes and underestimates discretionary accruals for extreme sales changes.'

4.4. The Industry Model

Dechow and Sloan (1991) apply the industry model to estimate discretionary accruals, which developed the assumption of constant nondiscretionary accruals to common variation of nondiscretionary accruals across companies in the same industry. Instead of finding determinants which form total nondiscretionary accruals, it builds LOS regression where $NDAt = r1 + r2 \text{ median (TAt)}$, by using the median value of total accruals (TA) to proxy the nondiscretionary accruals (NDA). But the accuracy of computing results highly relies on the premise assumption is likely to cause Type II error which affects the power of detection. Moreover, the premise is too general to meet specific intra-company and intra-industry relation analysis. If complicated circumstances like those two relations exist, biased estimation will be induced (Dechow, Sloan & Sweeney 1995, pp.199-200).

4.5. Performance Matched Discretionary Accrual Measures

Kothari, Leone and Wasley (2005, pp.163-166) state that performance matching on return on assets (ROA) will impact the performance on discretionary accruals partially because the non-linear relation between accruals and performance. By incorporating ROA as an additional regressor, performance-matched method reconstructs the modified Jones regression model. It is a popular refinement of modified Jones model as it adjusts non-linear bias in estimating discretionary accrual and thus enhance the reliability of earning management detection. While, some researchers point out that adding of ROA as performance-matching factor would be wrong in principle as ROA has already contained the accruals (dependent variables in regression function), which may lead to self-inflicted endogeneity bias (Banker et al. 2019, p.46). Further, Dechow et al. (2012) claim that econometric problems will be caused by matching on ROA.

5. Conclusion

Supporting by empirical evidence, this paper discusses association between five motivations, bonus plan hypothesis, debt covenant, political cost hypothesis, CEOs turnovers and analyst forecast, and related earning management behaviour in real business process. Moreover, empirical methods used by researchers to detect earning management have been listed and critically analysed.

References

- [1] Banker, R.D, Byzalov, D, Fang, S & Jin, B 2019, 'Operating asymmetries and non-linear spline correction in discretionary accrual models', *Review of Quantitative Finance and Accounting*, , pp. 1-48.
- [2] Bartov, E, 1993, 'The timing of asset sales and earnings manipulation', *The Accounting Review*, vol. 68, no. 4, pp. 840-855.
- [3] Belz, T, von Hagen, D & Steffens, C 2019, 'Taxes and firm size: Political cost or political power', *Journal of Accounting Literature*, vol. 42, no.1, pp. 1-28.
- [4] Ben Rejeb Attia, M, Lassoued, N & Attia, A 2016, 'Political costs and earnings management: evidence from Tunisia', *Journal of Accounting in Emerging Economies*, vol. 6, no. 4, pp. 388-407.
- [5] Cahan, SF, Chavis, BM & Elmendorf, RE 1997, 'Earnings management of chemical firms in response to political costs from environmental legislation', *Journal of Accounting, Auditing and Finance*, vol. 12, no. 1, pp. 37-65.

- [6] Choi, J, Kwak, Y & Choe, C 2014, 'Earnings Management Surrounding CEO Hall, Turnover: Evidence from Korea', *Abacus*, vol. 50, no. 1, pp. 25-55.
- [7] Daher, M.M & Ismail, A.K 2018, 'Debt covenants and corporate acquisitions', *Journal of Corporate Finance*, vol. 53, no. 1, pp. 174-201.
- [8] Das, S & Zhang, H 2003, 'Rounding-up in reported EPS, behavioral thresholds, and earnings management', *Journal of Accounting and Economics*, vol. 35, no. 1, pp. 31-50.
- [9] Dechow, P.M, Kothari, S.P & L. Watts, R 1998, 'The relation between earnings and cash flows', *Journal of Accounting and Economics*, vol. 25, no. 2, pp. 133-168.
- [10] Dechow, P.M, Sloan, R.G & Sweeney, A.P 1995, 'Detecting Earnings Management', *The Accounting Review*, vol. 70, no. 2, pp. 193-225.
- [11] Dechow, P.M, Hutton, A.P, Kim, J.H & Sloan, R.G 2012, 'Detecting Earnings Management: A New Approach', *Journal of Accounting Research*, vol. 50, no. 2, pp. 275-334.
- [12] DeFond, M.L & Jiambalvo, J 1994, 'Debt covenant violation and manipulation of accruals', *Journal of Accounting and Economics*, vol. 17, no. 1, pp. 145-176.
- [13] DeFond, M.L & Jiambalvo, J 1993, 'Factors related to auditor-client disagreements over income-increasing accounting methods', *Journal of Accounting and Economics*, vol. 9, no. 2, pp. 415-431.
- [14] Deng, Y, Devos, E, Rahman, S & Tsang, D 2016, 'The Role of Debt Covenants in the Investment Grade Bond Market – The REIT Experiment', *Journal of Real Estate Finance and Economics*, vol. 52, no. 4, pp. 428-448.
- [15] Dichev, I, D, & Skinner, D.J 2002, 'Large-sample evidence on the debt covenant hypothesis', *Journal of Accounting Research*, vol.40, no.5, pp. 1091-1123.
- [16] Ferreira, J & Gómez, C 2014, 'Implementing a voluntary wage policy: Lessons from the Irish and Spanish wages policies before the crisis', *Panoeconomicus*, vol.61, no. 1, pp. 107-127.
- [17] Hall, S.C & Stammerjohan, W.W 1997, 'Damage awards and earnings management in the oil industry', *The Accounting Review*, vol.72, no.1, pp. 47-65.
- [18] Höglund, H 2012, 'Detecting earnings management with neural networks', *Expert Systems With Applications*, vol. 39, no. 10, pp. 9564-9570.
- [19] Ibrahim, S.S 2005, An alternative measure to detect intentional earnings management through discretionary accruals, University of Maryland, College Park.
- [20] Jaggi, B & Lee, P 2002, 'Earnings management response to debt covenant violations and debt restructuring', *Journal of Accounting, Auditing & Finance*, vol.17, no.5, pp. 295-324.
- [21] Jha, A 2013, 'Earnings Management Around Debt-Covenant Violations – An Empirical Investigation Using a Large Sample of Quarterly Data', *Journal of Accounting, Auditing & Finance*, vol. 28, no. 4, pp. 369-396.
- [22] Jung, J & Dobbin, F 2016, 'Agency theory as prophecy: how boards, analysts, and fund managers perform their roles', *Seattle University Law Review*, vol. 39, no. 2, pp. 291.
- [23] Kaplan, R. S 1985, 'Comments on Paul Healy: Evidence on the effect of bonus schemes on accounting procedures and accrual decisions', *Journal of Accounting and Economics*, vol. 7, pp. 109-113.
- [24] Kothari, S.P, Leone, A.J & Wasley, C.E 2005, 'Performance matched discretionary accrual measures', *Journal of Accounting and Economics*, vol. 39, no. 1, pp. 163-197.
- [25] Matsunaga, S, Shevlin, T & Shores, D 1992, 'Disqualifying Dispositions of Incentive Stock Options: Tax Benefits versus Financial Reporting Costs', *Journal of Accounting Research*, vol. 30, no. 1, pp. 37-68.
- [26] Moore, M, 1973, 'Management changes and discretionary accounting decisions', *Journal of Accounting Research*, vol.11, no.1, pp. 100-107.
- [27] Murphy, K.J & Zimmerman, J.L 1993, 'Financial performance surrounding CEO turnover', *Journal of Accounting and Economics*, vol. 16, no.1, pp. 273-315.
- [28] Payne, J.L & Robb, SWG 2000, 'Earnings Management: The Effect of Ex Ante Earnings Expectations', *Journal of Accounting, Auditing & Finance*, vol. 15, no. 4, pp. 371-392.

- [29] Peasnell, K.V, Pope, P.F & Young, S 2000, 'Detecting earnings management using cross-sectional abnormal accruals models', *Accounting and Business Research*, vol. 30, no. 4, pp. 313-326.
- [30] Pourciau, S 1993, 'Earnings management and nonroutine executive changes', *Journal of Accounting and Economics*, vol.16, no.6, pp. 317-336.
- [31] Roberts, M.R & Sufi, A 2009, 'Renegotiation of financial contracts: Evidence from private credit agreements', *Journal of Financial Economics*, vol. 93, no. 2, pp. 159-184.
- [32] S.C 1993, 'Political scrutiny and earnings management in the oil refining industry', *Journal of Accounting and Public Policy*, vol.12, no.4, pp. 325-351.
- [33] Skinner, D.J & Sloan, R.G 2002, 'Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio', *Review of Accounting Studies*, vol. 7, no. 2, pp. 289-312.
- [34] Stubben, S.R 2010, 'Discretionary Revenues as a Measure of Earnings Management', *The Accounting Review*, vol. 85, no. 2, pp. 695-717.
- [35] Strong, J & Meyer, J 1987, 'Asset write-downs: Managerial incentives and security returns', *Journal of Finance*, vol. 20, no.1, pp. 643-663.
- [36] Sweeney, A.P 1994, 'Debt-covenant violations and managers accounting responses', *Journal of Accounting & Economics*, vol.17, no.6, pp. 281-308.
- [37] Zmijewski, M.E & Hagerman, R.L 1981, 'An income strategy approach to the positive theory of accounting standard setting/choice', *Journal of Accounting and Economics*, vol. 3, no. 2, pp. 129-149.