Xiaomin Qiang

Earnings Management in Small Profit Firms during Financial Crisis of 2008-2009

Master’s Thesis
Accounting
March 2013
Purpose: This paper examines empirically the managerial earnings management practices undertaken by small profits firms, and seeks whether these practices changed during the recent global financial crisis. Previous studies on small but positive earnings are normally in whether earnings management causes the discontinuity around zero in earnings distribution. There are few studies combined discontinuity around zero with different macroeconomic conditions.

Design: The association between earnings management and small profit firms is investigated by three measures. First, earnings distribution of scaled earnings by lagged market value in different scaled earnings level during financial crisis is portrayed. Second, distribution of accumulated discretionary accruals which is the proxy for earnings management in different scaled earnings level is exhibited. Third, based on the qualified firm-year observations, discretionary accruals regressed on several earnings management controlling variables are tested. Due to the limited number of qualified firm-year observations, two measures of small profit firms are used.

Data: The sample is selected from all listed firms in United States. Financial crisis period is confined in Year 2008 and 2009 when the stock price was in the bottom in recent decades. In these two years, the incentives from capital markets are restricted in the low level.

Findings: Without considering financial crisis, there is income-increasing earnings management in small profit firms which is consistent with previous studies. After considering financial crisis, the practices of earnings management is changed to income-decreasing, which provides the direct evidence on that the constitution of small profits firms are those ex-ante profit firms during the crisis and also provides the indirect evidence on that the constitution of small profits firms are small losses or losses firms in other periods. Both earnings distribution and accumulated discretionary accruals in financial crisis have the same consequence.

Practical Implications: This paper shows profit firms employ income-decreasing earnings management during the bad economic situation. The good financial performance from these firms in the post-crisis period need to be questioned whether the business actually revived.

Keywords: earnings management, small positive earnings, Global Financial Crisis, earnings quality, discretionary accruals
## Contents

Abstract  
Table of Contents  
Table of Figures  
Table of Tables

1 INTRODUCTION

1.1 Background

1.2 Prior Related Research

1.3 Research problem and structure of Thesis

2 EARNINGS MANAGEMENT

2.1 Definition

2.2 Incentives for Earnings Management

2.2.1 Contracting theory

2.2.2 Signaling theory

2.2.3 Tax saving motivation

2.2.4 Capital market incentive

2.2.5 Political incentives

2.2.6 CEO turnover incentives

2.3 Patterns of Earnings Management

2.3.1 Discontinuity around zero

2.3.2 Income smoothing

2.3.3 Big bath

2.4 Methods to Detect Earnings Management

2.4.1 The Healy Model

2.4.2 The DeAngelo Model

2.4.3 The Jones Model
2.4.4 Modified Jones Model (Dechow et al. Model) ......................... 48
2.4.5 The Industry Model ......................................................... 48
2.4.6 Comparison ................................................................... 49

3 EARNINGS QUALITY ................................................................... 51
  3.1 Definition ........................................................................... 51
  3.2 Proxies of Earnings Quality ................................................ 52
    3.2.1 Conservatism ............................................................... 52
    3.2.2 Earnings persistence ..................................................... 55
    3.2.3 Accruals ................................................................... 57
    3.2.4 Earnings smoothness .................................................... 60
    3.2.5 Target beating ............................................................. 61
    3.2.6 Investor response to earnings ........................................ 62

4 HYPOTHESES DEVELOPMENT .................................................. 64

5 RESEARCH DESIGN ................................................................. 67
  5.1 Sample Selection ............................................................... 67
  5.2 Earnings distribution .......................................................... 67
  5.3 Measure of earnings management ........................................ 68
  5.4 Measure of Association ........................................................ 69

6 EMPIRICAL RESULT ................................................................. 71
  6.1 Earnings Distribution in 2008 and 2009 ............................... 71
  6.2 Discretionary accruals ......................................................... 72
  6.3 Association .................................................................... 74

7 CONCLUSION ........................................................................... 78

REFERENCES ............................................................................. 81

APPENDICES .............................................................................. 90
FIGURES

Figure 1 Frequency of scaled earnings with 0.5% width from 1950 to 2010 ........ 34

Figure 2 Histograms of four scaled annual earnings with different endings. The deflator is the market value in the beginning of the year. The width in partitions is 0.5%. (Jacob & Jorgensen 2007: 376) ................................................................. 38

Figure 3 the difference between fiscal earnings frequency and expected frequency. Expected frequency is the mean of frequency from three alternative annual earnings for the same partition. (Jacob & Jorgensen 2007: 376) ...................................................... 39

Figure 4 Histogram of four alternative unscaled annual earnings. The partition width is $100,000. (Jacob & Jorgensen 2007: 381) ................................................................. 41

Figure 5 Scaled Earnings in 2008 and 2009 with 0.5% width ......................... 71

Figure 6 Discretionary accruals distribution for the scaled earnings from -0.05 to 0.05 with 0.5% width in 2008 and 2009. ................................................................. 73
TABLES

Table 1 descriptive statistic for scaled earnings.............................................71

Table 2 Descriptive statistic of scaled earnings and discretionary accruals scaled by total assets.................................................................72

Table 3 Descriptive statistics of third dataset.....................................................74

Table 4 Small profit firms, financial crisis and discretionary accruals.................75
1 INTRODUCTION

1.1 Background

Hayn (1995) perceives a phenomenon that the quantity of firms with small losses is less than the number of firms with great loss and also much less than the quantity of firms with small positive so that “there is kink in earnings distribution: too few firms report small losses and too many firms report small profits” (Dechow, Richard & Tuna 2003: 1).

Burgstahler and Dichev (1997) find the discontinuity around zero in the earnings distribution, which is that the first partition in the left side of zero has extreme low frequency, even lower than the frequency of left adjacent partition, and the first partition in the right side of zero has extreme high frequency. They attribute this situation to earnings management. The idea behind is that due to contracting theory, capital market incentives or loss avoidance, firms are unwilling to report negative results so that they manage earnings up from small loss to small profit. They advocated this suggestion by examining three earnings’ components around zero reference point. The level of cash flow in firms with small positive earnings was higher than in firms with small loss. They assumed that right side firms managed cash flow up to prosper the financial performance.

Based on the work of Burgstahler and Dichev (1997), Dechow et al. (2003) reexamined earnings management as an explanation for abnormally low proportion of small losses firms. They focused on the discretionary accruals of small profit firms and compared the level of discretionary accruals with both small loss firms and all others. The first one is same as BD’s that firms with small losses try to report positive earnings so that these firms in small profits group have higher discretionary accruals than those firms remained in small loss group. The second one is small losses group might have similar level discretionary accruals as others whose discretionary accruals are without specified direction. The third assumption is that firms with large losses are supposed not to engage in earnings upwards management to report small negative earnings, which results in low frequency of small loss firms.
Their empirical results indicate that small profits group has higher positive earnings management than other groups, which proves the first assumption. Small profits group includes firms who should have reported small losses if without earnings management. They also find that small losses group report positive earnings management as well. There is a possibility that small losses group contains firms who should have reported large losses if without earnings management. Thus the second assumption and third assumption are violated and discontinuity around zero cannot be approved to be caused by earnings management.

Further evidence on earnings management as an explanation for discontinuity around zero is provided by Jacob and Jorgensen (2007). Instead of calculating discretionary accruals, they compare fiscal year annual earnings distribution with another three rolling annual earnings distribution ending in different quarters. The pattern of discontinuity around zero is only emerged in the fiscal year annual earnings distribution. Because most of these contractually underlying earnings are related to fiscal earnings and managers are easy to grasp the whole picture in the days near the end of billing cycle, there is a high possibility that managers would place their discretions in the final quarter of fiscal year. However, owing to the iron law, those discretions need to be reversed in the following periods. The alternative annual earnings, for example ending in the first quarter, may include reversal of managers’ discretions so that there is no gap around zero in their frequency distribution.

Additionally, they use the mean of three alternative annual earnings frequencies from the same corresponding position to calculate the expected frequency, instead of using the average frequency of two adjacent partitions in the fiscal year histogram. They find that both the first partitions in the immediate vicinity of zero report largest difference with expected frequencies. The first partition in the left side of zero point has the lowest under-expectation frequency. The first partition in the right side of zero point has the highest over-expectation frequency. The findings suggest that a large scale of firms who should have reported small losses manage their earnings up then they report small positive earnings instead. The results support the assumption that discontinuity around zero is caused by earnings management.
Therefore although there is counterview to rebut that earnings management is the inducement for discontinuity around zero in earnings distribution, majority of previous studies believe in and support that the extreme low frequency in small losses firms and extreme high frequency in small profits firms is caused by small losses firms who manage their earnings up (e.g. Burgstahler & Dichev 1997, Dechow et al. 2003, Jacob & Jorgensen 2007). The small profits group is constituted by most of firms with income-increasing earnings management, thus the group generally reports positive earnings management.

Strobl (2009) suggests that earnings management is prevalent in the good economic condition than in the bad economic condition. Investors are more sensitive to bad financial performance in economic booms than in economic recession (Conra, Cornell & Landsman 2002). Thus the capital market incentives are stronger in good economic condition to push firms reporting good performance. Moreover, during booms, most firms report high income and investors believe that few low-value firms may have incentive to manipulate their earnings up, thus investors do not question the quality of published reports, which provide the chance to firms to manage earnings (Cohen & Zarowin 2007). In the bad economic situation, the capital market incentives weaken. Investors may expect quite a lot of firms would manage earnings which results in low quality of published reports and decreases the emphasis on these reports (Cohen & Zarowin 2007). Therefore firms may have fewer motives to manage earnings in recession.

However, evidences from previous researches on earnings management during financial crisis suggest otherwise. Two studies research earnings management 1997 Asian Financial Crisis. Ahmed, Godfrey and Saleh (2008) find that firms with potential debt renegotiations apply income-decreasing management in Malaysia. Service companies in Singapore exhibit the same earnings management pattern (Chia, Lapsley & Lee 2007).

2008 Global Financial Crisis has much deeper and broader impact than 1997 Asian Financial Crisis. The value of global equity market at the end of February 2009 was only $22 trillion. Compared with the value in the beginning of October 2007, $51 trillion, it shrank more than 56% during the crisis. With the grievous news about
collapse in bank industry, investors lost their confidence in stock market. Equity market experienced unprecedented illiquidity and listed firms confront continuously decreasing share prices (Bartram & Bodnar 2009). Due to the illiquidity of capital market, firms were possible to be hard to get sufficient money to fund their investment. A recent survey from Chief Financial Officers in Europe, Asia and U.S. points out that because it is quite hard to borrow money from capital market during the crisis, firms have to cut down or postpone lucrative investments, burn their cash and sell superfluous assets in order to reduce illiquidity risk (Campello, Graham & Harvey 2010).

Habib, Bhuiyan and Islam (2012) study earnings management employed by financially distressed firms in New Zealand from 2008 to 2011. They define the financial distress as firms with either negative working capital or losses in the recent years and find that financially distressed firms engage income-decreasing earnings management during the crisis.

Because share price in 2008 and 2009 was at low ebb and capital market was constrained, it was hard to borrow money either from bank or from shareholders, so incentives from capital market to manage earnings upwards minimized. If compensation schemes are linked with share price, owing to failing share price, executives were unable to get full compensations and their past share options could be worthless. And even they tried their best to maximize earnings, share price could still in the low place because investors loss their confidence in the market. Also if firms reported best performance compared with their rivals in the same industry, investors may not believe in extreme great performance and governments may interfere to shoot the leading birds. Therefore, firms seem to be more scrupulous than before.

Combined all mentioned possibilities together, firms with ex ante small losses may perform like Habib et al.’s (2012) discovery and replace income-increasing earnings management by income-decreasing earnings management during the crisis. Because the ex-ante small losses firms may worsen their reported earnings and shift their position to further left locality, the discontinuity around zero caused by ex-ante small losses firms in the earnings distribution may not appear in the earnings distribution
only for the crisis period. In addition, reported small profits group may not contain ex-ante small losses firms during the period.

### 1.2 Prior Related Research

The discontinuity around zero is supposed to be caused by earnings management. There are several reasons that motivate managers to manipulate earnings.

First, contracting theory is one of the incentives. There are three major types of contracts: compensation contract, borrowing/loan contract and implicit contract. Healy (1985) finds the association between earnings management and bonus scheme, and the managements’ choice between accruals and accounting policies. Bonus scheme is regarded as one of the most important incentives forced managers to manipulate earnings to maximize their own benefits (Guidry, Leone & Rock 1999, Healy 1985, Kaplan 1985). Healy (1985) finds that in two occasions, income-decreasing earnings management is employed by executives. When earnings are lower than the threshold of minimum compensation, managers would rather decrease the earnings further in order to augment the probability of bonus in next year. When earnings are higher than the upper bound of maximum compensation, managers pull down the earnings under the upper bound. Because managers do not get award for the exceeding part of earnings, they like to hide exceeded profit for the compensation in the following years.

To protect the profit of the current loan holders, there are auxiliary covenants embedded in the long-term debt contracts. Since the cost of breaching these covenants is quite high, like paying back the whole debt immediately or stricter covenants, managers try to use earnings management to avoid such risk (Sweeney 1994). Sweeney finds that firms who violated debt covenant in the first time are voluntarily using income-increasing method by changing accounting policy, such as applying FIFO instead of LIFO, in previous five years before defaulting, and they are compulsorily adopting income-decreasing policies later.

Another type contract is implicit contract which is without formally legal contract but is confined by self-enforcement. There are a lot benefits when firms keep good
reputation. And firms’ reputation in a great extent is relevant to the financial image (Maksimovic & Titman 1991). When firms involve in high level of implicit contracts, they have higher income-increasing earnings management through choosing FIFO and accelerated depreciation accounting polices than firms involved in low level of implicit contracts (Bowen, DuCharme & Shores 1995).

Secondly, signaling theory explains the existence of earnings management. It assumes that earnings management is used by executives in order to mitigate asymmetric information. Evidences on this theory are provided by Subramanyam (1996) who finds that discretionary accruals are informative. He firstly uses regression model of stock return on operating cash flow, normal accruals and discretionary accruals and finds that all coefficients are positive and coefficient on abnormal accruals is smaller than coefficients on other two variables, which support the author’s claim that discretionary accruals are useful in valuing share price. Secondly, he confirms the findings of Sloan (1996) on the persistence of discretionary accrual in predicting future earnings and dividends by regressing future earnings on three earnings components. Thirdly, consisting with Dechow (1994)’s findings on negative relation between operating cash flow and accruals, Subramanyam’s work reports a correlation of -0.6 between operating cash flow and discretionary accruals compared to a correlation of -0.1 between normal accruals and operating cash flow.

Thirdly, to reduce income tax payment also provokes the application of earnings management. Although in most countries, taxable income is not the same the financial accounting income, some choices of accounting rules are the same for both incomes. Moreover, according to statutory standards and accounting standards, there are some resemblances in these two methods (Guenther 1994). Manages can accelerate expense or defer revenue in order to shift the period of taxable income, meanwhile, accounting income is changed at the same time. There was a Tax Reform Act (TRA) in 1986 in U. S. and tax rate decreased from 46 percent to 34 percent which was effective from 1 July 1987. Guenther (1994) studies the earnings management for tax saving purpose in 1986 in nearly all industries except financial service and finds that firms with large size and low debt level are inclined to use more current accruals to decrease the taxable income and financial accounting
income. Additionally there are some tax induced earnings managements found in European private companies (Coppens & Peek 2005). Coppens and Peek’s study provides the evidence on that when managers manipulate earnings, they would consider the effect on taxation, which is consistent with previous researches such as the timing of recognition of profit or loss from sales of long-term assets (Bartov 1993). In addition, earnings managements are used more frequently in the countries where accounting practice is aligned with tax practice than in the countries where the alignment is not significant.

Fourthly, firms endure the pressure from capital market after they decide to finance from public. Initially, firms’ financial performance plays essential role during initial public offerings (IPO). Friedlan (1994) believes that there is a proportional relation between the change in sales and the change in accruals which represents nondiscretionary accruals from growth so that the discretionary accruals in his model equals to the period total accrual-sales ratio minus same equation in the benchmark period. The results from the model are consistent with the assumption that firms apply upward earnings management in the financial report which published in prospectus; moreover, such management is centralized in the poor-performed firms and small and unknown firms. After IPO, capital market incentives are still existed. Myers, Myers and Skinner (2006) report the findings that firms with at least five-year growth in annual EPS have average more than 20 per cent return per year and firms with consecutive growth in quarterly EPS have higher abnormal return. They also find evidence of earnings management existed in the sample firms. Earnings in the sample firms are smoother than in the control firms and change in accruals is unusually much more negative correlated to change in operating cash flow. Sample firms report less non-decreasing quarterly earnings. Moreover, reported earnings are conversely related to the effective tax rate. All these evidences demonstrate that sample firms manage their earnings to maintain the persistently growing earnings quarterly or annually in order to have higher market value than the similar companies.

Fifthly, political cost hypothesis assumes that under the same conditions, managers are likely to lower current reported earnings when the firms face high political costs. When publicly famous firms report higher accounting profits than their rivals, following with media and investors attentions, politicians may view that extreme
profitability as monopolies in some extent and draw up related regulations or legislations to extract part of wealth (Watts & Zimmerman 1978). Cahn (1992) finds that firms under antitrust investigations lower more earnings through discretionary accruals during the investigating period than other periods. Han and Wang (1998) study earnings management linked with political costs used by oil companies during 1990 Gulf crisis in U.S. and find that there is no unusually accrual in the Crude Petroleum and Nature Gas industry, while petroleum refining companies use discretionary accruals to lower earnings and delay the earnings announcement in the last quarter of 1990. Jones (1991) finds that companies received import relief investigations by International Trade Commission decrease the earnings in the year of investigation.

Sixthly, previous studies (e.g. Elliott & Shaw 1988, Moore 1973) indicate that there is strong association between executives turnover and earnings management. Executive turnover can be separated into non-routine and routine turnover. Non-routine executive turnover is unplanned dismissal and voluntary resignation so that directors are hard to control the opportunistic earnings management. Routine executive turnover includes regular job rotation and retirement, which are supposed to be helpful in decreasing the level of earnings management (Pourciau 1993). Murphy and Zimmerman (1993) find that capital expenditure and R&D expends have been reduced starting from five years to two years before the retiring year, which demonstrates that because retiring CEOs know the exact time they would leave the company, they inflate earnings in the previous years to avoid being discovering by the successors (Smith 1993). Such findings are also convinced that when the CEO change is routine, the successor can engage in or supervise the decision made by the predecessor in the year of changing so that previous CEO may not have chance to tamper the financial statements (Pourciau 1993). Besides, Murphy and Zimmerman’s research finds that firms with non-routine CEOs changes reported significantly decreasing in those four discretionary accounts used for testifying the existence of earnings management. The decrease in expenditure illustrates that as those CEOs did not have good performance in the past and they do not know they would be dismissed, to keep their position, they lessen the expenditure in such as R&D, advertising as usual, which can be seemed as the evidence for cover-up hypothesis that predicts executives manage earnings up when firms’ performance is
not acceptable by shareholders to avoiding being laid-off (Murphy & Zimmerman 1993).

Earnings management can be discovered from the patterns of past earnings distribution, such as discontinuity around zero, smoothing income or big bath, but all these patterns are ex post facto. Discretionary accruals are frequently to detect the existence of earnings management. Furthermore compared with manipulation through real activities, accruals are easy to be controlled, thus accrual-based earnings management is regarded as frequent used method to adjust earnings (Dechow, Sloan & Sweeney 1995).

There are several models used quite often by researchers, such as Healy Model (1985), DeAngelo Model (1986), Jones Model (1991), Modified Jones Model (1995) and Industry Model (1991). From the study by Dechow et.al (1995), they find that although all the models provide well specific tests for a random sample, the detecting power of the models is low in all the models. Especially when the firms are with extreme financial results, all models produce non-standard tests. However, among all models, the most powerful test is the modified Jones model.

When mentioning earnings management, financial reports users may suspect the quality of earnings. However, earnings management is only of the dimensions of earnings quality, Dechow, Ge and Schrand (2010) category earnings quality proxies into three broad fields: properties of earnings which include earnings persistence, abnormal accruals, earnings smoothness, earnings conservatism, and target beating; investor responsiveness to earnings by earnings response coefficient (ERC); and external indicators of earnings misstatements comprised by accounting and auditing enforcement releases; restatement; and internal control.

1.3 Research problem and structure of Thesis

The objective of this thesis is to explore the earnings management behavior of small profits firms in United States and to examine whether this behavior changed during 2008 Global Financial Crisis (GFC) especially in 2008 and 2009.
Stock price in U.S. stock markets started slumping in the end of 2007, and reached the bottom in the end of 2008 and the beginning of 2009, and then in 2009 the price rallied staggering. Thus it is presumed that due to the historically low stock price, capital market incentives to earnings management have been minimized. This paper is focus on the earnings performance and earnings management during 2008 to 2009 in U.S. and selects sample from all U.S. stock markets.

The empirical part of this study is divided into three sections. The first section is to examine the earnings distribution in 2008/2009. Using the same methodology from Burgstahler and Dichev (1997), the distribution do not show the same discontinuity around zero pattern as the previous studies whose earnings distribution is based on more than 20 years earnings information. The frequencies in small profits firms and small losses firms are quite smoothing.

The second section is to measure earnings management proxied by discretionary accruals based on Modified Jones Model (1995) in 2008 and 2009. The results show that both small profits firms and small losses firms have negative discretionary accruals and both of them employ income-decreasing earnings management. Moreover, negative discretionary accruals are not confined in only these groups, and they disperse into other earnings groups.

The third section is to explore the association between earnings management and small profits firms with considering or without considering the influence from GFC. The sample of U.S. listed firms is selected with consecutive and integrated reported financial data from 1999 to 2009. Because the limited number of useful firm-year observations, only 40 observations in 2008/2009 fall into the group with positive scaled earnings but less than 0.005. Thus two groups of small positive earnings are defined as the first group with scaled earnings from zero to 0.005 and the second group with scaled earnings from zero to 0.05.

The empirical results from regression model document that without considering GFC, both groups reports positive relation between earnings management and small profits firms, because $\beta_1$, the coefficient of small profits earnings, is positive in both regression results. With considering GFC, the first group does not have rational
results because the sample size in the first earnings group in 2008/2009 is too small. But the second group exhibits negative relation between earnings management and small profits firms, because $(\beta_1 + \beta_3)$, the coefficients of small profits earnings in 2008 and 2009 is negative.

Combined all these empirical results together, the earnings management behaviors in small profit firms are changed during financial crisis. The 2008/2009 earnings distribution illustrates that small losses firms are no longer managing earnings upwards during crisis. The 2008/2009 discretionary accruals divided by different earnings scales further confirms the finding from 2008/2009 earnings distribution. Small loss firms employ income-decreasing earnings management so that small losses group may consist of ex-ante small profit firms. Also there are negative discretionary accruals in small profit group, which indicates the group is made up by ex-ante profit firms. Therefore the association between earnings management and small profit firms is negative in 2008/2009. Next the results from the regression models verify the findings from discretionary accruals.

The structure of paper proceeds as follows. Section two reviews the previous studies in earnings management from the views of motivations, patterns and methods used to detected discretionary accruals stood for earnings management. Section three is according to Dechow et al.’s (2010) study to examine different determinants of earnings quality from the dimensions including earnings conservatism, earnings persistence, accruals and discretionary accruals, earnings smoothing, target beating and investor responsiveness to earnings by earnings response coefficient (ERC). Section four develops two hypotheses in the association between earnings management and small profits firms. Section five interprets the selection of sample, formula used in calculating discretionary accruals and two regression models used in testing hypotheses. Section six describes the descriptive statistic, empirical results and analysis in each subordinated sections. Section seven concludes the main findings in this paper and the limitations.
2 EARNINGS MANAGEMENT

2.1 Definition

According to current accounting framework, managers can choose the suitable accounting policies, for example, inventory record methods (IAS 2) or depreciation or amortization methods (IAS 16). Further, based on the accrual accounting, earnings are composed by cash flow component and accrual component. As accruals are based on the managers’ estimation, the accuracy of accruals is hard to verify. Thus to achieve some specific purposes, such as realizing managers’ personal utilities; avoiding violating terms of contracts; or maximizing the market value of the firm, earnings can be managed voluntarily in a short period. However, from the long-run perspective, earnings reflect a firm’s real performance, because whether earnings are manipulated upwards or downwards in the current periods will be reversed in the future periods. For example, comparing the impact on earnings of accelerated depreciation method and straight-line depreciation method, although depreciation cost is higher under accelerated depreciation method than under straight-line depreciation method for one period, and assuming other accounts are the same, net income is lower under accelerated depreciation than under straight-line method. Because the total depreciation cost on one tangible asset for its whole life is same under two methods, the depreciated periods of assets under accelerated depreciation are shorter than under straight-line method. After all cost of an asset has been depreciated under accelerated method, depreciation cost is still expensed under straight-line methods, so earnings are higher under accelerated method than under straight-line method. Thus although managers can use accelerated depreciation method to decrease current periods earnings, in the long-run, accumulated earnings are the same under two methods. Earnings management is a short-term device in manipulating net incomes.

Managers can change the earnings number through two ways: choosing accounting policies or modifying the accrual number, nevertheless it is found that managers prefer accrual to accounting policies (Healy 1985). When using accounting policies to manipulate earnings, firms need to disclosure the changes in the published financial reports so that this method is easy to be detected by the public. While using
accruals, as both accrued income and expense is integrated in the big sales/expense amount, it is hard to be detected by external auditors or external financial reports users. Moreover, the impact of accounting policies changes on the earnings is more than one year, because managers cannot frequently change their accounting choice. But the impact of accrual changes can be lasted for only one period such as one quarter or one year, and the previous accrual is easier to be reversed in the next periods.

When managers use excessive earnings management and are careless about firm’s future performance, the quality of financial reports is distorted. Moreover, a period of management can maximize the periodic earnings to keep their position, reputation and compensation by saving current expense to future or moving future income to current. Due to the information asymmetry, outside investors are hard to discover the existence of earnings management. Although most firms who have been charged in violation of US GAAP by Security and Exchange Commission (SEC) are found using excessive earnings management (Dechow, Sloan & Sweeney 1996), moderate earnings management can be good for the firm and investors. From efficient contracting view, firms use earnings management as a low-cost device to avoid violating covenants and high punishment. From financial reporting view, earnings management can be used as a measure to communicate inside information to outside users, if market is efficient enough (Subramanyam 1996).

2.2 Incentives for Earnings Management

2.2.1 Contracting theory

Managers’ earnings manipulation can be explained by contracting theory. There are three major types of contracts: compensation contract, borrowing/loan contract and implicit contract. Compensation contract occurs between firms and management team. Besides fixed salary, high level management can get annual bonus based on the performance of firms. The bonus is designed to mitigate the agency problem between shareholders and management. When bonus is designed to be based on the reported accounting earnings, managers have incentives to maximize their bonus through increasing or reducing current earnings. Borrowing contract is between firms and
lenders like banks or governments. Because there are covenants built in the borrowing contracts, firms normally do not want to touch the bottom line according to the covenants. It is common that managers prefer managing earnings upwards. But when firms meet long-term financial distress and have a chance in renegotiation of debt covenants, managers may decrease earnings further in order to discuss the least stringent covenants with lenders. Implicit contract is not the formally signed contract. It is the invisible contract between firms and their stakeholders such as investors, lenders, management and suppliers. Implicit contract is embedded in the explicit contract and represents future performance of two parts based on past behavior.

Healy (1985) finds the association between earnings management and bonus scheme, and the managements’ choice between accruals and accounting policies. Bonus scheme is regarded as one of the most important incentives forced managers to manipulate earnings to maximize their own benefits (Guidry et al. 1999, Healy 1985, Kaplan 1985). Bonus is designed to mitigate the tension between managers and owners under the agency theory. In that theory, managers are hired by owners to maximize the owners’ utility, but managers may maximize their own benefit by damaging the benefits of owners, such as transferring the company’s assets to managers’ personal account. To restrict the managers’ conduct, part of their remuneration is based on their performance contributed to the firm. Bonus is designed to connect with accounting earnings, stock price, or other performance. No matter how bonus is linked to which kind of measures, there is a threshold. When it is triggered, managers can get the minimum bonus. But whether bonus has an upper bound depends on the shareholders’ decision. In the study by Healy (1985), it reviews the effect of bonus based on accounting earnings with both threshold and upper bound on earnings management. He discovers that when the current year income is lower than the threshold, accruals of liabilities are higher than the average level. It seems that more expense is recorded into current year in order to reduce the current income further. By doing so, expense in the following years will decrease so that the probability of getting bonus is augmented. Moreover, if the bonus scheme has an upper bound, managers also have motivates to decrease current year net income and make it lower than the upper bound, because they cannot receive the bonus on the part over the upper bound, which is also confirmed by Holthausen,
Larcker and Sloan (1995) who obtain the actual data on annual performance-based bonuses.

Other contractual reason motivates managers to manipulate earnings can be drawn from the avoidance from breaching the debt covenants. To protect the profit of the current loan holders, there are auxiliary covenants embedded in the long-term debt contracts, such as the level of financial leverage, paying dividends. Since the cost of breaching these covenants is quite high, like paying back the whole debt immediately or stricter covenants, managers try to use earnings management to avoid such risk (Sweeney 1994).

Sweeney (1994) uses 130 firms which violated debt covenant in the first time from 1980 to 1989 in U.S as a sample and uses another 130 similar industries and size firms as control firms who were without debt violation. Although these firms in the sample can keep the required ratios like interest coverage ratio and debt/equity ratio, they are easily to violate the required level of equity and working capital. Compared to those controlled firms, sample firms are voluntarily using income-increasing method by changing accounting policy, such as applying FIFO instead of LIFO, in previous five years before defaulting, and they are compulsorily adopting income-decreasing policies later. Further study by DeFond and Jiambalvo (1994) supports the findings by Sweeney that defaulting firms adopt earnings-increasing discretionary accruals based on the sample of 94 defaulting firms who disclosed debt covenants violations during 1985 to 1988. But the discretionary accruals in the year of violation are hard to be figured out, because firms who successfully adopted earnings management and complied with the debt agreements are omitted from the sample. After further controlling sample firms with management changes or going concern audit report, it shows positive discretionary total accruals of sample, but the coefficient is not significant departing from zero in statistic, however, discretionary working capital accruals show significantly positive. Thus it suggests that in the year of violation, managers still increase earnings manipulatively.

However, facing the risk of violating covenant, not all companies choose to manage earnings up to whitewash reports. Financial distressed firms with persistent financial losses and dividend reduction adopt earnings-decreasing method with or without debt
covenant (DeAngelo, DeAngelo & Skinner 1994). DeAngelo et al. (1994) use 76 listed firms with at least three years financial losses and cash dividend reduction in 1980 to 1985. Among the samples, 29 firms reduced the dividends due to the binding debt contracts. The huge amount of negative discretionary accruals (income-decreasing earnings management) is exhibited in all of these 76 companies starting from the dividend reduction year to next three years. While in ten years before the dividend reduction year, there was no evidence in upward earnings management in 29 firms compared with remaining companies. DeAngelo et al. attribute the motivation of income-decreasing earnings management to the contract renegotiations with banks, governments, shareholders and others. Further study by Ahmed et al. (2008) finds that during 1997 Asian Financial Crisis period, firms engaged in debt renegotiation adopted negative discretionary accrual and market gave high value of the discretionary accruals only for these renegotiating companies, since market believes that new pacts are beneficial for those firms.

Another type contract is implicit contract which is without formally legal contract but is confined by self-enforcement. When a firm gains good reputation from past transactions with its lenders, customers or suppliers, it may have lower debt interest rate or less strict debt covenants from its lenders; it can get advanced payment from its customers; or it can have longer days of payment for its suppliers. Firms’ reputation in a great extent is relevant to the financial image (Maksimovic & Titman 1991). When firms involve in high level of implicit contracts, they have higher income-increasing earnings management through choosing FIFO and accelerated depreciation accounting polices than firms involved in low level of implicit contracts (Bowen et al. 1995).

2.2.2 Signaling theory

Forecast of a firm’s future performance and future stock price is based on the currently available earnings. Investors will revise their estimation in respond to recently published reports. Managements held the insider information about firms’ future prospects. If managers convey their estimation on companies’ future or inside information through earnings management and market is efficient enough to realize it, investors will change their appraisal correspondingly. Thus signaling theory assumes
that earnings management is used by executives in order to mitigate asymmetric information. But findings on this theory are controversial.

Evidences on this theory are provided by Subramanyam (1996) who finds that discretionary accruals are informative. Subramanyam firstly uses regression model of stock return on operating cash flow, normal accruals and discretionary accruals and finds that all coefficients are positive and coefficient on abnormal accruals is smaller than coefficients on other two variables, which support the author’s claim that discretionary accruals are useful in valuing share price. But there are two other explanations for this result. The first one is that market prices the firm based on the total earnings, although managers opportunistically manages earnings, market cannot discover it (Sloan 1996). The other one is that Jones model (Equation 3, 5 & 5 in section 2.4.3) used to separate accruals into non-discretionary and discretionary components could mistake nondiscretionary accruals into discretionary accruals, which may interpret the positive relation between stock return and discretionary accruals (Bernard & Skinner 1996).

Secondly, Subramanyan confirms the findings of Sloan (1996) on the persistence of discretionary accrual in predicting future earnings and dividends by regressing future earnings on three earnings components. Although discretionary accruals are the least persistent component in earnings, they can improve the accuracy of predicted earnings.

Thirdly, consisting with Dechow (1994)’s findings on negative relation between operating cash flow and accruals, Subramanyam’s work reports a correlation of -0.6 between operating cash flow and discretionary accruals compared to a correlation of -0.1 between normal accruals and operating cash flow. The result interprets that if there is no misclassification of discretionary accruals, a much more predictable and persistent earnings series can be generated by smoothing earnings through discretionary accruals. However, this finding is not affirmed by the following studies. Xie (2001) also used Jones model but based on larger sample from 1971 to 1992. Xie finds the same persistent feature of discretionary accruals like the finding from Subramanyan (1996). If Subramanyan’s argument on informative discretionary accruals is established, market should response differently to different classes of
accruals. However, earnings response coefficient (ERC) is abnormally higher for discretionary accruals compared with ERC for nondiscretionary accruals.

Due to the deficiencies of Jones model, the study by Liu, Ryan and Whalen (1997) uses unexpected quarterly loan loss accruals in U.S. bank industry as signal for earnings management. Unexpected quarterly loan loss accruals are used to decrease earnings. Stock price of risky banks, whose liquid capital is close to the legally required level, is positively related to the unexpected quarterly loan loss accruals, while stock price is negatively relevant to the income-decreasing earnings management for the banks who are not at risk. Markets believe that when banks are at risk, they will decrease earnings at current time in order to increase future earnings, so that high unexpected quarterly loan loss accruals are signaling to the outside investors that management are taking actions to solve current problem. However when banks are not at risk, there is no need to decrease current earnings for getting higher future earnings, so that stock price has the congruous movement with earnings. Their study supports the Subramanyan’s argument about the signal effect of earnings management that managers through earnings management to express their expectation in firms’ future performance.

Furthermore, instead of separating accruals into discretionary and nondiscretionary components, stably increasing earnings is used as one signal of earnings management to reveal potential earnings growth (Barth, Elliott & Finn 1999). Based on the Miller and Modigliani’s price and earnings model (1966) and Ohlson’s price, earnings and book value of equity model (1995), and further controlled firm characteristics of growth by five-year compound growth rate of book value of equity and analysts’ forecast of long-term earnings growth; financial risk by debt-to-equity ratio; and operating risk by the variance of earnings change percentage in the past six years, Barth et al. (1999) find that samples in the period from 1982 to 1992 show that firms with at least five-year consecutively increasing earnings enjoy higher price-earnings multiples than firms with similar size, growth and risk but without such pattern. The earnings multiples premium for such pattern is small in the first four years, but increases a lot in the fifth and sixth years. This premium is not eliminated when firms only have one-year decreasing earnings after keeping consecutively increasing earnings. But the premium vanishes after two-year decreasing earnings and in the
second year of decreasing earnings, earnings multiples decrease at maximum. Moreover, premium for earnings multiples becomes negative after four-year dropping earnings. However, market is not rewarding all level of earnings management to create increasing earnings pattern, only earnings management which is not conveying overstated future performance has been compensated.

2.2.3 Tax saving motivation

To reduce income tax payment also provokes the application of earnings management. Although in most countries, taxable income is not the same the financial accounting income, some choices of accounting rules are the same for both incomes. For example the choice in inventory accounting methods in U.S can influence on both taxable income and accounting income. When purchasing price is increasing, the cost of sales is higher, profit is lower and tax savings is higher under LIFO than under FIFO (Lindahl 1989).

Moreover, though the method used for taxable income has a lot difference with the method used for financial accounting pre-tax income, according to statutory standards and accounting standards, there are some resemblances in these two methods (Guenther 1994). Manages can accelerate expense or defer revenue in order to shift the period of taxable income. Expense accrual for financial report purposes is recognized when the expenses is incurred or based on the matching principle, the expense accrual is estimated and records so as to match the revenue recognition. Meanwhile, expense which can be deducted for tax purpose must satisfy that the expense occurs in the corresponding financial year with accordant financial performance and also the estimation must be reasonably accurate. Thus when managers accrue more expense accruals from future periods to current period for tax purpose, expense accruals are increasing in the same time for financial accounting purpose. Additionally, managers can defer current revenue to future periods in order to decrease taxable income. The deferral of revenue for tax purpose is by means of delaying the transfer of assets’ rights, which simultaneously deceases the income for financial reporting purpose. Therefore, through manipulating in current accruals, both taxable income and financial accounting income moves in the same trajectory (Choi, Gramlich & Thomas 1991).
There was a Tax Reform Act (TRA) in 1986 in U. S. and tax rate decreased from 46 percent to 34 percent which was effective from 1 July 1987. Guenther (1994) studies the earnings management for tax saving purpose in 1986 in nearly all industries except financial service. Current accruals are the difference between current assets and current liabilities, and both current assets and current liabilities are related to current sales, so current accruals have positive relation with the change in sales. Guenther estimated current accruals according to Jones’s (1991) model that is the difference between the change in current assets and liabilities but without the change in cash and cash equivalent, next the change in income taxes payable and current maturities liabilities of long-term debt are added back to the difference. Furthermore, to minimize the nondiscretionary accruals part in current accruals, earnings management detected in this study from 1985 to 1988 was the difference between the estimated current accruals based on the past thirteen-year performance from 1972 to 1984 and actual current accruals. The study shows mixed results. Because current accruals, after controlling for the size, debt level and management ownership percentage of outstanding shares, in 1985 and 1986 are both negative, no evidence shows that negative current accruals in 1986 can attribute to decreasing taxable income. But current accruals with the effect of size and with debt level are only significant in 1986, which indicated that firms with large size accrued more than others and firms with high debt level used less accruals than others. There is no effect from management ownership on earnings management. Therefore from this study, firms with large size and low debt level are inclined to use more current accruals to decrease the taxable income and financial accounting income.

Additionally there are some tax induced earnings managements found in European private companies (Coppens & Peek 2005). Other than public firms, private companies face less capital market incentives and agency problem (Fama & Jensen 1983) induced earnings management. Since contracting incentives still remain in the private companies, they have motivation to avoiding negative earnings. Simultaneously there is no market share premium for persistently increasing earnings, so there are a lot of companies who are not required to beat last year performance (Coppens & Peek 2005). When further control the aligning level between tax practice and accounting practice, Coppens and Peek (2005) separate sample European countries into two groups to observe the earnings around zero and earnings change.
The first group with high similarity between accounting and tax practice includes Germany, France, Italy and Belgium. The second group with low level similarity contains UK, the Netherland, Spain and Denmark. Firms in Germany and France give up managing increasing earnings to report small but positive earnings, while firms in Italy, Belgium and the second group report the upward earnings management to avoid loss which is violating the authors’ hypothesis. They predict that in the high-alignment countries, firms seek to minimize taxation and give up upward earnings management, however, the empirical results show that firms in Italy and Belgium still show loss avoidance pattern. Coppens and Peek further find that compared with earnings distribution in public companies in Italy and Belgium, earnings are much smoother in private companies. Earnings smoothness is as a pattern of earnings management under tax incentives since firms may avoid reporting too high earnings to pay excess tax or too low earnings to be investigated by institutions (Herrmann & Inoue 1996). Therefore, Coppens and Peek’s study provides the evidence on that when managers manipulate earnings, they would consider the effect on taxation, which is consistent with previous researches such as the timing of recognition of profit or loss from sales of long-term assets (Bartov 1993). In addition, earnings managements are used more frequently in the countries where accounting practice is aligned with tax practice than in the countries where the alignment is not significant.

2.2.4 Capital market incentive

In contrast to borrow from banks, firms may be willing to get capital from stock market because they do not need to pay interest and no contractual agreement restricts them. Since accounting earnings is one of important determination coefficients of stock’s market price, managers have intention to manoeuvre the earnings to maximize or stabilize the stock price.

Initially, firms’ financial performance plays an essential role during initial public offerings (IPO). Because there is no existing market price at that period, issuers, underwriters and investors value the firms, to some extent, based on the financial information available in the prospectus (Krinsky & Rotenberg 2010). Accounting information based multiples valuation approaches are usually used as the starting
point for IPO companies (Bloch 1989). Earnings and other accounting numbers are positively related to the IPO price and also price in the following one week (Clarkson et al. 1992). Thus in order to sell shares in the high price, firms may take income-increasing discretionary management (e.g. Friedlan 1994, Teoh, Welch & Wong 2002). Due to the high cost in detecting fully earnings manipulation from accounting choice in financial reports, underwriters and investors may acquiesce in the existence of some of earnings discretion, thus discretion may not impair the possibility of selling out shares in a relative high price (Friedlan 1994). Most of IPO firms are growing quickly in the years before going public so that the nondiscretionary accruals do not follow random-walk assumption which is proposed by DeAngelo (1986). The change of total accruals in IPO firms contains two parts, one is from firm growth and the other is from earnings discretion by managers. Friedlan (1994) believes that there is a proportional relation between the change in sales and the change in accruals which represents nondiscretionary accruals from growth so that the discretionary accruals in his model equals to the period total accrual-sales ratio minus same equation in the benchmark period. The results from the model are consistent with the assumption that firms apply upward earnings management in the financial report which published in prospectus; moreover, such management is centralized in the poor-performed firms and small and unknown firms. Marquardt and Wiedman (2004) investigate accruals for the equity offering firms and find that those firms try to increase revenue by increasing account receivables or decreasing the provision for bad debt. Moreover, due to the legal scrutiny and public concern, such earnings-increasing management may last in the following financial year after IPO, since immediate accrual reversal reveals the firms’ manipulation on earnings (Teoh et al. 2002). Owing to the “iron law” of earnings management, such upward income management has to be reversed afterwards. Thus firms have to reverse discretionary earnings in the next second or third year after IPO and investors will discover the earnings management gradually from media press or analyst’s reports so that three-year aftermarket stock return of firms with aggressive earnings management for IPO performs nearly 20% worse than return of firms with conservative earnings management (Teoh et al. 2002).

Though many previous researches demonstrate that firms manage income upwards to have a high IPO price, one article by Kimbro (2005) studies the accounting
information in valuing IPO of A-shares (traded in domestic currency) in China stock market from 1995 to 2002 and finds that negative discretionary accruals are general in these firms. Kimbro also finds that the average first-day stock return for new shares is around 132 per cent and first-year share performance is around 194 per cent, which could be explained that market detected that listed firms intentionally published low earnings. As there is a large number of listed companies are belong to government owned firms and the probability of seasoned equity offerings are high in China market, public companies may hide incomes for their future risk (Chen, Firth & Kim 2004). Also such income-decreasing earnings management can be caused by the long-time investigation by government departments so that listing date is lagged (Chan, Wang & Wei 2004). Furthermore, firms may use underpricing to lessen troubles caused by the information asymmetry such as adverse selection problems and agency problems (Su 2004).

After IPO, capital market incentives are still existed. As share price represents future earnings performance of the underlying company, current earnings and analysts’ forecast can be a good guide. For example, firms can increase earnings by accruing positive discretionary accruals aiming to raise market price, before issuing seasoned equity offerings (Teoh, Welch & Wong 1998). Besides issuing new shares, mentioned above in section 2.2.2, firms enjoy higher market value premium than their rivals when they keep constantly increasing earnings more than five years, so that firms use earnings management to maintain the pattern of earnings and high earnings-price ratio (Barth et al. 1999). Myers et al. (2006) report the similar findings that firms with at least five-year growth in annual EPS have average more than 20 per cent return per year and firms with consecutive growth in quarterly EPS have higher abnormal return. They also find evidence of earnings management existed in the sample firms. Earnings in the sample firms are smoother than in the control firms and change in accruals is unusually much more negative correlated to change in operating cash flow. Sample firms report less non-decreasing quarterly earnings. Moreover, reported earnings are conversely related to the effective tax rate. All these evidences demonstrate that sample firms manage their earnings to maintain the persistently growing earnings quarterly or annually in order to have higher market value than the similar companies.
2.2.5 Political incentives

Other incentive is from political motivation. Political cost hypothesis is one of the three hypothesizes of positive accounting theory, which assumes that under the same conditions, managers are likely to lower currently reported earnings when the firms face high political costs. When publicly famous firms report higher accounting profits than their rivals, following with media and investors attentions, politicians may view that extreme profitability as monopolies in some extent and draw up related regulations or legislations to extract part of wealth (Watts & Zimmerman 1978).

Cahan (1992) used 48 firms under antitrust investigations as sample and separated total accruals through the methodology like Jones model. The study finds that these firms lower more earnings through discretionary accruals during the investigating period than other periods. Besides monopolistic firms confront political costs, firms in the strategic industries like utilities and transportation also face the threat. Politicians and publics are more sensitive to the price changes in the commodities firms than other firms (Watts & Zimmerman 1986). For example, oil companies gouge high oil price during the periods when oil supply is restricted, extra tax or regulations can be launched to calm down public outcry and dissatisfaction (Han & Wang 1998). Han and Wang (1998) study earnings management linked with political costs used by oil companies during 1990 Gulf crisis in U.S. Oil companies are classified into two industries: Crude Petroleum and Nature Gas industry and Petroleum Refining Industries. The study, using the similar model to Jones, finds that there is no unusually accrual in the Crude Petroleum and Nature Gas industry, while petroleum refining companies use discretionary accruals to lower earnings and delay the earnings announcement in the last quarter of 1990. The result is consistent with argument by Watts and Zimmerman (1986) that consumer related firms are scrutinized in high degree by the public. Petroleum refining companies operates more service stations than crude oil and gas firms so that they have much more motivation to decrease their income.

Firms without extreme profit or size may also suffer political cost. Jones (1991) followed 23 companies received import relief investigations by International Trade
Commission (ITC) during six years from five industries. She separated the total accruals into discretionary and nondiscretionary accruals (the method is introduced in section 2.4.3). When discretionary accruals from the model are negative, it presents that firms use accruals to decrease earnings, and vice versa. Significantly negative discretionary accruals are found in samples in the year when ITC processed investigations, while there are not significantly negative discretionary accruals before or after that year. Thus because only firms whose business are threatened by international competitors have chance to get granted import relief from ITC, to increase the possibility of attaining relief, they manage earnings down intentionally.

2.2.6 CEO turnover incentives

Previous studies (e.g. Elliott & Shaw 1988, Moore 1973) indicate that there is strong association between executives turnover and earnings management. Executive turnover can be separated into non-routine and routine turnover. Non-routine executive turnover is unplanned dismissal and voluntary resignation so that directors are hard to control the opportunistic earnings management. Routine executive turnover includes regular job rotation and retirement, which are supposed to be helpful in decreasing the level of earnings management (Pourciau 1993).

Discussed above in section 2.2.1, based on the bonus contractual theory, executives manipulate earnings to maximize their annual bonus. A ‘horizon problem’ is arisen and assumes that before retiring, CEOs are likely to report higher earnings to get final bonus. Thus retiring CEO changes is regarded to routine CEO turnover as the turnover is noticed in advance. Murphy and Zimmerman (1993) study such earnings management through four accounts: research and development (R&D), advertising expenditure, capital expenditure and total accruals in the years around CEOs’ retirement. If horizon hypothesis is established, managers could either decrease the payment in R&D or advertising or fixed assets or accruals like allowance for bad debts. Reduction in expense from R&D, advertising or capital investment can improve financial performance promptly, but it is more costly than accrual variables as it sacrifices the future development. However, Murphy and Zimmerman do not find direct evidence to prove such hypothesis. Growth rate in these four elements do not drop significantly in the year when CEOs retiring. But there are some indirect
clues which may support the existence of horizon problem. Capital expenditure and R&D expends have been reduced starting from five years to two years before the retiring year, which demonstrates that because retiring CEOs know the exact time they would leave the company, they inflate earnings in the previous years to avoid being discovering by the successors (Smith 1993). Such findings are also convinced that when the CEO change is routine, the successor can engage in or supervise the decision made by the predecessor in the year of changing so that previous CEO may not have chance to tamper the financial statements (Pourciau 1993).

Besides, Murphy and Zimmerman’s research finds that firms with non-routine CEOs changes reported significantly decreasing in those four discretionary accounts used for testifying the existence of earnings management. The decrease in expenditure illustrates that although those CEOs did not have good performance in the past, they do not know they would be dismissed, to keep their position, they lessen the expenditure in such as R&D, advertising as usual, which can be seemed as the evidence for cover-up hypothesis that predicts executives manage earnings up when firms’ performance is not acceptable by shareholders to avoiding being laid-off (Murphy & Zimmerman 1993). However Pourciau (1993) finds a contrary result that write-off and accruals (deflated by sales) were increasing and earnings was cut down in the last year of non-routine CEO change. But this finding cannot indicate that executives do not manipulate earnings before leaving. The deterioration of sales and fixed cost decreases the profit which could countervail the effect of income-maximizing manipulation (Smith 1993). The operating cash flow from Pourciau’s test does not slump, which indicates the possibility of significance of fixed cost.

Another earnings management theory linked to executive turnover is big-bath hypothesis, which predicts that when new CEOs assume office, they may depress earnings in the first year because such low earnings can be attributed to the poor performance of previous management team and financial performance turns around in the following years (DeAngelo et al. 1994). Both Pourciau (1993) and Murphy and Zimmerman (1993) confirm the occurrence of big-bath phenomenon. From opportunistic perspective, successors manage earnings from accruing more bad debt allowance for receivables or inventory allowance than before to save profit for future. From opposite perspective, incumbent executives discover the inflation in earnings
and make correction. For example, additional inventory allowance is due to obsolete stocks which are not accrued by the previous executive. In addition, due to the iron law of accruals, previous income-increasing discretionary accruals are reversed after old CEO’s departure. For instance, companies could miss booking the accruals for expense accounts which have not received invoices yet. When the invoices are arriving, they need to be reflected such expense in current financial position, however, according to the matching principle, the expense should have been recorded in the previous fiscal year. Thus from this aspect, the existence of taking bath indirectly analogizes the upward earnings management took by outgoing executives and cover-up hypothesis (Smith 1993).

2.3 Patterns of Earnings Management

Without intricate calculation, some patterns of earnings distribution can indicate the existence of earnings management.

2.3.1 Discontinuity around zero

Hayn (1995) perceives a phenomenon that the quantity of firms with small losses is less than the number of firms with great loss and also much less than the quantity of firms with small positive so that “there is kink in earnings distribution: too few firms report small losses and too many firms report small profits” (Dechow et al. 2003: 1).

Based on this finding, Burgstahler and Dichev (1997, hereafter BD) plot the frequency of scaled earnings distribution using Compustat databases from 1976 to 1994 and prove the existence of discontinuity around zero between small loss and small positive earnings. The pattern of small positive earnings is showed in Figure 1 which uses the same methodology as Burgstahler and Dichev’s (1997) but with larger Compustat data period from 1950 to 2010. The figure shows that the frequency of earnings in the range from -0.005 to 0 is 1,186 which is much lower than the frequency of earnings, 2,392, in the range from 0.005 to 0 and even lower than the frequency of earnings, 1,312, in the range from -0.01 to -0.005.
BD attribute this situation to earnings management. The idea behind is that due to contracting theory, capital market incentives or loss avoidance, firms are unwilling to report negative results so that they manage earnings up from small loss to small profit. They advocate this suggestion by examining three earnings’ components around zero reference point. First they find the level of cash flow in firms with small positive earnings is higher than in firms with small losses. They infer that right side firms manage cash flow up to prosper the financial performance. But Dechow et al. (2003) refute this as an evidence for the existence of earnings management in ex-ante small losses firms. The increase in earnings is in direct proportion to the growth in cash flow. There is no surprise that the level of cash flow in small profits firms is higher than small loss firms, when earnings in small profits are higher than in small losses firms. Also without earnings management, managers can improve cash flow by taking some actions such as improvement in receiving account receivables or increasing creditable payment period. Secondly, as accruals contain unconfirmed estimates, it is traditional and easy that firms manipulate earnings through accruals rather than cash flow. To find more evidences, BD run the test on working capital accruals and other accruals. The results from two accrual groups seemed paradoxical. Working capital accruals in the small profit group show upward trend in the median change, while other accruals in this group have downward trend, which both compared with small loss group. Dechow et al. (2003) are suspicious of increasing
working capital accruals as an evidence for earnings management again. They deem that because there is positive correlation between earnings and working capital accruals, increasing working capital accruals could just represent the revitalization in their business other than earnings management. Thus the findings from BD’s are not adequate enough to support their hypothesis.

Based on the work of BD, Dechow et al. (2003) reexamined earnings management as an explanation for abnormally low proportion of small losses firms. They focused on the discretionary accruals of small profit firms and compared the level of discretionary accruals with both small loss firms and all others. The research is based on three assumptions. The first one is same as BD’s that firms with small losses try to report positive earnings so that these firms in small profits group have higher discretionary accruals than those firms remained in small loss group. The second one is small losses group might have similar level discretionary accruals as others whose discretionary accruals are without specified direction. The third assumption is that firms with large losses are supposed not to engage in earnings upwards management to report small negative earnings, which results in low frequency of small loss firms.

The sample used by Dechow et al. (2003) is from 1988-2000, consisted 47,847 firm-years, among that, 1,646 small profits firms and 797 small losses firms. The empirical results show that compared with other firms, the level of discretionary accruals is high in the small profits firms, which testifies income-increasing earnings management is utilized by small profit group. However, when compared with small losses firms, both of two groups present similar positive proportion of discretionary accruals. Therefore, discretionary accruals in small losses group are violating the second assumption. Although firms report small losses, they still try to report higher earnings and this group is comprised by firms who should have large losses before manipulating earnings. Thus the third assumption is also violated. The result from Dechow et al. can prove that small profits firms manage earnings up, but cannot explain the kink around the zero reference point. No strong evidence shows that the slot in the earnings distribution can be explained by earnings management, since firms with large negative earnings boost reported income as well. But Dechow et al. suggest that there is another possibility that managers use real action to gear up the financial performance so that manipulation is hard to be detected by discretionary
accruals, nevertheless, this suggestion is consistent with the findings from BD, because from their empirical results, both incremental cash flow and working capital accruals present the improvement in real operating performance. Another explanation could be that before announcing net income, nearly all of small losses firms try to manage earnings up, most of them succeed, but remaining fraction still leave in the left side of zero. Thus large losses firms are supposed not engaging in income-increasing earnings management and small losses group only contains firms who already in this group before earnings management unsuccessfully manage their earnings over zero

Although there is counterview to rebut that earnings management is the inducement for discontinuity around zero in earnings distribution, most studies agree on the presupposition, there still a few studies query this hypothesis. They assert that the pattern is caused by deflator. The amount of earnings is decreasing after being scaled by market value so that the observations are scattered, while scaling has no impact on the observations with zero, which results in more frequency of scaled earnings clustered around zero (Degeorge, Patel & Zeckhauser 1999). Additionally, Durtschi and Easton (2005) find that the median price for firms with negative one cent is $0.25 and the median price for firms with positive one cent is $1.31, so that stock price lower than $1 drags deflated earnings away from zero, while stock price over $1 pushes deflated earnings closing to zero. Also they suggest that scaled earnings can raise selection bias. Scaled earnings require firms have market value in the end of last financial year, but the number of small loss firms without stock price at the end of last year is higher than the number of small positive firms, so that some small loss firms are deleted during selection. Consequently, they do not find that discontinuity in the EPS distribution; furthermore, the histogram shows that the frequency of small loss firms is higher than the frequency of small profit firms, which is inconsistent with the assumption that firms manage earnings up to avoid reporting loss. Meanwhile the pattern around zero is not found in the distribution of un-scaled net income in their sample. They also point out that using total revenues or total assets as the deflator can have the same effect like market value to mislead the distribution of deflated earnings. Thus, they believe deflator is the main reason of discontinuity in the earnings distribution, rather than earnings management.
Other alternative explanation for discontinuity is from tax effect. Due to the high effective tax rate, after-tax net income has been forced close to zero after tax payment in profit firms. Whereas not all losses firms are eligible for tax refund, especially those losses firms have high negative amount in discontinuous items which are excluded from tax refund. Losses firms who receive tax refund can move themselves to the positive close to zero, while those who are unqualified for tax refund in situ. The effect from tax saving to reduce loss is not as the same as the effect from tax payment. Thus Beaver, McNichols and Nelson (2007) deduce that nearly two-third of earnings distributional discontinuity around zero can be explained by asymmetric tax treat and non-operating items.

To rebut mentioned contentions, Jacob and Jorgensen (2007) compare the distributions of rolling annual earnings in each quarter. For example, if a firm’s fiscal year is ended in December, rolling annual earnings in the first quarter start from the beginning of April in year-1 to the end of March in year. Then they draw four histograms based on four scaled annual earnings with different quarter ending and use the same methodologies as BD, which are showed in Figure 2. Figure 2a is the distribution of earnings ending in the fiscal year, and 2b-2d are the distributions of earnings ending in the first, second and third quarter. It is evident that only the distribution of fiscal earnings shows the discontinuity around zero, while other three distributions have no such pattern. In addition, the actual frequency in one partition is compared with the expected frequency. “The expected frequency is the mean of the frequency in the two adjacent partitions” (Jacob & Jorgensen 2007: 377). The difference between actual and expected frequency in Figure 2a shows that in partition 0 actual frequency is over expectation while in partition -1 actual frequency is under expectation, which support the BD’s opinion that firms manage earnings up to avoid losses.

Figure 2 implies the existence of earnings management in fiscal year earnings, as claimed by BD. Due to compensation and loan contractual incentives, managers have purport to maximize their own bonus or to keep current borrowing provisions through earnings management. Because most of these contractually underlying earnings are related to fiscal earnings and managers are easy to grasp the whole picture in the days near the end of billing cycle so that there are high possibilities that
Managers would place their discretions in the final quarter of fiscal year. However, owing to the iron law, these discretions have to be reversed in the following periods. The alternative annual earnings, for example ending in the first quarter, may include reversal of managers’ discretions so that there is no gap around zero in its frequency distribution.

Figure 2 Histograms of four scaled annual earnings with different endings. The deflator is the market value in the beginning of the year. The width in partitions is 0.5%. (Jacob & Jorgensen 2007: 376)

Further Figure 2 outargues the assertion by Degeorge et al. (1999) and Durtschi and Easton (2005) that the discontinuity around zero in the scaled earnings distribution caused by deflator. If their assertion is set up, the distributions of four scaled annual earnings should show the same pattern, with the discontinuity around zero. However, three alternative annual earnings distributions in Figure 2b - 2d contradict this assertion.

However, the expected frequency used before has some flaws in discovering earnings management. Firstly, the expectation for the peak in the distribution is not comparable with the actual frequency. If the peak represents firms using earnings management, the difference may mislead the interpretation. Secondly, firms in the adjacent partitions can also use earnings management, if earnings management is a
prevalent method used by most of firms. The cue of earnings management indicated by the difference between actual frequency and expected frequency can be hided.

To overcome these deficiencies, Jacob and Jorgensen use another unique method to calculate the expected frequency. Instead of using the average frequency of two adjacent partitions in the same year histogram, they use the average of three alternative annual earnings frequencies from the same corresponding position. For example, the expected frequency for partition 0 in Figure 2a is the mean of the frequencies in partition 0 from Figure 2b-2d. The underlying concept behind this method is that the aggregated earnings in these four annual earnings are the same, so the mean frequency from three alternative earnings histogram in the identical position is the natural reference for the same partition in the fiscal earnings histogram.

![Figure 3](image)

*Figure 3 the difference between fiscal earnings frequency and expected frequency. Expected frequency is the mean of frequency from three alternative annual earnings for the same partition. (Jacob & Jorgensen 2007: 376)*

The difference between fiscal earnings frequency and expectation is shown in Figure 3, which provides more realistic indication in earnings management spread than previous expected frequency method. The negative difference between fiscal year frequency and expected frequency is distributed from partition -1 to partition -9 (scaled earnings from -0.5% to -4.5%) and partition -1 shows strongest statistical deviations from expectation by Z-statistic. Part of the gap between fiscal earnings frequency and expected frequency can be attributed to the firms who successfully increase their earnings over zero. Undeniably, the other part of frequency difference could be distressed firms, especially those not close to zero, who may manage
earnings downward to reserve profits for the following years, such as taking a bath (this pattern will discuss in part 2.3.3).

Similarly, partition 0 to partition 6 (scaled earnings from 0% to 3%) have higher than expectation frequencies. The over expected frequency can be partly attributed to those firms with small losses before management who successfully manage earnings up over zero. The extra frequency may also contain firms who have over threshold earnings before manipulation and manage surplus earnings down (DeGeorge et al. 1999), such as one bonus compensation assumption by Healy (1985) in section 2.2.1 which states that once there is an upper limit in the compensation scheme, because managers cannot get extra bonus even though the reported earnings is surpassed the ceiling, they have intention to decrease current earnings and save profit for next year. The partition from 7 to 13 in Figure 3 which are lower than expected frequency can support this assertion. Firms in this range can either pull earnings down to the position vicinity to zero or shift earnings up to report better performance.

To further figure out whether the discontinuity around zero is caused by scaling, alleged by Degeorge et al. (1999) and Durtschi and Easton (2005), Jacob and Jorgensen draw histograms for four alternative annual earnings, which is presented in Figure 4. Compared with Figure 2, histograms of scaled annual earnings, the peak of distributions is moved to zero, and in the Figure 4a, it is obvious that there is a sharp decrease in the partition close to partition 0. The outcome from the comparison between an identical partition frequency in fiscal year histogram, Figure 4a, and the mean from the same partition frequencies in three alternative annual earnings histograms, from Figure 4b – 4d, indicates that partition -1 to partition -9 have lower than expectation frequency and partition 0 to partition 5 have higher than expectation frequency. The positively different frequency in partition 0 changes tremendously to negative different frequency in partition -1, which indicate that the existence of discontinuity around zero and proves that scaling is not the reason of discontinuity.

Also the findings from Figure 4 are consistent with scaled earnings that earnings management is not just confined around zero. Nearly 1% sample under expected frequency in the left side of zero may try to avoid losses in their fiscal reporting earnings (different frequency from partition -1 to -9). Correspondingly, 0.798%
sample report over expected frequency in the right side of zero (different frequency from partition 0 to 5), which indicate that this proportional firms may successful manage earnings to avoid report negative result.

Since analysts, investors keep attention on earnings per share rather than scaled earnings or net income, EPS distribution is a controversial topic. DeGeorge et al. (1999) find the discontinuity in EPS distribution based on the I/B/E/S database. However, Durtschi and Easton (2005) do not find evidence based on the Compustat database, and they think the actual EPS in I/B/E/S is not integrity and has selection bias as analysts may not follow all firms especially those report negative earnings.

Jacob and Jorgensen also examine EPS distribution by their unique method based on Compustat quarterly data. The result is quite similar to the scaled earnings or unscaled earnings distribution, except that the discontinuous point has been shifted to point 1. The frequency in partition 0 is lower than expectation, while the frequency in partition 1 is over expectation, which may indicate that managers have incentives to report positive earnings per share instead of zero earnings.

Figure 4 Histogram of four alternative unscaled annual earnings. The partition width is $100,000. (Jacob & Jorgensen 2007: 381)
But the selection problem is still existed in Jacob and Jorgensen’s study. As their expected frequency method need earnings information from four quarters, however, quarterly database may not has as full data as yearly database. More reduce in sampling, more bias can be brought into result. The accuracy and creditability of their study in EPS distribution is in question.

Jacob and Jorgensen re-examine the findings from Beaver et al. (2007) in that tax effect can be one of the reasons of discontinuity round zero in the scaled earnings distribution. As the distribution of earnings could be distorted by scaling (Durtschi & Easton 2005), unscaled pre-tax income is used for this hypothesis. If the hypothesis is set up, discontinuity at zero in the pre-tax income distribution should be smaller than that in the net income distribution. However, discontinuity at zero is discovered in the unscaled pre-tax income distribution, but the deviations between the fiscal year frequency and the mean of frequencies from three alternative periods are smaller than the deviations in the after-tax net income distribution.

There are some alternative explanations for this result. Firstly, after-tax income includes gain and loss from discontinued operations or extraordinary accounts which may cause different tax treatment, for instance, some sorts of losses cannot get tax refund, while pre-tax income does not contain such items. Secondly, discontinued operations are easily manipulated by managers (e.g. Bartov 1993). For example, managers can choose the time to recognize gain or loss from selling tangible assets when transactions are in cash. Without involving such items with high probability in earnings management, pre-tax income may exhibit low potential in exceeding threshold like zero, compared with net income. Finally, although pre-tax income displays less earnings management than net income, any removal from the accounts in net income may add noisy in the net income distribution.

Thus tax effect may explain small portion of discontinuity at zero in the net income distribution. However, from previous discussions, earnings management still plays important role in the discontinuity, because most of firms are unwilling to report negative earnings. As the prevalence of different earnings management approaches and motivations, earnings management employed by firms in the same earnings group is different. For example, small but positive earnings group contains not only
ex-ante small losses firms with income-increasing earnings management but also ex-ante profits firms with income-decreasing earnings management (Jacob & Jorgensen 2007).

To avoid loss is one twig of exceeding thresholds. Other thresholds include previous reported earnings and analyst’ forecast. Discontinuity is also obvious in the distribution of earnings change (Burgstahler & Dichev 1997). Same as the discovery in earnings distributions, earnings management can also explain majority of the discontinuity in net income surprise, but asymmetric tax does not have significant effect in discontinuity in pre-tax income as there is no incentive to keep pre-tax income over thresholds (Jacob & Jorgensen 2007).

2.3.2 Income smoothing

The distribution of earnings with a continuously growing pattern and without temporary plummeting or rocketing may indicate the existence of earnings management. Mentioned in section 2.2.2 and 2.2.4, firms with at least five-year continues growing earnings have premia in their market price (Barth et al. 1999), thus there is incentive to decrease undulation in the long-run earnings. From Healy’s (1985) assumption (in section 2.2.1), one type of bonus contract sets the upper and inferior limit of achieved earnings so that managers will control the earnings in the restrictive scope. Due to the risk-aversion, they are likely to smooth earnings so as to receive stable bonus. Also firms smooth earnings to avoid paying excessive tax when taxable income is too high or being investigated by tax bureau when taxable income is too low (Herrmann & Inoue 1996) (section 2.2.3).

2.3.3 Big bath

Firms have very low earnings in one year or longer and show turnaround in the following years. According to big-bath hypothesis (discussed in section 2.2.6), this can take place during the non-routine change of top executives. Also based on Healy’s bonus contractual hypothesis (discussed in section 2.2.1), when one year earnings is lower than the bottom line of promissory amount and managers cannot
receive bonus during that year, they are likely to decrease the earnings in that year so as to increase the possibility of future bonus.

During the recession, such as financial crisis and financial distress, firms are likely to exposure all the disadvantages in that period and expect rebound in the future. For example, in section 2.2.1, firms with at least three years financial losses and cash dividend reduction are inclined to decrease reported earnings during the period so as to force the renegotiations with governments, debt holders and so on (DeAngelo et al. 1994). Furthermore, market appreciates firms with negative discretionary accruals during financial crisis only when firms have probability to renegotiate their debt contracts (Ahmed et al. 2008).

Some categories of firms have to decrease their earnings due to the political reasons, as discussed in section 2.2.5, such as publicly famous firms, strategic firms or firms under investigation but can get government allowance. Income minimization can also be classified into a variety of taking a bath. Firms under investigation (e.g. Han & Wang 1998, Jones 1991) only need to report temporarily decreasing earnings during the investigation to satisfy the terms of allowance and their earnings may recover after that. Publicly famous firms and strategic firms need to reduce earnings in long term if their performance is better than then general. If they use accruals to save current income, due to the iron law of accruals, the reversal of accruals will increase the income in the future. But if they use real activities such as increasing employees’ benefits or marketing expense, such expenditure will be permanent.

2.4 Methods to Detect Earnings Management

Although earnings distribution can intuitively give the idea whether firms manipulate earnings ex post facto, it is hard to know the directions of earnings management in advance and in the short term. Compared with manipulation through real activities, accruals are easy to be controlled, thus accrual-based earnings management is regarded as frequent used method to adjust earnings (Dechow et al. 1995).

Accruals can be decomposed into normal part and abnormal (discretionary) part. Normal accruals are the adjustment due to the firms’ fundamental performance.
Abnormal accruals are due to earnings management in an imperfect accounting system, which is not related to the actual economic performance of firms. Discretionary accrual is less persistent than other parts like cash flow from operating and nondiscretionary accrual because it is easy to write off in the following periods. The existence of discretionary accruals can be used as a measure of earnings management. There are several different models to detect discretionary accruals.

2.4.1 The Healy Model

The Healy model assumes that systematic discretionary accruals occur every period so that nondiscretionary accruals are the mean of total accruals scaled by lagged total assets from the estimated period (Healy 1985). The sample in Healy’s study is divided into three groups. Earnings with predicted upward earnings management are in one group. Earnings with predicted downward earnings management are in other two groups. Then comparing mean total accruals in the upward group with mean total accruals from separated downward group. The mean total accruals in the estimation period from Equation (1) represent nondiscretionary accruals.

\[ NDA_t = \frac{\sum T_A_t}{T} \]  

where NDA is estimated nondiscretionary accruals, TA is scaled total accruals by previous year total assets, T is the number of year in the estimation period.

2.4.2 The DeAngelo Model

The DeAngelo model assumes that last period total accruals (scaled by lagged total assets) are without earnings management so that nondiscretionary accruals for the current period is equal to the last period total accruals (scaled by lagged total assets), which is showed in Equation (2).

\[ NDA_t = TA_{t-1} \]
This model is the special case of Healy model which assumes that the estimated period is equal to 1 (DeAngelo 1986).

Both of the Healy model and the DeAngelo model are under the assumption that nondiscretionary accruals are constant over time and the mean of discretionary accruals is equal to zero during the estimation period. However, the level of nondiscretionary accruals should change simultaneously with the changes in economic environment which is based on the nature of accrual accounting so that both of these models are not successful to detect earning management (Kaplan 1985).

2.4.3 The Jones Model

The Jones model relaxes the restriction of the constancy of nondiscretionary accrual. It depends on the rationale that sales determine working capital and investment in property, plant and equipment determine depreciation and amortization. It is based on the total accrual which is combination of all single accrual accounts. Total accrual is the change in non-cash working capital less income tax payable and total depreciation expense so that total accrual includes accounts receivables, accounts payable, and changes in inventory (Jones 1991).

Jones assumes that revenue and investment in long-term assets are nondiscretionary so that changes in revenue and investment in property, plant, equipment are used in the expectation model (Equation 3) to control the change in nondiscretionary accruals caused by changing economic environment.

\[
NDA_t = \alpha_1 \left( \frac{1}{A_{t-1}} \right) + \alpha_2 \times \Delta REV_t + \alpha_3 \times PPE_t
\]  

(3)

Where

- \(NDA_t\) = nondiscretionary accruals in the period \(t\)
- \(A_{t-1}\) = total assets in year \(t-1\)
- \(\Delta REV_t\) = the change in sales in year \(t\) scaled by total assets in year \(t-1\);
- \(PPE_t\) = property, plant, equipment in year \(t\) scaled by total assets in year \(t-1\);
- \(\alpha_1, \alpha_2, \alpha_3\) = firm specific coefficients
And discretionary accrual is the difference between total accruals and nondiscretionary accruals (showed in Equation 4).

$$DA_t = TA_t - NDA_t$$  \hspace{1cm} (4)

Where $TA_t =$ total accruals in year $t$ scaled by total assets in year $t$-1;

To estimate the firm specific coefficients, $\alpha_1$, $\alpha_2$, $\alpha_3$, in Equation (3), Equation (5) is generally used. There is no existent dependent variable, NDA in Equation (3) from any financial report, while TA in Equation (5) is easy to obtain. Because total accruals are comprised by discretionary accruals and nondiscretionary accruals (Equation 4), and combined with Equation (3), estimation of NDA, the residuals from Equation (5) are discretionary accrual.

$$TA_t = \beta_1 \left( \frac{1}{A_{t-1}} \right) + \beta_2 \times \Delta REV_t + \beta_3 \times PPE_t + \varepsilon_t$$  \hspace{1cm} (5)

Where $\varepsilon_t =$ residual, discretionary accruals in Equation (4)

$\beta_1, \beta_2, \beta_3 = \alpha_1, \alpha_2, \alpha_3$ in Equation (3)

Although the Jones model is successfully explaining the variation in total accruals around a quarter through Jones’ working, there are limitations in the model. The model assumes that revenue is an objective measure of the operations before manipulations so that revenue is without discretion. But some studies find that managers can manipulate sales by offering discounts to increase sales, or have inside trading with acquainted business partners (Roychowdhury 2006). For example, firms can increase sales amount by mounting the amount in account receivables and decrease the inventory of underlying merchandise in the end of reporting year. In the next financial year, firms can do a transaction of return to offset the increment in account receivables and decrement in inventory. However, in Jones model the manipulation of sales through accounts receivable or cash cannot be discovered. To overcome this shortage, the Jones model is designed by Dechow et al. (1995).
2.4.4 Modified Jones Model (Dechow et al. Model)

The modified Jones model is applied to remove the limitation in the Jones model which based on the assumption that managers can manipulate revenue through accounts receivables which is easier than over the recognition of cash sales. The model assumes all changes in account receivables not from estimation period are caused by earnings management. In modified Jones model, changes in receivables scaled by lagged total assets ($\Delta REC_t$) is subtracted from the changes in revenues, the model is showed below in Equation (6).

\[
NDA_t = \alpha_1 \left(\frac{1}{A_{t-1}}\right) + \alpha_2 \times (\Delta REV_t - \Delta REC_t) + \alpha_3 \times PPE_t
\]  

(6)

Where:

- $NDA_t =$ nondiscretionary accruals in the period $t$
- $A_{t-1} =$ total assets in year $t-1$
- $\Delta REV_t =$ the change in sales in year $t$ scaled by total assets in year $t-1$;
- $REC_t =$ account receivables in year $t$ scaled by total assets in year $t-1$;
- $PPE_t =$ property, plant, equipment in year $t$ scaled by total assets in year $t-1$;
- $\alpha_1, \alpha_2, \alpha_3 =$ firm specific coefficients

2.4.5 The Industry Model

The final model is proposed by Dechow and Sloan (1991), which is similar to the Jones model in relaxing the assumption of constant nondiscretionary accrual used in the Healy and DeAngelo model, which is showed in Equation (7).

\[
NDA_t = \gamma_1 + \gamma_2 median_1(TA_t)
\]  

(7)

Where $median_1(TA_t) =$ median value of total accruals scaled by lagged total assets in the same industry

This model assumes that in the same industry, the distribution of nondiscretionary and discretionary accruals appears the same shape across the firms. The model uses
the median value of total accrual scaled by lagged total assets for all the firms in the same industry. The limitations of this model are that nondiscretionary accruals from the model may not be correctly extracted if changes in firm-specific environment are reflected in changes in nondiscretionary accruals. Also the model combines nondiscretionary accruals of the firms within the same industry together, the extent of correlation between the model and specific firm is hard to control.

2.4.6 Comparison

From the study by Dechow et.al (1995), they find that although all the models provide well specific tests for a random sample, the detecting power of the models is low in all the models. Especially when the firms are with extreme financial results, all models produce non-standard tests. However, among all models, the most powerful test is the modified Jones model. Subramanyan (1996) further examines how well the Jones model used to separate single accruals into discretionary and nondiscretionary accruals. From his study, the model works in some degree, but it classifies some of nondiscretionary accruals into discretionary accruals. Also the model treats the working capital accruals driven by factors rather than gross property, plant, and equipment, and the change in revenue, such as salary payable, tax receivable, as discretionary accruals. Subramanyan further proves that discretionary accruals have the power in forecasting earnings and they are informative, although less than the nondiscretionary accruals and cash flow from operating. Thus, there is no perfect model to classify the discretionary accruals and nondiscretionary accrual.

Michelson, Wootton and Jordan-Wagner (2011) select 14 enforcement released firms which violate the Generally Accepted Accounting Principles from the Securities and Exchange Commission (SEC) due to earnings management and analyze the discretionary accrual from 1978 to 1996 by seven different earnings management detection models. The results from their study shows that except modified Jones model (Equation 3), results from other six models are statistically indifferent. Among these seven models, modified Jones model identifies 11 companies with earnings management out of 14 samples. No model can identify the whole sample whether or not employ earnings manipulation, but they provide different indications for each sample. The three out of 14 samples cannot be discovered by modified Jones model
are explored by other models. Thus the findings confirm the result of Dechow et.al (1995) that there is no perfect method to detect earnings management or discretionary accruals. Each model has its own advantage to detect one facet of earnings manipulation.
3 EARNINGS QUALITY

When mentioning earnings management, financial reports users may suspect the quality of earnings. However, not all earnings management destroy earnings quality, the purpose of earnings management to signal inside information and to mitigate the asymmetric information can improve the quality of reports. Moreover, earnings management is only of the dimensions of earnings quality, the quality of earnings is determined by several factors.

3.1 Definition

The purpose of financial reports, from International Accounting Standard 1 (IAS 1), is to “provide information about financial performance during a period that is useful to wide range of users in making economic decisions”. Earnings quality is affected by the characteristics of firms, financial reporting system, corporate governance and control, external auditors, financing sources and others. Earnings quality is measured by the relevant level of financial reports and economic decisions. If financial reports provide more relevant information for specific decision making, the financial reports have higher earnings quality (Dechow et al. 2010). The quality of earnings may vary among the different decision making. One report may be useful for some decision makers, while it may useless for others. Also earnings quality is evaluated not only by the relevance and usefulness to decision making but also by the informativeness in the financial reports through the accounting system.

Dechow et al. (2010) category earnings quality proxies into three broad fields: properties of earnings which include earnings persistence, abnormal accruals, earnings smoothness, earnings conservatism, and target beating; investor responsiveness to earnings by earnings response coefficient (ERC); and external indicators of earnings misstatements comprised by accounting and auditing enforcement releases; restatement; and internal control.
3.2 Proxies of Earnings Quality

3.2.1 Conservatism

Accounting conservatism is defined by Bliss (1924) that firms do not recognize unverified revenue, but they do recognize the anticipated expense. Compared with fair value accounting method, net assets in the accounting conservatism, on average, has lower book value than their market value (Beaver & Ryan 2005). Accounting conservatism is widely in accounting standards like IFRS. For example, in IFRS, under revaluation, impairment loss in tangible and intangible assets is recognized as current period operating loss immediately, while the gain from fair value accounting is just recorded in revaluation surplus (shareholder’s equity) account which would not increase current profit (Epsten & Jermakowicz 2008).

There are several explanations for applying accounting conservatism including contracting, litigation, taxation and regulation (Watts 2003a). Contracting explanation articulates contracts with all the relevant parties, such as debt holders, managers, employees, suppliers. When firms issue a loan or debt, borrowers consider and value the firm with all possible losses and no verified gains (Watts 2001), and they neglect the value of intangible assets (Holthausen & Watts 2001). This widely application of conservatism in debt contracts has long history from 1620s to protect the profit of creditors from avoiding overstating earnings and assets; forgoing positive projects with negative current cash flow; and paying dividend to shareholders. Management compensation contract is like debt contract. If managers are possible to get the bonus based on the unverified earnings, most of overpaid bonus cannot be recovered, which destroys the value of the firm, so that conservatism accounting requires higher degree of verification of income, which defers the recognition of unverified income and delays the payment to managers (Smith Jr & Watts 1982). From corporate governance perspective, managers are unwilling to disclosure the loss during their tenure thus conservatism accelerates the speed of recognizing loss and warms the board of directors of unusual loss. From litigation perspective, accounting conservatism understates the earnings which cost less if firms face litigation than overstatement so that firms prefer to report understated earnings and net assets value (Kellogg 1984). From taxation view, the
income tax impels the managers to understate the taxable earnings. As long as taxable income is much closer to reporting earnings (Shackelford & Shevlin 2001), accounting conservatism becomes universal. Watts (2003) also thinks when the firms keep more on the market valuation who try to have high earnings, which is opposite to the principle of tax avoidance and accounting conservatism, these firms have high rate of fraud. Furthermore, regulators like FASB and SEC encourage the use of accounting conservatism as overstated income or overvalued assets create more observable losses than understated income or undervalued assets, although occasionally regulators like FASB strayed from the principle of conservatism such as impairment assessment of intangible assets by using unverified and predicted future cash flow. All these aspects illustrate that the pervasion of accounting conservatism.

In the literature, accounting conservatism is separated into two distinct branches, conditional and unconditional. Conditional conservatism is raised by Basu (1997) who finds that publicly available “bad news” is more quickly reflected in the future earnings than “good news”, and the degree of verification is higher to recognize gains than to recognize loss. In general, when the environment is adverse, book value will be written down; when the environment is favorable, book value will not be written up. Conditional conservatism includes impairment accounting, valuing inventory by lower cost through historical cost methods or market price. Unconditional conservatism is independent of “news”, and it is the choice of accounting process without considering future benefits when dealing with assets and liabilities. Unconditional accounting methods include historical cost accounting, accelerated depreciation method, expensing cost of research phase in the research and development area, and so on. Although the key difference between these two branches is that unconditional conservatism uses the information at the beginning of the asset’s life; while conditional conservatism uses the information from the future period (Basu 2005), both of them can help firms to minimize the litigation, tax, contracting, and regulation costs. Despite their generalities, unconditional conservatism is focus on the effects on future earnings from valuing assets and liabilities, and conditional conservatism is focus on contracting efficiency improvement (Beaver & Ryan 2005). The cost and effect of applying the two types conservatism is different, when firms choose which one to use, there is a trade-off behind them (Basu 2005).
Though it is hard to detect unconditional conservatism, models used to find conditional conservatism are discussed a lot. The earnings-returns regression model raised by Basu (1997) is frequently used as a measure of conditional conservatism or timely loss recognition in Equation (8).

\[ Earnings_{t+1} = \alpha_0 + \alpha_1 D_t + \beta_0 Ret_t + \beta_1 D_t \times Ret_t \]  

(8)

Where D is the dummy variable, when Ret\(_t\) is less than 0, D equals to 1; when Ret\(_t\) is larger than 0, D equals to 0. The model uses market return as the signal of news under the assumption of market efficiency. Positive market return means good news and negative market return means bad news. If the coefficient of bad news is higher, loss is more timely recognized in earnings. However, the potential measurement errors of the measures for asymmetric timeliness based on Basu (1997) still exist. Returns reflected the information which can come from both verified and unverified information and from investor’s expectation, so returns cannot represent all non-earnings information which may contain the earnings information and may influence by the firm’s disclosure (Givoly, Hayn & Natarajan 2007, Ryan 2006). Also accounting principles, like Generally Accepted Accounting Principles (GAAP); International Financial Reporting Standards (IFRS), can influence the timely recognition of bad news as impairment write-down is hard to assess practically (Beaver & Ryan 2005). Third, intentional earnings management like big bath or cookie jar can cause the information asymmetric (Hanna 2002). Forth, conditional conservatism may be impacted by the unconditional conservatism (Beaver & Ryan 2005). Fifthly, according to the taxation motivation for conservatism which is proposed by Watts (2003a, 2003b), asymmetric information increases when profit firms try to defer their earnings and nonprofit firms try to realize losses quickly. Sixth, as the accounting data is highly aggregated, the information aggregated in the earnings or returns cannot be observed easily (Givoly et al. 2007). Because the existing defect of the reverse regression measure, the alternative measurement of asymmetric timeliness by Basu (1997), ‘tendency-to-reverse’, has been used incrementally when there is not available for equity returns (Ball & Shivakumar 2005b).
Because higher accounting conservatism represent higher earning quality, to pursue high earnings quality, countries with common law system (Ball, Kothari & Robin 2000), high investor protection (Francis & Wang 2008), effective monitoring governance (Garcia Lara, Garcia Osma & Penalva 2009) are found using more conservatism/timely loss recognition in their firms financial reports. Also the financing structures in countries may impact the conservatism of the earnings. Ball, Robin & Sadka (2008) find that in countries with high level of debt markets compared with equity markets, earnings are more conservative. However, other studies find more connections between conservatism and equity market, since equity market demands for decision useful financial information for public investors. The earnings in public companies are more conservative than the earnings in the private companies (Ball & Shivakumar 2005a), which suggests that in the equity market, investors view conservative earnings as the good sign of the earnings quality. Thus, conservatism is not just driven by the accounting system, but also influenced by the institutional factor like countries financing structure, law systems and corporate governance (Guenther & Young 2000). Although from some perspectives, debt markets or equity markets think conservatism can improve earnings quality, whether unconditional conservatism in earnings is useful for decision making is a controversial issue (Watts 2003b) and the effect of conditional conservatism on the earnings usefulness is hard to measure without considering persistence because high conservatism means more low persistent bad news are realized timely in the earnings, but when too much low persistence in the earnings may destroy the quality of the earnings (Dechow et al. 2010).

3.2.2 Earnings persistence

Earnings persistence is defined as the relationship between earnings in two adjacent two years. When the number is sustainable and persistent, future earnings can be estimated and forecasted based on past earnings, which is helpful for firm valuation. Thus earnings persistence is assumed to have positive connection with equity valuation. If the relationship coefficient between two years’ earnings is higher, the coefficient indicates earnings persistence and earnings quality is higher, then the errors in valuation are less (Dechow et al. 2010).
Earnings can be decomposed into cash flow and accruals components. Cash flow is found to be more persistent than accruals (Dechow 1994). Firms with high accruals although can have an increase in sales, they face a diminished efficiency and product margin, which decrease the earnings persistence (Richardson, Sloan, Soliman & Tuna 2006). Future earnings will be improved by the increase in operating activities including the operating accruals like accounts receivables and payables, but will be depressed by the increase in the financial activities (Nissim & Penman 2001). However, although accruals are less persistent than cash flow, accruals can help to improve the forecast of future earnings and decision making. Moreover, long-term operating accruals are more persistent than short-term operating accruals and operating accruals are less persistent than financial accruals (Richardson, Sloan, Soliman & Tuna 2005).

Earnings persistence is assumed to have positive relation with stock price. Under the stock market efficiency assumption, investors may value the more persistent earnings firm with higher price (Collins & Kothari 1989). After relaxing the stock market efficiency assumption and due to the different persistent level of earnings components, like accruals and cash flow, investors may not be aware of the low persistence of accruals and low accrual firms have better stock performance than high accrual firms (Sloan 1996). Except investors in stock market, debt holders or other related stakeholders can also mispricing the company with high accruals and low earnings persistence (Bhoijraj & Swaminathan 2009). Besides the usefulness of earnings persistence in equity price decision, this quality of earnings is also related to the internal decision for management compensation. When firms have more persistent earnings, the decision from compensation committees may put more attention on the earnings instead of cash flow or stock price (Nwaeze, Yang & Yin 2006).

Although cash flow is more sustainable than accruals, cash flow is not as good as earnings for indicating for decision making. The forecasting ability of earnings can be improved by some components of accruals.
3.2.3 Accruals

Accruals are part of earnings. Although they are less persistent than cash flow components in earnings, they have been found that both aggregated accruals and disaggregated accruals are useful in cash flow forecast (Barth, Cram & Nelson 2001, Dechow 1994). Disaggregated accruals can be disintegrated into nondiscretionary accruals and discretionary accruals. Nondiscretionary accruals are related to companies’ real performance and have high quality in persistence. The persistence of discretionary accruals is lower than nondiscretionary accruals, but discretionary accruals still have positive impact on earnings persistence (Xie 2001). Investors may realize the distinction of two types of accruals, but stock price is overvaluing the abnormal accruals (Defond & Park 2001). Investors may have difficulties in detecting the income differences caused by accruals, because the information required to make these adjustments may not be available to the outside financial reports users (Schipper 1989).

Sloan (1996) assumes that investors fixate on the aggregated earnings and ignore the components of earnings, such as operating cash flows and accruals, which is proved by other studies that accruals have the same predictive power for future earnings as operating cash flow (Barth et al. 2001). Moreover, Sloan argues that there is more subjectivity in the component of accrual than in the component of cash flow. So Sloan suggests that abnormally negative (positive) future earnings and stock returns around future earnings announcement are impacted by the high (low) reported accruals in the fiscal year. Sloan uses changes in balance sheet items, measures accruals as changes in non-cash working capital minus depreciation expense and excludes the change in short term debt and change of taxes payables. The empirical research by Sloan provides the evidence that the magnitude of the accrual component of earnings and the cash flow component of earnings may influence the persistence of current earnings performance. The persistence is increasing with the decreasing level of the accrual component and increasing level of cash flow component. Thus current earnings performance is less persistent when current earnings are composed by more accrual component and less cash flow component.
Moreover, some studies find that investors do not forecast future earnings based on the available information (Bernard & Thomas 1990, Maines & Hand 1996). As investors are not value the accrual component and cash flow component separately when forecasting future earnings performance, stock price may not correctly reflect the magnitude of components in the earnings. Thus the current stock price cannot persist if current earnings consist of higher magnitude of the accrual component and lower magnitude of cash flow component so that negative stock return occurs when the future earnings performance is available. Adversely stock price can persist if current earnings consists more cash flow component than accrual component (Sloan 1996).

Based on the research from Sloan (1996), Xie (2001) combines the research model from Sloan and Jones (1991). Instead of using total accruals used in the empirical research by Sloan (1996), Xie first applies the Jones model to reclassify the accruals into discretionary accruals and normal accruals and then tests the influence of these categories on the stock price and stock return. The result shows discretionary accruals are less persistent than two earnings components, cash flow from operating and nondiscretionary accruals, but investors are not fully realizing that. Discretionary accruals have the same predict power as the cash flow from operating for stock price, whereas nondiscretionary accruals have the highest predict power for stock price. The findings of Xie are further confirming the suggestion by Sloan.

However, both the accruals in Sloan (1996) and Xie (2001) are using changes in non-cash working capital minus depreciation expense excluding other categories of accruals. Richardson et al. (2005) relax this limitation by introducing a more general definition of accruals. Under the cash accounting, the only asset or liability is cash. So with accrual accounting, accruals represent the difference between change in all non-cash assets and the change in all liabilities. In Richardson et al. study, “accruals consist of the change in non-cash working capital (\(\Delta WC\)), the change in net non-current operating assets (\(\Delta NCO\)) and the change in net financial assets (\(\Delta FIN\)).”

The change in non-cash working capital (\(\Delta WC\)) is the difference between the change in current operating assets and the change in current operating liabilities. The change in current operating assets includes accounts receivable, inventory and other current
assets. The change in current operating liabilities includes accounts payable, income taxes payables and other current liabilities. These ΔWC accruals are used by Healy (1985) and Sloan (1996). Richardson et al. (2005) measure the change in current operating assets as low reliability. As account receivable includes uncollectible amount and also receivable may involve in the earnings management such as early recognition of future revenue (Dechow et al. 1996). The different inventory cost accounting may influence the value of inventory, such as FIFO, LIFO. Managers can change the inventory cost accounting to manage the earnings. Also managers purchase more raw materials in the end of fiscal year to increase the profit of current sales. Thus the risk of less reliability in these two accounts is high. They measure the change in current operating liability as the high level of reliability. Accounts payable are obligations to suppliers and are kept at their fair value so there is little room for manipulation. Therefore, the reliability level of the change in non-cash working capital is medium.

The second part of accruals suggested by Richardson et al. (2005) is the change in net non-current operating assets (ΔNCO) which is the difference between the change in non-current operating assets and the change in non-current operating liabilities. The change in non-current operating assets includes net property, plant and equipment (PP&E), equity method investments, intangible assets and other assets. There is subjectivity in the PP&E and intangibles that generated internally. Managers have the rights to classify the fuzzy operating expense into PP&E and decrease the current operating expense and increase the current profit. Also they can change the useful life of the PP&E and intangible assets, the longer the useful life the lower the depreciation expense every fiscal year. Once the market arm’s length fair value of PP&E and internally generated intangible assets is not available, the revaluation and impairment of these two accounts are decided by the management. Thus the change in non-current operating assets is with low reliability. The change in non-operating liabilities consists of deferred taxes, minority interest and other liabilities. Some of these liabilities can be measured with high reliability such as long-term payables, minority interest. Others may have subjective estimation and the reliabilities are low such as deferred tax. Thus this category shows the result of mix different liabilities as low reliabilities.
The third part of accrual suggested by Richardson et al. (2005) is the change in net financial assets ($\Delta$FIN) which includes the change in short-term investments, long-term investments and removes the change in financial liabilities. The change in short-term investments has the high reliability as the book value of this category is equal to the fair value of the underlying assets. The change in long-term investments has the lower reliability than the short-term investments as the book value of this category may not reflect actual market value so that its reliability level is medium. The change in financial liabilities includes debt in current liabilities, long term debt, and preferred stock. Since this category is measured at the present value of future cash flow with the fixed discount rate at the issue date and there is little room for manipulating, this category is with high reliability. Thus the overall reliability of $\Delta$FIN is high.

Compared with Healy (1985) and Sloan (1996), Richardson et al. (2005) extend the content of accruals. This content of accruals includes non-current operating assets/liabilities and financial assets/liabilities rather than the accruals used before only incorporates non-cash working capital assets/liabilities. Based on this definition of accrual, Richardson et al. (2005) find that some categories of accruals have low reliability which has been ignored before and such low reliable accruals are result in the lower earnings persistence. Investors do not fully realize the low persistence of some categories accruals and misprice the stock and bear abnormal stock return in the future, which is confirmed the result by Sloan (1996).

3.2.4 Earnings smoothness

Earnings smoothing is a type of earnings management methods. As investors prefer stocks with stable and predictable net income to the stocks with undulant net income, firms use accounting skills to decrease the fluctuations in net income in several periods. Smoothness is the product of accrual accounting which is assumed to improve in tracing business economic performance during the period. Based on the accounting principle they applied, firms are tricky enough to restate their accounting earnings through moving income from good year to bad year or moving expense from bad year to good year.
Whether smoothness improves or distorts the earnings quality is hard to be into final conclusion. From the affirmative side, when earnings have a fixed pattern, analysts and investors are easy to predict the future amount and do the valuation which can enhance the validity of investing decision. The informativeness of earnings is in the high-smoothing firms than low-smoothing firms, because future earnings can reflect in current stock price (Tucker & Zarowin 2006). The predictability of earnings increases the informative usefulness of the accounting information. However, this kind of informativeness may hide behind the manipulation, and the real firm performance is unknown to the investors. Smoothness is a technique to reallocate the net income in the short-period, but in the long run, the performance of a firm is not improved and there is no extract return obtained by owners under this method (McInnis 2010).

3.2.5 Target beating

Another form of earnings management is to report earnings closing to the external target like consensus analysts’ forecasts or to report earnings with positive but small profits. It is prevalent in the unaudited interim reports reported earnings have small and negative difference with the external target, which indicates the existence of earnings management and damages earnings quality (Brown & Pinello 2007). However, market may not view target beating as a bad sign of earnings quality. When firms just reach the analyst forecasts through accruals or reschedule the discretionary expenses like research expense and advertising expense, stock price improves in the short term although these firms have lower quality earnings (Bhojraj, Hribar, Picconi & McInnis 2009). And analysts ignore such earnings management which may because they do not anticipate that firms would use earnings management techniques to meet targets or because of some other reasons, such as the accuracy of analyst forecast, that makes analysts neglect the earnings management intentionally (Libby, Hunton, Tan & Seybert 2008). But when the income tax expense is decreasing, although firms meet targets, there is no market premium for such firms. Market may view tax payment decrease as the sign of ravage in firm real performance and current earnings quality (Gleason & Mills 2008). Moreover, if firms can meet or beat external target for a long period, more than two years, they can
receive higher market price than other firms without meeting targets (Kasznik & McNichols 2002).

Statistically, the number of firms with small profit is larger than the number of firms with small losses, which assumes that firms want to report positive income and manage the small losses earnings (Burgstahler & Dichv 1997). Firms are likely to manipulate small positive earnings in the fourth quarter when the performance of whole year is knowable (Kerstein & Rai 2007). However, indirect evidence from discretionary accrual associated small profit with earnings management is unobserved. Based on the discretionary accruals detecting method, abnormal accruals are not significantly different between the group with small profit and the group with small loss, thus earnings management is not observable in the small profit group, although it is possible that discretionary accrual is not useful to detect earnings management or both two groups manipulate the earnings (Dechow et al. 2003). Although small profit firms do not enjoy price premium or low cost of equity (Bhattacharya, Daouk & Welker 2003), it is hard to draw a conclusion that in the small profit group, the information usefulness of net income is diminished due to the manipulation of earnings.

3.2.6 Investor response to earnings

Investor response to earnings or earnings response coefficient (ERC) is the coefficient of return on earnings surprise/unexpected earnings. Unexpected earnings are the difference between the actual income for time t and forecasted income in time t-1. The explanatory power ($R^2$) of the ERC regression model, based on the abnormal return and unexpected earnings, is very low, less than five percent (Ball & Brown 1968). But when there is high correlation between earnings forecast revisions for future periods and unexpected earnings, both $R^2$ and ERC are high since the information from unexpected earnings cause the change in forecast revisions, which shows high earnings quality (Liu & Thomas 1998). The earnings quality in ERC is only the quality for equity valuation, and ERC is not suitable to measure other proxies of earnings quality, like earnings persistence. ERC cannot distinguish the earnings quality from fundamental performance or from the choice of accounting system, which represents the whole quality of earnings.
Although ERC cannot represent other proxy of earnings quality, it is positive associated with earnings persistence (Collins & Kothari 1989). More persistent earnings mean earnings will be recurred in the future and earnings surprise is lower. Current stock price can display the most decision information behind the reported earnings. But the problem of this association is that managers can manipulate earnings to reach earnings persistence, earnings management cannot be found from ERC, and thus ERC represents conditional quality of earnings.

Non-earnings published information improves the earnings usefulness and ERC. With the disclosure of poor earnings information, concurrent announcement of non-earnings news can complement the ERC (Lougee & Marquardt 2004). When disclosing balance sheet information in the earnings announcement, the discount rate applied to equity valuation declines so that there is price premium on the additional non-earnings disclosure (Baber, Chen & Kang 2006). Earnings forecasts make the information asymmetric up of reported earnings. Earnings forecast is more likely to be announced concurrently when earnings’ informativeness is higher, market return is positive related to the issuance of earnings forecast so as the ERC (Lennox & Park 2006).
4 HYPOTHESES DEVELOPMENT

Although there is counterview to rebut that earnings management is the inducement for discontinuity around zero in earnings distribution, majority of previous researches confirm that discontinuity is caused by earnings management (e.g. Burgstahler & Dechow 1997, Dechow et al. 2003, Jacob & Jorgensen 2007). In most cases, positive discretionary accruals are found in small positive earnings so that there is an assumption that small losses firms apply upwards earnings management to avoid reporting loss.

The constitution of extra quantity in small but positive earnings is from two parts. Small losses firms before earnings management successfully manage earnings up, and shift themselves from left side to right side around zero, which is one part. Firms who have extra performance over past performance or analysts’ forecast intentionally decrease earnings, which is the other part (Jacob & Jorgensen 2007). Previous study reports positive earnings management in small profit firms (Dechow et al. 2003) indicates that the amount of positive discretionary accruals from ex-ante small losses firms is higher than the amount of negative discretionary accruals from firms with extra performance before earnings management.

Therefore, without considering impact from other area, such as financial crisis, the first null hypothesis is:

H1: there is positive association between small profit firms and earnings management proxied by discretionary accruals.

Next analysis is examining whether the association between small profit firms and earnings management is changed during financial crisis. Strobl (2009) suggests that earnings management is prevalent in the good economic condition than in the bad economic condition. Investors are more sensitive to bad financial performance in economic booms than in economic recession (Conrad et al. 2002). Thus the capital market incentives are stronger in good economic condition to push firms reporting good performance. Moreover, during booms, most firms report high income and investors believe that few low-value firms may have incentive to manipulate their
earnings up, thus investors do not question the quality of published reports, which provide the chance to firms to manage earnings (Cohen & Zarowin 2007). In the bad economic situation, the capital market incentives weaken. Investors may expect quite a lot of firms would manage earnings which results in low quality of published reports and decreases the emphasis on these reports (Cohen & Zarowin 2007). Therefore firms may have fewer motives to manage earnings in recession.

However, evidences from previous researches on earnings management during financial crisis suggest otherwise. One study from Ahmed et al. (2008) uses the sample in Malaysia during 1997 Asian Financial Crisis and finds that firms with potential debt renegotiations apply income-decreasing management. Additionally, they find that the investors’ tolerance to poor financial performance is higher in the bad economic environment, so that firms book more accruals to depress earnings so as to improve performance after depression. The direction of earnings management in Singapore service companies during 1997 Asian Financial Crisis exhibits the same pattern (Chia et al. 2007). Another study by Habib et al. (2012) uses sample in New Zealand in 2008 Global Financial Crisis and finds that financial distressed firms in recent years are applying downwards earnings management.

Therefore, it is quite possible that firms adopt ‘big bath’ accounting method in the bad economy circumstances, such as financial crisis, especially those firms without good performance, for example distressed firms or firms with earnings which are lower than analysts’ forecast, for at least three reasons. Firstly, as stock performance is poor during financial crisis, incentives to manipulate earnings up from capital market are decreasing. Secondly, investors have high tolerance to poor financial results during bad times. So firms would intentionally report poorer performance if they cannot reach budget or analysts’ forecast. Finally, due to the iron law of accrual reverse, firms who adopt ‘big bath’ can have greater financial results in post-crisis period.

Moreover, combine the findings from Habib et al. (2012) and Jacob and Jorgensen (2007). If the finding from Habib et al. (2012) is in general, during financial crisis, those small losses firms who employ income-increasing management before may abandon reporting zero or small positive earnings because the poor stock market
performance decreases the incentives from capital market, and they turn to employ income-decreasing management to save profits or try to give up earnings management. If firms with extra performance still decrease earnings from contractual incentives or else, the direction of discretionary accruals in small profit firms may become downwards. Thus, the second hypothesis is:

H2 there is negative association between small positive earnings and earnings management during financial crisis.
5 RESEARCH DESIGN

Earnings management in small profits firms are demonstrated in three parts. First part portrays the earnings distribution in 2008-2009. Second part simply demonstrates the direction and level of earnings management proxied by discretionary accruals in different scaled earnings level. Third part expatiates on the association between small positive earnings and earnings management.

5.1 Sample Selection

Sample is selected from annual CCM database which combines CRSP and COMPUSTAT databases and includes US listed companies from NYSE, AMEX, NASDAQ and ARCA EXCHANGE.

Recent global financial crisis started from U.S. in the last quarter of 2007 (Clinch et al. 2011), thus the effect of 2007 crisis will be reflected in 2008 financial reports. Additionally, from U.S. stock market performance, such as NASDAQ Index (appendix 1), stock price started slumping in the end of 2007, and reached the bottom in the end of 2008 and the beginning of 2009, and then in 2009 the price rallied staggeringly. Therefore, it is presumed that due to the historically low stock price, capital market incentives to earnings management have been minimized. This paper is focus on the earnings performance and earnings management during 2008 to 2009 in U.S.

Detailed sample selection standards will be illustrated below in each section.

5.2 Earnings distribution

Because the discontinuity around zero in earnings distribution is assumedly caused by small losses firms before earnings management successfully manage earnings up to avoid losses (Burgstahler & Dichev 1997), however, based on hypothesis here, it is assumed that upwards earnings management would be replaced by downwards earnings management in those ex-ante small losses firms so that the discontinuity
around zero should be no longer existed in the earnings distribution during financial crisis.

To minimize selection bias, samples are chosen with reported earnings in 2008 and 2009. Because market value in the end of previous year is used as the deflator to calculate scaled earnings like Burgstahler and Dichev’s (1997), firms without market value in 2007 or 2008 are deleted. 0.5% width is used for separated scaled earnings. There are 4,259 firms, among that, 4,128 firms with Y2008 earnings and 3,927 firms with Y2009 earnings.

5.3 Measure of earnings management

Earnings management is measured by discretionary accruals. Because in the previous empirical researches (Dechow et al. 1995, Michelson et al. 2011), modified Jones model is proved to be the most powerful model in detecting earnings management, though it still has deficiencies. So modified Jones model with one more independent controlling variable, ROA, is used here to calculate the discretionary accruals (Equation 9)

$$TA_t = \alpha_1 \left( \frac{1}{A_{t-1}} \right) + \alpha_2 \times (∆REV_t - ∆REC_t) + \alpha_3 \times PPE_t + \alpha_4 \times ROA_t + \varepsilon_t$$

Where $∆REV_t$ is the revenue difference between year t-1 and t, scaled by total assets in t-1; $∆REC_t$ is the changes in account receivables from t-1 to t, scaled by total assets in t-1; $PPE_t$ is the investment in property, plant and equipment in year t, scaled by total assets in t-1; $ROA_t$ is the operating income before depreciation in year t, scaled by total assets in t-1. $\varepsilon_t$ is the residual value, which is the value for discretionary accruals.

Because discretionary accruals from Equation (9) are calculated from industry level, industry is deleted if there are less than six firm-year observations in it. Though Dechow et al. (1995) suggest using industry with more than ten observations, to reduce the selection bias, here using industry selection criteria from Rosner’s
suggestion (2010). Thus firm size reduced to 3,302, among that, 3,180 firms with 2008 earnings and 3,054 firms with 2009 earnings.

5.4 Measure of Association

The first hypothesis on the association between small positive earnings and earnings management after controlling the determined variables of earnings management is examined in regression Equation (10).

\[
DA_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 SIZE_{it} + \beta_3 LEVERAGE_{it} + \beta_4 OCF_{it} + \beta_5 GROWTH_{it} + \epsilon_{i,t}
\]

Where:

- \( DA \): Signed \( DA \) calculated from Equation (9);
- \( SP1 \): A dummy variable coded 1 if the current year scaled earnings by lagged market value are in the range from 0 to 0.005;
- \( SP2 \): Earnings by lagged market value are in the range from 0 to 0.05.
- \( SIZE \): Log value of total assets;
- \( LEVERAGE \): The ratio of long term debt to total assets;
- \( OCF \): Current year operating cash flow scaled by lagged total assets;
- \( GROWTH \): The ratio of market value of equity over book values of assets

After control firms size, leverage level, operating cash flow and growth rate, \( \beta_1 \) is the primarily interested coefficient. A positive value on \( \beta_1 \) imply upwards earnings management by small profit firms, and vice versa.

The correlations between controlled variables and earnings management are discussed below. There is argumentative relation between firm size and earnings management. Due to the strict corporate governance and care about firm reputation, large firms are supposed to have less earnings management. However, large firms face higher pressure from capital market to beat analysts’ forecast (Barton & Simko 2002), and the complicated accounting treatments leave the space to manipulate
earnings which also decrease the risk to be detected (Habib et al. 2012). Thus the association between firms size and earnings management is undefined. Owing to the debt covenant incentives, firms may engage in earnings management to correspond to the underlying provisions, so that LEVERAGE has positive relation to earnings management (DeFond & Jiambalvo 1994). Discretionary accruals are positively related to accruals, thus OCF removing the change in non-cash items is negatively related to discretionary accruals. The association between GROWTH and earnings management is also inconclusive. From one aspect, high-growth firms engage in more opportunistic accounting behavior (Skinner & Sloan 2002), because they have more investments which are hard to be monitored (Gaver & Gaver 1993). From the other aspect, from signaling theory, these firms are willing to disclosure their potential development opportunities through discretionary accruals in order to decrease the level of asymmetric information (Habib et al. 2012).

Based on the equation (10), Equation (11) includes the impact from global financial crisis (GFC) on the association between small positive earnings and earnings management.

\[
DA_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 GFC_{i,t} + \beta_3 GFC \times SP_{i,t} + \beta_4 SIZE_{it} + \beta_5 LEVERAGE_{i,t} + \\
\beta_6 OCF_{i,t} + \beta_7 GROWTH_{i,t} + \varepsilon_{i,t}
\]  

(11)

\[GFC\] = A dummy variable code 1 if the firm-year observations come from 2008 or 2009, 0 otherwise. All other variables are the same as in the equation (10).

The impact from GFC on earnings management (DA) with small profit firms is caught by \((\beta_1, \beta_3)\).

There are three criteria to select the sample for testing associations. First, selected firms should have consecutive reporting year from 1999 to 2009. Second, there is no absence in any items of total assets, sales, PPE, operating income before depreciation, long term debt, operating cash flow and lagged market value of stock. Third, there are more than six firms in one industry. Finally, there are 1,510 firms in the sample.
6  EMPIRICAL RESULT

6.1  Earnings Distribution in 2008 and 2009

The descriptive statistic for the first set of data of scaled earnings is in Table 1. In these two years, the average scaled earnings are negative. The mean value in 2008 is higher than in 2009 and the standard deviation in 2008 is lower than in 2009. Firm performance in 2008 is more concentrated than in 2009.

Table 1 descriptive statistic for scaled earnings

<table>
<thead>
<tr>
<th>Year</th>
<th>Observations</th>
<th>Mean</th>
<th>Median</th>
<th>Std</th>
<th>25% q</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave.</td>
<td>8,055</td>
<td>-0.0341</td>
<td>0.0217</td>
<td>7.6564</td>
<td>-0.1252</td>
<td>0.0656</td>
</tr>
<tr>
<td>2008</td>
<td>4,128</td>
<td>-0.0009</td>
<td>0.0166</td>
<td>5.6516</td>
<td>-0.1119</td>
<td>0.0547</td>
</tr>
<tr>
<td>2009</td>
<td>3,927</td>
<td>-0.0689</td>
<td>0.0294</td>
<td>9.3102</td>
<td>-0.1465</td>
<td>0.0801</td>
</tr>
</tbody>
</table>

Note: Scaled earnings = current year earnings/ market value of stock in the end of last year;

Figure 5 Scaled Earnings in 2008 and 2009 with 0.5% width

To illustrate earnings distribution during financial crisis, uses 0.5% bin width as previous researches (e.g. Burgstahler & Dichev 1997), but discontinuity around zero in Figure 5 Scaled Earnings in 2008 and 2009 with 0.5% width is less obvious than
in Figure 1 Frequency of scaled earnings with 0.5% width from 1950 to 2010. The frequency in (0, 0.005] is 118 and in (-0.005, 0] is 90.

Although the unobvious result in Figure 5 can be caused by small data quantity in 2008 and 2009, there is another possible that during financial crisis, firms with bad performance may give up reporting zero or small positive earnings, instead of applying big bath during this period. Next section is to check the discretionary accruals for earnings management.

6.2 Discretionary accruals

The descriptive statistic for the second dataset of scaled earnings and discretionary accruals is in Table 2 with 6,234 observations. After excluding more observations, compared with first dataset in Table 1, the average scaled earnings increased from -0.0341 to 0.023. But there is still no significant discontinuity around zero in the distribution by this dataset, because the scaled earnings distribution from this sample is similar to Figure 5, so the chart is not presented again. The mean and median of discretionary accruals scaled by lagged total assets is positive. Next accumulated discretionary accruals for each scaled earnings segment are discussed.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean</th>
<th>Median</th>
<th>Std</th>
<th>25% q</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaled earnings</td>
<td>0.023102</td>
<td>0.022715</td>
<td>8.603744</td>
<td>-0.12320</td>
<td>0.06602</td>
</tr>
<tr>
<td>Discretionary accruals</td>
<td>6.5023008E</td>
<td>0.000335</td>
<td>0.131697</td>
<td>-0.03712</td>
<td>0.03697</td>
</tr>
</tbody>
</table>

Notes: Samples include 6,234 observations with earnings in 2008 and 2009, and one industry have more than six firms. Discretionary accruals is the residual value from Equation (9)

$$TA_t = \alpha_1 \left( \frac{\Delta REV_t}{A_{t-1}} \right) + \alpha_2 \times (\Delta REC_t - \Delta REC_{t-1}) + \alpha_3 \times PPE_t + \alpha_4 \times ROA_t + \varepsilon_t$$  \hspace{1cm} (3)

Where $\Delta REV$ is the revenue difference between year $t$ and $t-1$ scaled by total assets in $t-1$; $\Delta REC$ is the changes in account receivables from $t-1$ to $t$, scaled by total assets in $t-1$; $PPE$ is the investment in property, plant and equipment in year $t$, scaled by total assets in $t-1$; $ROA$ is the operating income before depreciation in year $t$, scaled by total assets in $t-1$. $\varepsilon$ is the residual value, which is the value for discretionary accruals.

Consistent with Figure 5, 0.5% width is used in splitting scaled earnings in Figure 6. The accumulated discretionary accruals from -0.05 scaled earnings to 0.05 scaled
earnings are showed in Figure 6. For example, the accumulated discretionary accruals for scaled earnings in (-1,0] is -0.17.

Nearly all partitions in Figure 6, except partition 3, in the right side of zero report, have negative discretionary accruals. Partition -1, -2, -4, -5 report negative discretionary accruals, too. The result indicates that both small profit firms and small loss firms could apply earnings decreasing management in 2008 and 2009. The findings are contrary to the results from Dechow et al. (2003) who find that both small profit firms and small loss firms apply upwards earnings management. Thus the assumption that small loss firms manage earnings up to avoid negative earnings is not set up in this period.

The direction of the accumulated discretionary accrual for small losses firms is negative, which is consistent with previous researches by Ahmed et al. (2008) and Habib et al. (2012).

Nevertheless the accumulated discretionary accrual for all firms with negative earnings is positive (around 3.74), which is inverse to the result from Habib et al.’s study (2012). But this could be explained by different selection criterion for financial distress firms. Here financial distress firms are simply equal to the firms reporting
negative earnings in 2008 or 2009. In Habib et al.’s study, financial distress are defined as that firms either have net loss in recent years or have negative working capital in recent years. Also in their report, financial crisis period is from 2008 to 2011 and sample is from New Zealand. Here financial crisis period is defined only in 2008 and 2009 and sample is selected from U.S. Additionally, the number of firm in the sample is 3,302 which is larger than the sample of 813 firm-year observations in Habib et al.’ work.

6.3 Association

The descriptive statistics of the third dataset is showed in Table 3. Average signed discretionary accrual is -0.01373% of lagged total assets. The average LEVERAGE is 0.177, the sample observations do not have high long-term debt. The average growth rate is 1.45. As the existence of extreme value, the standard deviation is quite high. Only 3% observations fall into the scaled earnings range from 0 to 0.005. 29.1% observations in the scaled earnings range from 0 to 0.05. 20% observations come from the financial crisis period, 2008 and 2009.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Std Dev</th>
<th>25%</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>-0.044</td>
<td>-0.043</td>
<td>0.076</td>
<td>-0.072</td>
<td>-0.017</td>
</tr>
<tr>
<td>DA</td>
<td>-0.0001</td>
<td>0.001</td>
<td>0.099</td>
<td>-0.035</td>
<td>0.037</td>
</tr>
<tr>
<td>SP (0.005)</td>
<td>0.030</td>
<td>0.000</td>
<td>0.170</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>SP (0.05)</td>
<td>0.291</td>
<td>0.000</td>
<td>0.454</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>GFC</td>
<td>0.200</td>
<td>0.000</td>
<td>0.400</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>SIZE</td>
<td>6.097</td>
<td>6.074</td>
<td>2.071</td>
<td>4.595</td>
<td>7.544</td>
</tr>
<tr>
<td>LEVERAGE</td>
<td>0.177</td>
<td>0.133</td>
<td>0.219</td>
<td>0.002</td>
<td>0.276</td>
</tr>
<tr>
<td>OCF</td>
<td>0.070</td>
<td>0.089</td>
<td>0.182</td>
<td>0.037</td>
<td>0.141</td>
</tr>
<tr>
<td>GROWTH</td>
<td>1.450</td>
<td>2.329</td>
<td>221.656</td>
<td>1.103</td>
<td>4.822</td>
</tr>
</tbody>
</table>

Notes: there are 1,510 firm-year observations from 2000 to 2009. Earnings management is measured by discretionarty accruals from Equation (9)

\[
DA = \text{Signed DA calculated from Equation (9)}; \\
SP1 = \text{A dummy variable coded 1 if the current year scaled earnings by lagged market value are in the range from 0 to 0.005;}
\]

\[
SP2 = \text{Earnings by lagged market value are in the range from 0 to 0.05.}
\]

\[
SIZE = \text{Log value of total assets;}
\]

\[
LEVERAGE = \text{The ratio of long term debt to total assets;}
\]
\[ OCF = \text{Current year operating cash flow scaled by lagged total assets}; \]
\[ GROWTH = \text{The ratio of market value of equity over book values of assets}; \]
\[ GFC = \text{A dummy variable code 1 if the firm-year observations come from 2008 or 2009, 0 otherwise. All other variables are the same as in the Equation (10)}. \]

The result from multivariate from Equation (10) and Equation (11) is showed in Table 4, Columns 2-3 present the regression results for the association between earnings management and small positive earnings. Columns 4-5 present the regression results for the association under the impact of financial crisis.

| Table 4 Small profit firms, financial crisis and discretionary accruals |
|--------------------------|--------------------------|--------------------------|
|                          | Equation (10)            | Equation (11)            |
| Variables                | (1)                      | (2)                      | (3)                      | (4)                      | (5)                      |
| Constant                 | -0.00763**               | -0.00888**               | -0.00669**               | -0.00857**               |
|                          | -3.05                    | -3.53                    | -2.66                    | -3.37                    |
| \( SP \)                 | 0.01725**                | 0.00963**                | 0.01733**                | 0.01155**                |
|                          | 3.7                      | 5.48                     | 3.54                     | 5.98                     |
| \( GFC \)                | -                        | -                        | -0.00729**               | -0.00366                 |
|                          | -                        | -                        | -3.66                    | -1.61                    |
| \( GFC*SP \)             | -                        | -                        | -0.00926                 | -0.01367**               |
|                          | -                        | -                        | -0.57                    | -2.97                    |
| \( SIZE \)               | 0.00265**                | 0.00246**                | 0.00275**                | 0.00255**                |
|                          | 6.44                     | 6.00                     | 6.67                     | 6.21                     |
| \( LEVERAGE \)           | -0.01229**               | -0.01056**               | -0.01259**               | -0.01095**               |
|                          | -3.28                    | -2.81                    | -3.36                    | -2.92                    |
| \( OCF \)                | -0.101**                 | -0.10322**               | -0.10091**               | -0.10308**               |
|                          | -22.32                   | -22.7                    | -22.31                   | -22.68                   |
| \( GROWTH \)             | -0.00                    | -0.00                    | -7.65E-07                | 0.00                     |
|                          | -0.18                    | -0.18                    | -0.21                    | -0.21                    |
| Adjusted R2              | 0.0322                   | 0.0333                   | 0.033                    | 0.0345                   |
| Observations             | 1510                     | 1510                     | 1510                     | 1510                     |

Notes: ** significant at 1% level, * significant at 5% level.
Results from Table 4 in column 2 and 3 display that both coefficients on the two SP measures are positive and statistically significant at 1% level (coefficients value are 0.01725 and 0.00963 respectively) suggesting that small profit firms engage in earnings upwards management, which is consistent with first hypothesis and previous researches. Small profit firms are composed by three types of firms. Firms without earnings management report their original earnings figure. Firms with income-increasing management successfully shift themselves from small negative earnings to small profit earnings. Firms with income-decreasing management avoid report high earnings. Due to the positive association, the value of income-increasing management is higher than the value of income-decreasing management, which is also in accordance with the discontinuity around zero in earnings distribution in Figure 1.

To test second hypothesis, the result in Equation (11) presented in Table 4, column 4 and 5. Coefficients on variable SP have the same positive directions for two sets of small positive earnings and are both statistically significant at 1% level (coefficients value are 0.01733 and 0.01155 respectively). However, coefficients on variable GFC*SP have different results. When small positive earnings SP are defined only containing positive scaled earnings less than 0.005, there are only 40 observations remained for GFC*SP. The number of GFC*SP is too small to have the unbiased result in regression model.

As the accumulated discretionary accruals in Figure 6 shows nearly all positive scaled earnings less than 0.05 are reported negative earnings management. So SP2 are defined as positive scaled earnings less than 0.05, and number of observations for GFC*SP is increased to 240. When SP is over 0 but less than 0.05, the coefficient for GFC*SP is negative and statistically significant at 1% level (coefficient value is -0.01367). The combined coefficient on [SP + GFC*SP] are -0.212% (0.01155-0.01367), which indicates a negative relationship between earnings management and small positive earnings after considering financial crisis. This result is consistent with second hypothesis. As showed in Figure 6, nearly all small profit firms engaged in income-decreasing management so that under financial crisis, with minimum capital market incentives and possible decreased bonus, managers are willing to engage in ‘big bath’.
The control variable \textit{SIZE} is significantly and positively related to earnings management all at 1\% level, which indicates that large firms may engage in more earnings upward management. But \textit{LEVERAGE} is significantly negative related to earnings management although it was supposed that \textit{LEVERAGE} is positive related to earnings management, which could be caused by sample bias as the average \textit{LEVERAGE} is not high in Table 3. Another possible explanation is that banks well do their monitoring roles. \textit{OCF} is consistent with expectation which has significantly negative relation to earnings management at 1\% level for all cases. \textit{GROWTH} is statistically not different with zero so that it may have no impact on earnings management.

Overall, the results from regression models provide evidence that in peacetime, managers of most small losses firms before earnings management engage in income-increasing management so that small profit firms show positive discretionary accruals. In the recession, most firms are willing to employ income-decreasing earnings management to save profit for future so that there are negative discretionary accruals in small profit firms.
7 CONCLUSION

Based on the previous studies that earnings management is the main reason of discontinuity around zero in earnings distribution, and financially distressed firms engage in income-decreasing earnings during financial crisis, this paper is trying to figure out the association between small profit firms and earnings management and whether this association changes during the bad economic period. There are three contributions in this paper. First, it provides evidence that there is income-increasing earnings management in the firms who report small positive earnings, which is consistent with previous studies. Second, the discontinuity around zero is not exhibited in earnings distribution during financial crisis period. Third, there is downwards earnings management in small profit firms during financial crisis period.

There are arguments in whether the discontinuity around zero in earnings distribution is caused by that most of small losses firms manage earnings up to report non-negative earnings, so that the quantity of partition left to zero is lowest compared to the vicinal two partitions. The results of this study can indirectly support the assumption of that the discontinuity around zero is caused by earnings management of firms who should have reported small losses. In normal situation, there is evidence that small profit firms report positive discretionary accruals. While in the bad economic condition, the discontinuity around zero is no longer existed and further small profit firms report negative discretionary accruals. These evidences can indicate that in normal time, most firms in small profit group have under ex-ante zero earnings, and because of their successful earnings management, the discretionary accruals are positive in small profits group. However, when the economic is in recession, firms without good performance like distressed firms and small earnings firms are likely to employ income-decreasing earnings management technique. Small losses firms no longer manage earnings up. In small profit group, the major component is firms who should have report higher earnings than published performance. Perhaps net income in these firms before earnings management is lower than budget or analysts’ forecast so that stock price may decrease and managers cannot get their full bonus, thus they would rather accrue more future expense or exposure past unrealized expense.
Furthermore, the findings of this study provide evidence for capital market incentives of earnings management. US stock market has the worst share performance in 2008 and 2009. In these two years, investors were intensively focus on macroeconomics instead of firms themselves performance and investors have high tolerance of firms’ bad performance, thus capital market incentives were minimized so that small losses firms give up managing earnings up and small profit firms engage in downwards earnings management as well.

2008 Global Financial Crisis is the special case of bad economic situation. Firms can engage in income-decreasing earnings management also in specific industrial depression, political upheaval and other macroeconomic factors in different countries. In addition, this study uses 2008 and 2009 as the sample years for financial crisis. Actually the impact from 2008 GFC does not ended until now, although stock price in February 2013 has been back to the level before GFC. The empirically results from this study cannot be generalized to 2010 and 2011, because in these two years, the share price was increasing and capital market incentive increased, whether small profit group report negative earnings management is undetermined.

The results from this study also evoke the question mark for the quality of financial reports in post-crisis period. As firms have already concealed future profits during the crisis, in the post-crisis, they could publish better financial results and show that the crisis has little influence on them and they can recover quickly. But the actual influence from crisis has been hid and investors can be misled.

There are several limitations in this study. The earnings distribution during crisis is only based on the earnings in 2008 and 2009. The sample size is not large enough. When using the range of small positive earnings in usual, the sample size of small positive earnings is too small to support the processing of regression model. Thus the range of small positive earnings is expanded and it is possible that those firms other than small profit firms may distort the result of second regression model. To test the association between earnings management and small profit firms, sample firms are restricted to have eleven consecutive financial figures, so the sample size of firm-year observations are not large enough. The result is possible the same if loosening the restrictions of sample selection. The empirical result is based on all industries
excluding those industries has less than six firms so that the result is not capable for single industry. Additionally, financial service industry is included in the sample, the result from financial industry could have slightly influence on the final empirical result.

Further research can find out market response to those income-decreasing management, whether investors appreciate the technology applied by firms. Also because majority of small profit firms engage in downwards earnings management during crisis, it is quite interesting to know when these firms reverse those expense increasing accruals and market reaction during the period. It is possible that as these firms will not report any discretionary accruals or earnings management during reversal period, investors may overestimate the value of firms.
REFERENCES


Watts, R. (2001). A proposal for research on conservatism. *Available at SSRN 6044*


APPENDICES

Appendix 1 NASQAD Composite Index 30 Jun 2006 – 17 Jun 2011