

EARNINGS MANAGEMENT, VALUE RELEVANCE OF EARNINGS AND BOOK VALUE OF EQUITY

Imam Subekti

Universitas Brawijaya

e-mail: ims.bekti06@gmail.com

Abstract

Previous studies examining relationship between earnings management and value relevance of accounting information show that earnings management decrease value relevance of accounting information. Generally, the studies apply accruals earnings management. In contrast, the present study applies integrated earnings management proxies i.e. real and accruals earnings management. Real earnings management proxies are measured by abnormal cash flow of operation, abnormal production cost, and abnormal discretionary expenses. On the contrary, accruals earnings management proxies are measured by short and long term discretionary accruals matched performance.

The objective of the present study is to investigate the effect of the earnings management proxies integrated by factor analysis on value relevance of earnings and book value of equity. Results of the present study show earnings and book value of equity are relevant in measuring firm market value, and integrated earnings management decrease the value relevance of earnings and book value of equity.

Keyword: *integrated earnings management, value relevance of earnings and book value of equity*

Abstrak

Penelitian-penelitian sebelumnya mengenai hubungan antara earnings management dan relevansi nilai informasi akuntansi menunjukkan bahwa earnings management menurunkan nilai relevansi informasi akuntansi. Pada umumnya, penelitian-penelitian tersebut, menerapkan earnings management akrual. Berbeda dengan penelitian sebelumnya, penelitian ini menggunakan earnings management dengan cara yang terintegrasi seperti earnings management riil dan akrual. Earnings management secara riil diukur dengan cash flow operasi yang abnormal, biaya produksi yang abnormal, dan pengeluaran discretionary (pengeluaran bebas berdasarkan kebijaksanaan) yang abnormal. Sebaliknya, earnings management secara akrual diukur dengan mencocokkan kinerja dengan akrual jangka pendek dan jangka panjang.

Tujuan dari penelitian ini adalah untuk meneliti pengaruh dari earnings management yang dilakukan secara terintegrasi dengan analisis faktor pada relevansi nilai earnings dan nilai buku ekuitas (book value of equity). Hasil penelitian menunjukkan bahwa earnings dan nilai buku ekuitas bersifat relevan dalam mengukur nilai pasar perusahaan, dan earnings management yang terintegrasi menurunkan nilai relevansi earnings dan nilai buku ekuitas.

Kata kunci: *earnings management yang terintegrasi, nilai relevansi earnings dan nilai buku ekuitas*

INTRODUCTION

Studies of value relevance of accounting information especially information of income number, and book value of equity have become the focus of many financial accounting research in America and also in Europe since in the last decades (see Harris, et al.,

1994; Amir and Lev, 1996; Collins, et al., 1997; Francis and Schipper, 1999; Brown, et al., 1999). Research of value relevance of accounting information leads to studies attempt to find important information that can be used to value and to analyze firms in stock market. Research on value-relevance of accounting

information is important and interesting to be examined in view of the different claim.

On one hand, financial statements based on historical cost have lost most of their relevance for investors. Brown et al. (1999) and Gu (2004) have noted a decline in the value relevance of earnings information for the US firms over 40 years from 1950 up to 1990. In addition, other researches indicate that accounting information such as earning, equity book value, and cash flow were not relevant for valuation of firm securities in the communications sector. Investors in this industry choose non financial information such as technical technology information and size and performance service of operational firm in valuation of the firm (Amir and Lev, 1996; Hirschey, et al., 2001). Furthermore, Amir and Lev (1996) argued that usefulness of accounting information, particularly earnings, cash flow, and book value has declined because there is a change in impact of firm operation technology and economic condition that is not reflected enough in the reporting system.

On the other hand, Collins et al. (1997) and Francis and Schipper (1999) stated that value relevance of overall accounting information overall has not decreased over time; instead it appears to have increased slightly. But, while the incremental value-relevance of 'bottom line' earnings has declined, it has been replaced by increasing value-relevance of book values. Furthermore, Collins et al. (1997) and Francis and Schipper (1999) contended that "the declined value relevance of earnings was caused by the increasing frequency of negative earnings, changes in average firm size and intangible intensity across time, changes from an industrialized economic to a high tech, and service-oriented economic. It explained that value relevance of accounting information showed movement from earnings information to book value of equity". This rendered evidence that earnings have become less relevant for assessing shareholder value.

The present research investigates a relation between the value relevance of accounting information and earnings management. It means that this research is able to reply ques-

tion whether earnings management behavior has role on decreasing value relevance of earning or not. Because of existence of earnings management represents poor quality financial statement. This decreases the value of financial statement as a relevant and credible form of communication.

A phenomenon triggering the present research is a statement revealed by International Federation of Accountants (IFAC) that investors have loss confidence on value relevance of accounting information. One of the causes of loss of confidence of investors in published financial statements was the existence of some scandals entangling accounting profession such as Enron, Worldcom, Global of Crossing, HIH, Tyco, and other cases (Taufik, 2004).

The occurrence of several accounting scandals have negatively affected investors' confidence in published financial statement. Investors' confidence in published financial statements is also affected by reliability of information provided by the financial statement. Some companies have been declared as bankrupt companies but their financial statements didn't give enough signals. It means that reliability of the financial statements is questionable. Likewise, economic crisis in East and South East Asia in 1997-1998 have raised many questions about reliability of information provided by financial statements. This is reported by United Nations Conference on Trade and Development (UNCTAD) in March 1999 (Taufik, 2004). It is argued that value relevance of accounting information has been decreasing.

Healy and Wahlen (1999) stated that: "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." It means that earnings management can be engaged by managers through judgment of accounting methods (accruals account) and (or) real operation transactions in

one accounting period. Earnings management through judgment of accounting methods is widely known as accruals management. On the other hand, earnings management through real operating transactions is widely known as real earnings management.

Unfortunately, most of previous studies on earnings management were based only on accruals transactions. Meanwhile, Graham et al. (2005) found strong survey evidence that 78% of 401 managers as respondents are much more willing to engage in real earnings management than accruals management. The present research is going to detect earnings management based on both real earnings management and accruals management. Thus, result of this study is able to confirm whether support study of Graham et al. (2005) or not.

In general, discretionary accruals (DA) are widely used as proxies for earnings management. Applied earnings management study base on DA have been conducted for a long time by many researchers (see Healy, 1985; DeAngelo, 1986; Jones, 1991; DeAngelo, DeAngelo, and Skinner, 1994; Dechow, Sloan, and Sweeney, 1995; Subramanyam, 1996; Gul, Leung, and Srinidhi, 2000; Bartov, Gul, and Tsui, 2001; Louis and Robinson, 2005). There is a criticism related to methodological problem of earnings management are exacerbated by the fact that managers sometimes manage earnings through “real” decisions; for example, by reducing research and development or advertising expenditure to meet benchmarks (Dechow and Sloan, 1991; Bushee, 1998; Roychowdhury, 2006; Graham et al., 2005). It means that cash flows as well as accruals are managed, making it difficult for researches to unambiguously document earnings management (Myers, et al., 2007).

The present study is going to use an integration earnings management between discretionary accruals and earnings management based on real operation activities. This model is a major strength of the present study. Another advantage of this study is related to computation of discretionary accruals i.e. adjusted and performance matched discretionary

accruals include short and long term. This model has not been used in previous studies.

LITERATURE REVIEW AND HYPOTHESIS

Value Relevance of Accounting Information

Research of association between accounting information and stock market performance have developed continuously. The ability of accounting information to explain firm value based on market value is widely known as value relevance of accounting information. More recently researches about the value relevance of accounting information have been developed to include all elements of financial statement such as balanced sheet, income statement, and cash flow from operating (Ohlson, 1995; Feltham and Ohlson, 1995). Value relevance studies in general investigate the empirical relation between stock market values (or changes in values) and various accounting numbers for the purpose of assessing those numbers’ usefulness in equity valuation.

There are two types of valuation models generally applied to investigate the relationship between accounting information and market firm value namely price model and return model. Theoretical foundations of both models are derived from the same source, which are the Ohlson (1995) and Feltham and Ohlson (1995). Based on these sources, formula of price model for value relevance of accounting information as follows:

$$P_t = \beta_0 + \beta_1 X_t + \varepsilon_t \dots\dots\dots (1)$$

Where P_t is stock price at time t, X_t is accounting information for period t, β is the intercept and slope coefficient, and ε_t is an error term. Furthermore, return model is can be formulated as follows:

$$R_t = \beta_0 + \beta_1 \Delta X_t / P_{t-1} + \varepsilon_t \dots\dots\dots (2)$$

Where R_t is stock return at time t, ΔX_t is change of accounting information for period t, β is the intercept and slope coefficient, and ε_t is an error term.

Price and return model represent two major approaches to capital market research in

accounting. Kothari and Zimmerman (1995) contended that price model can be viewed as a better method of equity valuation than return model, with the predicted price as an estimate of the intrinsic value of a stock. They also explained that current earnings reflect both surprise to the market and “stale” component that the market had anticipated in an earlier period. The “stale” component of current earnings is less relevant when return model is applied to explain current return as dependent variable compared to the component which reflects surprise to the market. On the other hand, current stock price reflects the cumulative effect of earnings information i.e. surprise to the market and “stale” components containing in current earnings. The both surprises are relevant to explain current stock price as dependent variable. Price model has also advantage of capturing the effect of information on balance sheet or accounting variables that are noisy, and lacking a clear event date. Therefore, price model has important role for accounting research.

Ota (2001) and Gu (2004) revealed that return model has serious specification problem that are ‘accounting recognition lag’ and ‘transitory earnings’. The accounting recognition lags arise from the fact that accounting systems report the effects of value relevant events with a lag because of accounting principles such as reliability, objectivity, and conservatism. Transitory earnings are a component of earnings that are not as persistent as permanent component earnings, and therefore, have a weak association with returns.

Investigating the relation between accounting information and firm value through stock price has been conducted for the last years ago in the West (developed countries) such as Collins et al. (1997); Brown et al. (1999); Bekaoui and Picur (2001); Hirschey et al. (2001); Black et al. (2000); Whelan and McNamara (2004). Meanwhile, similar researches on value relevance in Asia and developing countries were started about the end of twenty century ago such as Graham and King (2000); Graham et al. (2000); Habib (2004); Gu (2004); Shamy and Kayed (2005);

Davis-Friday et al. (2006). Accounting numbers applied in the researches are earnings and book value of equity.

Collins et al. (1997) used a valuation framework provided by Ohlson (1995), which expresses price as a function of both earnings and book value of equity. The study estimates yearly cross-sectional regressions for a 41 year period spanning 1953 to 1993 and use R^2 as the primary metric to measure value relevance. Then, they decompose the combined explanatory power of earnings and book values into three components; (1) the incremental explanatory power of earnings, (2) the incremental explanatory power of book values, and (3) the explanatory power common to both earnings and book values. Aim of the decomposing is to test whether earnings and book values act as substitutes for each other in explaining prices.

Result of the Collin et al. study showed that the combined value relevance of earnings and book values has not declined over the past forty years, in fact, appears to have increased slightly. Moreover, the incremental of earnings has declined; it has been replaced by increasing value relevance of book values. “The shifting in value relevance from earnings to book values can be explained by the increasing frequency and magnitude of one-time items, the increasing frequency of negative earnings, and changes in average firm size and intangible intensity across time” (Collins, et al., 1997: p 39).

Other study in value relevance of accounting information was conducted by Brown et al. (1999). This study criticized using R^2 as value relevance measurement in prior others studies. They show analytically that scale effects in levels regression increase R^2 , and this effect increases in the scale factor’s coefficient of variation. Thus, they argue that between samples comparisons of R^2 are invalid, unless one controls for differences in the scale factor’s coefficient of variation. The study use the similar data with prior others studies controlling for scale effect. Result of the study show that value relevance of accounting has declined over time. This result is

supported by Gu study (2004) study which examined value relevance based on regression residual dispersions analysis. It means that result of this study different with Collins et al. (1997), although accounting information is still relevant to valuation of firm.

Some studies in value relevance through price model of accounting information have been done in Asia related to economic crisis and corporate governance such as Davis-Friday et al. (2006), Graham and King (2000); and Graham et al. (2000). Davis-Friday et al. (2006) tested value relevance of accounting information related to economic crisis, and corporate governance of Asian countries. Result of this study point out that level of corporate governance mechanism has an impact on the extent of changes in the value relevance of book value of equity, but not in earnings. The value relevance of book value of equity has declined when corporate governance of the company has been weak. The value relevance of accounting information on each country during economic crisis shows decreasing. Economics crisis negatively affect on value relevance of accounting information. It appears that book value of equity is not related to market values before the crisis, but the value relevance of book value increase marginally during the crisis.

Graham and King (2000) examine value relevance of accounting information related to applying accounting standard differently in six Asian countries: Indonesia, South Korea, Malaysia, the Philippines, Taiwan, and Thailand. Result of this study reveals that in general earnings have less explanatory power than book value of equity in most years. Overall, the results show significant differences across countries in the value relevance of accounting earnings and book values. The incremental explanatory power of book value and earnings is similarly diverse. The differences in applying accounting standard appear to be related to differences in value relevance. Another research which test impact of Asian crisis particular in changing of exchange rate is done by Graham et al.(2000). Graham et al. (2000) tested whether the financial turmoil surround-

ing the devaluation of the Bath affected the value relevance of Thai accounting information. The study results suggested a decline in value relevance of Thai book value and earnings following the devaluation. It means that value relevance of accounting information based on stock price is affected by economic and financial crisis.

H_{1a}: There is a positive relationship between earnings and stock price.

H_{1b}: There is a positive relationship between book value of equity and stock price.

Earnings Management and Value Relevance of Earnings and Book Value

Relationship between value relevance of accounting information and earnings management is able to be explained through earnings quality. Lo (2007) argued that earnings management associated to earnings quality. Lo (2007) also stated that highly managed earnings have low quality. It means that earnings management actions will reduce earnings quality i.e. reliability of earnings. The relevance of accounting information in valuation of a firm can be affected by market's insight of the reliability of the information (Whelan and McNamara, 2004). The alleged lack of earnings reliability has consequence in the market inclusion less reliance on earnings in the stock valuation process. That means that earnings management actions influence value relevance of earnings negatively.

Some of studies on relationship between earnings management and value relevance of accounting information are conducted in the West or developed countries. These studies applied earnings management based on discretionary accruals (see Gul, et al., 2000, 2003; Whelan and McNamara, 2004; Marquardt and Wiedman, 2004; Habib, 2004). The existence of literature that examined relationship between earnings management and value relevance of accounting information conducted in developing countries, particularly in Asia (notably Indonesia) is still sparse. Most of value relevance of accounting studies conducted in Indonesia is only related to component of financial statement and economic cri-

sis, IPO, or firm life cycle without examine role of earnings management (see Pinasti, 2004; Indra and Syam, 2004; Gumanti, 2004; Sari, 2004; Rahmawati, 2005; Sausanto and Ekawati, 2006). Study on the relationship between value relevance of accounting information and earnings management still needs to be conducted continuously with more in-depth investigation in view of various critics regarding earnings management models. However, present research geared towards searching for evidence of earnings management suffered from a number of limitations with regards to methodology problems. Therefore, this study is able to bridge the gap.

Integrated Earnings Management and Its' Relationship to Value Relevance of Accounting Information

Integrated earnings management model idea is introduced by Leuz, et al. (2003). The researchers combine between income smoothing values and discretion of reported earnings (discretionary accruals). The procedure of the combination is averaging of ranked score from each measurement. Kind of measurement of earnings management and formula of the measurement are: 1) Smoothing reported operating earnings using accruals; 2) Smoothing and the correlation between changes in accounting accruals and operating cash flow; 3) Discretion in reported earnings: the magnitude of accruals; 4) Discretion in reported earnings: small loss avoidance.

Leuz et al. (2003) relate earnings management measurement to investor protection. Finding of Leuz et al. (2003) reveal that earnings management will decrease investor protection because strong protection limits insiders' ability to acquire private control benefit, which reduces their incentives to mask firm performance. Leuz et al. (2003) model is replicated by Habib (2004) in his study using industrial sector analysis unit. Habib (2004) research examined impact of earnings management on value relevance of accounting information in Japan companies. Result of this research show that earnings management nega-

tively affects on value relevance of accounting information.

The present study integrates between real earnings management, short-term and long-term accruals earnings management. The real earnings management is a manipulation of real operation activities conducted by management that deviate from normal business practices, undertaken with the primary purpose of meeting certain earnings thresholds (Roychowdhury, 2006). Aim of earnings management based on activities manipulation is to detect real operation activities manipulation around the zero earnings thresholds. Robustness of this model has been examined showing that abnormal real activities among firm-years reporting small annual profit reflect earnings management to avoid losses or optimal responses to prevailing economic circumstances.

The real activities operation investigated in the model are cash flow from operation, production cost, and discretionary expenses. These activities are considered can capture the effect of real operations better than just accruals. Indication of a firm engagements earnings management by manipulation of real activities can be showed by abnormal value of the activities. Measurement of abnormal value of each activity is deviation between actual activity value and expected activity value.

There are some studies showing result that earnings management have role on value relevance of accounting information such as Gul et al., (2000, 2003); Whelan and McNamara (2004), Habib (2004), and Marquardt and Wiedman (2004). Gul et al. (2000, 2003) showed that the stock market price of the discretionary accrual were higher for high-IOS firms than for low-IOS firms. It means that managers use discretionary accruals to signal future opportunities for growth, efficient earnings management can be significant, especially in high-IOS firms. On the other hand, opportunistic earnings management is not the only motivation for earnings management under all circumstances. The study also shows that discretionary accruals improve the value relevance of earnings measured in terms of the earnings-return relationship in firms with

higher IOS. This result is consistent with the notion of a higher proportion of informative earnings management in high-IOS firms.

Whelan and McNamara (2004) demonstrated that earnings management has an impact on value relevance. In addition, earnings management via long term discretionary accruals has a greater impact on value relevance of earnings and book value than earnings management via short-term discretionary accruals. The study shows that for firms where their management sells their stock through a secondary offering that voluntary disclose earnings forecast in the nine-month period prior to offering, earnings management does not affect value relevance of earnings. In contrast, firms that do not release a forecast, earnings management negatively affect value relevance of earnings. The study is supported by Marquardt and Wiedman's (2004) study showing that for firms where their management sell their stock through a secondary offering that voluntary disclose an earnings forecast in the nine-month period prior to offering, earnings management does not affect value relevance of earnings. In contrast, firms that do not release a forecast, earnings management negatively affect value relevance of earnings.

Habib's (2004) study showed that both earnings management measures and aggregate earnings management measures (combination of both earnings smoothing and earnings management measures) are significantly negatively associated with the combined value relevance of book values of equity and earnings (combined model) and value relevance of earnings (earnings model).

H_{2a}: Integrated earnings management decreases value relevance of earnings.

H_{2b}: Integrated earnings management decreases value relevance of book value of equity.

RESEARCH METHOD

Sampling Procedure and Data

The population of this research is public companies listed in Jakarta Stock Exchange (JSX) from 1995 up to 2006. Public compa-

nies listed in JSX are selected in this study for several reasons. Firstly, the mandatory requirement to present cash flow report for Indonesian public companies is in 1995. Cash flow report is a data source used to measure one dimension of earnings management and value relevance of accounting information variable. Samples of the research are selected by purposive sampling method. Sample of this research consists of: (a) companies classified in the manufacturing industry sector. (b) Companies with complete published annual financial reports. (c) Published period financial statements with financial year ended 31 December. And, currency of financial statements is Rupiah.

Data used in this study consist of accounting data (financial statement) and stock market data (stock price per share). Annual financial statements are obtained from stock market database in Jakarta Stock Exchange (JSX) Indonesian Capital Market Database (ICMD), and Jakarta Stock Exchange website (<http://jsx.co.id>) and In addition, stock price is obtained from Indonesian Securities Market Database (ISMD).

Model

The present study follows a model developed by Ohlson (1995) and Feltham and Ohlson (1995) price model to examine the value relevance of earnings and book value. The preference use of price model is based on Kothari and Zimmerman's (1995) argument that the slope or earnings response coefficient are substantially less biased in price model than in return model. The model has been widely employed in the literature (e.g. Landsman, 1986; Burgstahler and Dichev, 1997; Collins et al.,1997). Consistent with these studies, the model is as follows:

$$P_t = \alpha_0 + \alpha_1 DmCr_s + \alpha_3 DmPost + \beta_1 EPS_t + \beta_2 BVEq_t + \varepsilon_t \quad \dots\dots\dots(3)$$

Where:

P_t = Stock price in year t (three months after published annual report)

EPS_t = Earnings per share in year end t

- $BVEq_t$ = Book value of equity per share in year end t
- $DmCrS$ = Dummy economic crisis (1 = economic crisis period, 0 = others)
- $DmPost$ = Dummy Post crisis (1 = post economic crisis period, 0 = others)
- α_0 = Total constant (before crisis, crisis period, and post economic crisis)
- α_1 = Constant of economic crisis period
- α_2 = Constant of post economic crisis
- β = Regression coefficient
- ε = Error term at year end t

Integrated earnings management is a combination between earnings management based on activity manipulation model and modified discretionary accrual matched performance (ROA) model (i.e. short term and long term discretionary accrual matched performance). These activities are able to capture the effect of real operations better than just accruals. Indication of a firm engagement in earnings management by real activities manipulation can be shown by abnormal value of the activities (Roychowdhury, 2006).

Measurement of abnormal value of each activity refers to the deviation between actual activity value and expected activity value. This measurement is developed by Roychowdhury (2006). The actual activity value for each activity is calculated by a formula as follows. In addition, the expected activity value is calculated from each coefficient of the estimation model¹.

Cash flow from operation activity

$$CFO_t / A_{t-1} = \alpha_0 + \alpha_1 (1 / \text{Log} \cdot A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \varepsilon_t \dots\dots\dots(4)$$

¹ The current research applies Logarithm function. Aim of this adjustment is to ignore meaningless of the variable value. Rupiah (Indonesian currency) is very low rather than US Dollar; average in the last seven years that 1 US Dollar is similar 10.000 Rupiah. If the current research applies data in actual Rupiah, the value of variable will be meaningless, or too close on zero.

Production cost activity

$$PROD_t / A_{t-1} = \alpha_0 + \alpha_1 (1 / \text{Log} \cdot A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \beta_3 (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t \dots\dots\dots(5)$$

Discretionary expense activity

$$DISCR_t / A_{t-1} = \alpha_0 + \alpha_1 (1 / \text{Log} \cdot A_{t-1}) + \beta (S_{t-1} / A_{t-1}) + \varepsilon_t \dots\dots\dots(6)$$

Where:

- A_{t-1} = Total assets of firm at year end t-1
- S_t = Sales of firm at year end t
- ΔS_t = Change of sales of firm at year t compared with sales at year end t-1
- ΔS_{t-1} = Change of sales of firm at year t-1 compared with sales at year end t-2
- α, β = Coefficient of regression
- ε_t = Error term at year end t

Further, others component of integrated earnings management are short-term and long-term performance-matched discretionary accruals based on ROA. These components are modified Kothari et al. (2005) model. According to Kothari, Leone and Wasley (2005), the performance-matched discretionary accruals model is able to solve the limitation of discretionary accruals model related to nondiscretionary accruals misclassified as discretionary accruals. Formulas for short term and long term discretionary accruals matched performance are follows:

Short-term Discretionary Accruals Matched Performance (STDAMP)

STDAMP is a deviation between actual short-term discretionary accruals and expected short term discretionary accruals matched performance (ROA) value. Formula for STDAMP is as follows.

$$STDAMP_{i,t} = \frac{STACC_{i,t}}{TA_{i,t-1}} - \left\{ \alpha_1 \left(\frac{1}{\text{Log} \cdot TA_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \alpha_3 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \right\} \dots\dots\dots(7)$$

Where:

- $STDAMP_{i,t}$ = Short-term discretionary accruals matched performance
- $STACC_{j,t}$ = Short-term accruals for firm i in year t
- $TA_{j,t}$ = Total assets for firm i at end year t-1
- $Log.TA_{j,t}$ = Logarithm of total assets for firm i at end year t-1
- $\Delta REV_{j,t}$ = Revenues in year t less revenues in year t-1 for firm i
- $\Delta REC_{j,t}$ = Account receivables in year t less account receivables in year t-1 for firm i
- INC_{it} = Net Income in year t for firm i

(Formula created to obtain $STDACC_{it}$, and $STDAMP_{i,t}$ are presented at the Appendix 1)

Long-term Discretionary Accruals Matched Performance (LTDAMP)

$LTDAMP$ is a deviation between actual long-term accruals and expected long-term discretionary accruals matched performance (ROA) value. Formula for $LTDAMP$ is as follows.

$$LTDAMP_{i,t} = \frac{LTACC_{i,t}}{TA_{i,t-1}} - \left\{ \omega_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \omega_2 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \omega_3 \left(\frac{INT_{i,t}}{TA_{i,t-1}} \right) + \omega_4 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \right\} \dots\dots\dots(8)$$

Where:

- $LTDAMP_{it}$ = Long-term discretionary accruals matched performance
- $LTACC_{j,t}$ = Long-term accruals for firm i in year t
- $TA_{i,t-1}$ = Total assets for firm i at year t-1
- $Log.TA_{i,t}$ = Logarithm of total assets for firm i at year t-1
- $PPE_{i,t}$ = Property, plant and equipment for firm i at end year t
- $INT_{j,t}$ = Intangibles assets for firm i at end year t
- $INC_{i,t}$ = Net Income for firm i at end year t

(Formula created procedures of $LTACC_{it}$, and $LTDAMP_{it}$ are presented at the Appendix 1)

The present study applies factor analysis to obtain an integrated earnings management value. The integrated earnings management index (value) is constructed by computing individual factor analysis index. If factor analysis produces more than one factor index, the indexes will be constructed secondly to obtain one factor. Number of factor index can be detected from the result of its eigenvalue. This procedure applied in the present study is addressed to suggestion of literatures to develop methodology in measuring of earnings management (see K Kang and Sivaramakrishnan, 1995; Fields, et al., 2001; Kothari, 2001).

Further, the above Ohlson's model is extended to capture the effect of integrated earnings management (IEM) on the value relevance of earnings and book value. The regression model used to examine the effect is shown in equation 9 below.

$$P = \alpha_0 + \alpha_1 DmCrs + \alpha_2 Post + \beta_1 EPS + \beta_2 BVEq + \beta_3 IEM + \beta_4 (EPS \times IEM) + \beta_5 (BVEq \times IEM) + \varepsilon \quad (9)$$

Where:

- P = Stock price of firm (third month after annual report date)
- EPS = Earnings per share of firm
- IEM = Integrated earnings management
- $EPS \times IEM$ = Interaction between EPS and IEM
- $BVEq \times IEM$ = Interaction between BVEq and IEM
- $DmCrs$ = Dummy economic crisis (1 = economic crisis period, 0 = others)
- $DmPost$ = Dummy Post crisis (1 = post economic crisis period, 0 = others)
- α_0 = Total constant (before crisis, crisis period, and post economic crisis)
- α_1 = Constant of economic crisis period
- α_2 = Constant of post economic crisis
- β = Regression coefficient
- ε = Error term

In equation 9, β_1 and β_2 slopes represent the relevance of earnings and book value of equity, respectively in the absence of IEM. The β_3 slope shows the value relevance of IEM. The slopes of β_4 and β_5 show the effect of IEM on the value relevance of earnings and book value of equity. Based on the hypotheses 2a and 2b, they are expected that β_4 and β_5 to be negative and significant that mean that value relevance of earnings and book value of equity will decrease presence of IEM.

RESULT

Descriptive Statistics

Descriptive statistics of research data is presented in Table 1. The data will be used to calculate earnings management proxies' i.e. abnormal cash flow from operation, abnormal production cost, abnormal discretionary expenses, short-term discretionary accruals matched performance, and long-term discretionary accruals matched performance.

Table 1: Descriptive Statistics of Research Data (presented in million Rupiah except ROA)

Descriptive	n	Mean	Standard Deviation
Sales (net revenues)	1,569	2,284,259	1,789,756
Net Production cost (PROD)	1,569	1,814,614	1,575,591
Net Discretionary exp. (DISCR)	1,569	798,046	568,630
ROA (INC_t / A_{t-1})	1,569	0.050	0.014
Cash flow from operation (CFO)	1,569	175,525	168,768
Total Assets (A)	1,569	1.418,872	1,300,837
Log. Assets (Log. A)	1,569	5,67	5.61
Account receivable (AR)	1,569	162,919	143,241
Inventory (INV)	1,569	271,589	268,766
Other current assets (OCA)	1,569	186,074	157,856
Account payable (AP)	1,569	199,414	154,918
Tax payable (TXP)	1,569	138,033	107,249
Other current liability (OCL)	1,569	1,278,721	1,122,694
Plant, property, and equipment (PPE)	1,569	1,680,826	1,474,637
Intangible assets (INT)	1,569	77,400	66,699

Table 2: Model Parameters of Earnings Management Proxies

	CFO_t / A_{t-1}	$PROD_t / A_{t-1}$	$DISCR_t / A_{t-1}$	$STACC_t / A_{t-1}$	$LTACC_t / A_{t-1}$
Intercept	0.17** (3.61)	-1.79** (5.12)	-1.22** (-6.32)	-0.01 (-0.47)	-0.19* (-2.02)
1/ Log. A_{t-1}	-0.81** (-3.09)	12.61** (6.36)	6.60** (6.58)	0.13* (1.76)	0.75 (1.46)
S_t / A_{t-1}	0.05** (9.86)	0.32** (6.82)			
S_{t-1} / A_{t-1}			0.13** (6.51)		
$\Delta S_t / A_{t-1}$	-0.09** (-16.59)	-0.08 (-1.62)			
$\Delta S_{t-1} / A_{t-1}$		-0.22* (-2.23)			
$(\Delta REV_t - \Delta REC_t) / A_{t-1}$		0.01**		(2.75)	
PPE_t / A_{t-1}					1.20** (28.56)
INT_t / A_{t-1}					0.11** (9.16)
INC_t / A_{t-1}				0.00 (0.41)	-0.01 (-1.64)
F-value	353.72**	219.92**	52.70**	3.93**	1,535.22**
Adjusted R^2	0.40	0.36	0.06	0.01	0.80

*Significant at the 5% level. **Significant at the 1% level.

As explained previously that earnings management proxies are abnormal value of operation activities, short-term and long-term accruals. Abnormal value is calculated by deviation between the real activities, short-term, long-term accruals and estimated value based on the regression models. Coefficients of each estimation model of earnings management proxies are presented in Table 2.

Table 2 reports the regression coefficients for the key regressions used to estimate "normal" level of activities and accruals transactions. The table reports the coefficient and t-statistics from standard errors across firm-years. All of the regression models to estimate normal level of activities and accruals are significant at 1% level. It means that the regression models are robust and accurate. The explanatory power of the models is quite high for CFO and production cost activities, and

long-term accrual transaction. Meanwhile, explanatory power of discretionary expenses activity and short-term accrual transactions are quite low. The explanatory power is 40% for CFO, 36% for production costs, and 80% for long-term accrual transaction. In contrast, explanatory power of discretionary expenses is 6%, and 1% of short-term accrual transactions.

Value Relevance of Earnings and Book Value of Equity

The relationship between accounting information and market value can be tested through price model. As explained above, for instance, hypothesis 1a and 1b. The hypothesis 1 reveals that there are positive relationships between earnings, book value of equity and stock price. Result of the hypothesis testing is presented in Table 3.

Table 3: Result of Hypothesis 1a and 1b Testing Using Multiple Regression Analysis

	Value	VIF	Tolerance
Constant (α_0)	4,174.54**		
t-value	(12.93)		
Constant-economic crisis period (α_1)	-1,060.19**		
t-value	(-5.13)		
Constant-post economic crisis period (α_2)	-1,112.39**		
t-value	(-6,73)		
EPS _t	0.40**	1.64	0.61
t-value	(5.71)		
BVEq _t	0.43**	1.63	0.62
t-value	(20.36)		
F-value	280.93**		
R ²	0.47		
Adjusted R ²	0.47		

**Significant at level 1%

Table 4: The p-value of t and F-statistic of Park's test of Model Regression for Value Relevance

Coefficient EPS _t	0.20
t-value	(1.28)
Coefficient BVEq _t	0.27
t-value	(-1.11)
p-value of F-value	0.42
F-value	(0.95)

Table 3 shows that the regression has F-test of 280.93 which is significant at the 1 percent level. Taken together the independent variables are able to explain the variation in dependent variable of stock price as much as 47 percent. Both independent variables are significant i.e. EPS, and BVEq at the 1 percent level. It means that this testing result support hypothesis 1a and 1b. Moreover, the regression also shows that economic crisis has effect differently. Accounting information has effect positively on before crisis period. In contrary, accounting information has effect negatively on crisis period and post crisis period. The regression is free from multicollinearity and heteroscedasticity problems (see Table 3 and 4).

Combining Procedure of Earnings Management Proxies

Integrated earnings management (IEM) is a combination of earnings management proxies comprising abnormal CFO, abnormal production cost, abnormal discretionary expenses, short discretionary accruals, and long discretionary accruals. The combination model is calculated by factor analysis through two stages because factor analysis in first stage produces two factors. Mean while, the present research need one factor (index). Therefore, the second stage is conducted to produce one factor that is a combination from the factors produced by factor analysis of the first stage. Result of the factor analysis procedure is presented in Table 5.

Table 5 displays that first stage factor analysis produces 2 factors. Factor 1 tends to Abn.PROD and Abn.DISCR, this is indicated by the highest two correlation between factor 1 and earnings management proxies. Correlation between factor 1 and Abn.DISCR is 0.931, and 0.917 is between factor 1 and Abn.PROD. Mean while, factor 2 tends to Abn.CFO, STDAMP, and LTDAMP, this is indicated by the highest three 3 of correlation between factor 2 and earnings management proxies. Correlation between factor 2 and Abn.CFO is 0.841, between factor 2 and LTDAMP is -0.744, 0.489 is between factor 2 and STDAMP. This first stage factor analysis can explain total loadings of the proxies of 64.5%. Furthermore, indexes of each factor and observation produced by this stage will be

analyzed in second stage analysis factor. Purpose of this procedure is to obtain final factor constituting a proxy of integrated earnings management (IEM).

Table 5 also illustrates that the second stage factor analysis produces one factor (final factor) constituting a combination of factor 1 and factor 2 produced by first stage factor analysis. Correlation between final factor and factor 1 is .718, and -0.696 is between final factor and factor 2. This stage can explain total loading of the factors of 50%. This final factor is value of integrated earnings management proxy which will be used to test effect of IEM on value relevance of earnings and book value of equity.

Effect of Integrated Earnings Management (IEM) on Value Relevance of Earnings and Book Value of Equity

As explained above, hypothesis 2a and 2b reveal that IEM decreases value relevance of earnings and book value of equity. Testing result of the hypotheses is presented in Table 6. Table 6 displays the results of effect of IEM on the value relevance of earnings and book value of equity. The R^2 Change and F Change are significant on third step i.e. at 5% level for R^2 Change and at 1% for F Change. These results indicated that the IEM plays a role as moderator of the relationship between EPS, BVEq, and stock price. Both EPS and BVEq positively affect stock price significantly at 1 percent level with coefficient β of 0.40. The regression has F-test of 173.74. The positive relationship between EPS, BVEq and stock price become a negative relationship when EPS and BVEq interacted with IEM (EPS x IEM and BVEq x IEM). The negative effect of interaction between EPS, BVEq and IEM on firm value is significant at 5 percent level with coefficient β of -0.34 for EPS and -0.10 for BVEq. It means that IEM decreases the relationship between EPS, BVEq and stock price. Based on this result, hypothesis 2a and 2b are supported by the empirical evidence. This empirical evidence is also supported by interaction graph explaining the moderating effect of IEM on value relevance of EPS and BVEq. The graph is presented at Figure 1 and Figure 2 as follows.

Table 5: Common Factor Analysis of Integrated Earnings Management (IEM)

A. First stage of factor analysis					
KMO measure of sampling adequacy:	0.522				
<u>Initial Eigenvalues</u>					
Component	1	2	3	4	5
Total	1.724	1.500	0.955	0.587	0.234
Extraction sums of squared loading					
cumulative %	34.49	64.48			
<u>Correlation of factor components and earnings management proxies</u>					
IEM	Abn.CFO	Abn.PROD	Abn.DISCR	STDAMP	LTDAMP
Factor 1	-0.014	0.917	0.931	0.089	0.087
Factor 2	0.841	-0.003	0.025	0.489	-0.744
Table 5 continued					
Common factor analysis of integrated earnings management (IEM)					
B. Second stage of factor analysis					
KMO measure of sampling adequacy:	0.500				
<u>Initial Eigenvalues</u>					
Component	1		2		
Total	1.000		1.000		
Extraction sums of squared loading					
cumulative %	50.00				
<u>Correlation of factor components and earnings management proxies</u>					
IEM	Factor 1		Factor 2		
Final Factor	0.718		-0.696		

Table 6: Regression Result of Effect of IEM on Value Relevance of Earnings and Book Value of Equity

<u>Dummy-crisis period:</u>		<u>VIF</u>	<u>Tolerance</u>
Constant (α_0)	4,397.76**		
t-value	(13.35)		
Constant (economic crisis period = α_1)	-1,184.85**		
t-value	(-5.85)		
Constant (post economic crisis period = α_2)	-1,195.84**		
t-value	(-7.37)		
EPS	0.40**	2.09	0.48
t-value	(4.97)		
BVEq	0.40**	1.73	0.58
t-value	(18.57)		
IEM	51.86	1.13	0.88
t-value	(0.90)		
<u>Interaction terms:</u>			
EPS and IEM	-0.23*	1.92	0.52
t-value	(-2.34)		
BVEq and IEM	-0.10*	1.25	0.44
t-value	(-2.43)		
<hr/>			
R ²	0.50		
Adjusted R ²	0.50		
R ² Change	0.03		
F Change-value	27.58**		
Sig. F Change	0.00		
F-value	173.74**		

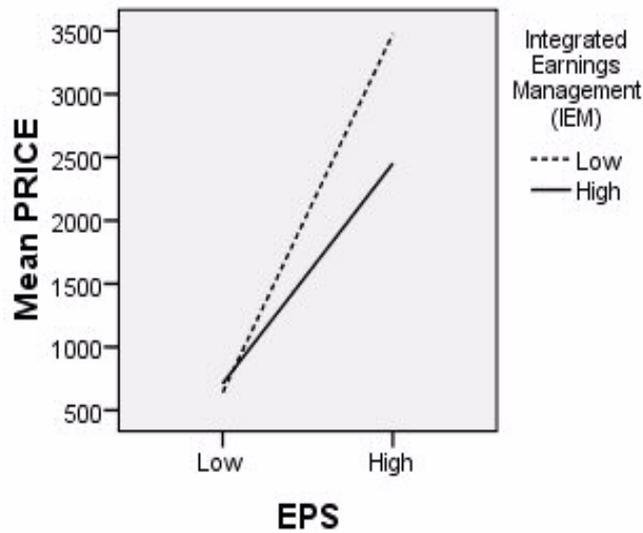


Figure 1: The Effect of Integrated Earnings Management (IEM) on Value Relevance of Earnings (EPS) Information (the relationship between EPS and stock price).

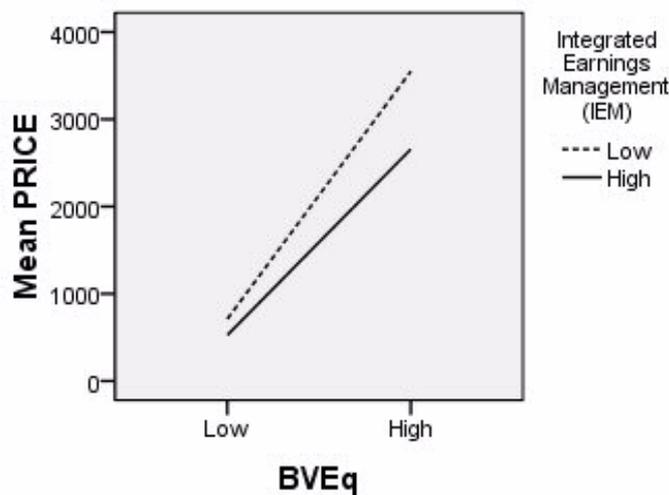


Figure 2: The Effect of Integrated Earnings Management (IEM) on Value Relevance of Book Value of Equity (BVEq) Information (the relationship between BVEq and stock price).

When the interaction is significant then graph is need to explain the moderating effect as shown at Figure 1 and Figure 2. The plot of EPS by IEM interaction (Figure 1) shows a pattern that is consistent with the prediction of hypothesis 2a. This hypothesis predicts that the positive relationship between EPS and stock price is likely to be weaker, when the integrated earnings management (IEM) is high. This can be explained by the slope of the two regression lines for the IEM. The most of low IEM line is positioned at upper. In contrast, the most of high IEM line is positioned

at bottom. Companies which have high EPS will have high stock price if they conduct low IEM. However, companies which have low EPS and have conducted IEM whether on high or low level will have low stock price. Therefore, the lower IEM, the higher the stock price will be.

The plot of BVEq by IEM interaction (Figure 2) shows a pattern that is consistent with the prediction of hypothesis 2b. This hypothesis predicts that the positive relationship between BVEq and stock price is likely to be weaker, when the integrated earnings man-

agement (IEM) is high. This can be explained by the slope of the two regression lines for the IEM. The low IEM line is positioned at upper. In contrast, the high IEM line is positioned at bottom. Companies which have the highest stock price are companies which have high BVEq and conduct low earnings management.

Table 6 also explains that economic crisis period also affect relationship between IEM and value relevance of earnings and book value of equity. Coefficient of α is significant i.e. 4,397.76; -1,184.85; and -1,195.84 for before economic crisis, during economic crisis, and post economic crisis respectively. Based on the direction of coefficient α of economic crisis period, it can be concluded that the relationship between accounting information (EPS, BVEq), interaction between accounting information and IEM, and firm market value are different between before economic crisis and during economic crisis, and post economic crisis period. On before economic crisis, the relationship coefficient is increasing (positive), on the other hand, on economic crisis period and post economic crisis the relationship coefficient is decreasing (negative). It means that value relevance of accounting information is increasing when economic condition is good (before economic crisis). In contrast, value relevance of accounting information is decreasing when economic condition is not good (for this present research is economic crisis period and post economic crisis).

CONCLUSIONS AND FUTURE RESEARCH

The purpose of the present study is to assess the value relevance of earnings and book value of equity. Furthermore, the present study investigates effect of integrated earnings management on value relevance of the information. The present research attempts to adjust and integrate the existing earnings management model. The adjustment is a replacement one variable of regression model used to calculate index of earnings management. The variable is $1/A_{t-1}$ replaced with $1/\text{Log. } A_{t-1}$. The adjustment is able to increase explanatory power of earnings management estimation.

The present study is also integrates 5 earnings management proxies based on factor analysis. The integrated earnings management proxies created by the present research is defined as integrated earnings management (IEM). This procedure has not been applied by previous researchers. Result of analysis shows that the combined earnings management model is robust and valid. Result study showing that integrated earnings management decreases value relevance of earnings and book value of equity indicates that quality of accounting information is low when management engages earnings management.

This evidence has important implication to investors as users of accounting information in stock market. The investors should react carefully to make their economic decisions in stock valuation because the earnings management can deteriorate firm value indirectly. Limitation of this study is related to real value of earnings management. As experienced by the previous researchers (Jones, 1991; DeAngelo, 1994; Dechow, et al., 1995) value of earnings management is just based on proxy. Value of the proxy is not real value of earnings management. It means that result of this study has not been explaining real procedures and techniques employed by companies in conducting earnings management.

The present research has attempted to modify earnings management model. As suggested by Kothari (2001), future outlook of earnings management research is related to methodological aspect. Hence, the present research also recommends developing another modified earnings management model which is able to overcome limitation of previous model.

REFERENCES

- Amir, E. and Lev, B. (1996). "Value-Relevance of Non financial Information: The Wireless Communication Industry". *Journal of Accounting and Economic*, 22, 3-30.
- Bartov, E., Gul, F.A. and Tsui, J.S.L. (2001). "Discretionary-Accrual Models and

- Audit Qualifications". *Journal of Accounting and Economics*, 30, 421-452.
- Belkaoui, A. R. and Picur, R. (2001). "Investment Opportunity Set Dependence of Dividend Yield and Price Earnings Ratio". *Managerial Finance*, 27 (3), 72-90.
- Black, E. L., Carnes, T. A. and Richardson, V. J. (2000). "The Value Relevance of Multiple Occurrences of Nonrecurring Items". *Review of Quantitative Finance and Accounting*, 15, 391-411.
- Brown, S., Lo, K. and Lys, T. (1999). "Use of R² in Accounting Research: Measuring Changes in Value Relevance Over the Last Four Decades". *Journal of Accounting and Economic*, 28, 83-115.
- Burgstahler, D. and Dichev, I. (1997). "Earnings Management to Avoid Earnings Decreases and Losses". *Journal of Accounting and Economics*, 24, 99-126.
- Bushee, B. J. (1998). "The Influence of Institutional Investors on Myopic R and D Investment Behavior". *The Accounting Review*, 73 (3), 305-333.
- Collins, D. W., Maydew, E. L., and Weiss, I. S. (1997). "Changes in the Value-Relevance of Earnings and Book Values Over the Forty Years". *Journal of Accounting and Economic*, 24, 39-67.
- Davis-Friday, P. Y., Eng, L. L., and Liu, C. S. (2006). "The Effect of the Asian Crisis, Corporate Governance and Accounting System on the Valuation of Book Value and Earnings". *The International Journal of Accounting*, 41, 22-40.
- DeAngelo, L. (1986). "Accounting Numbers as Market Valuation Substitutes: A Study of Management Buyouts of Public Stockholders". *The Accounting Review*, 61, 400-420.
- DeAngelo, H., DeAngelo, L. and Skinner, D.J. (1994). "Accounting Choice in Troubled Companies". *Journal of Accounting and Economics*, 17, 113-143.
- Dechow, P. M. (1994). "Accounting Earnings and Cash Flows as Measures of Firm Performance: The Role of Accounting Accruals". *Journal of Accounting and Economics*, 18, 3-42.
- Dechow, P.M. and Sloan, R., (1991). "Executive Incentives and the Horizon Problem: An Empirical Investigation". *Journal of Accounting and Economics*, 14, 51-89.
- Dechow, P. M., Sloan, R.G. and Sweeney, A.P. (1995). "Detecting Earnings Management". *The Accounting Review*, 70 (2), 193-225.
- Feltham, G. A. and Ohlson, J. A. (1995). "Valuation and Clean Surplus Accounting for Operating and Financial Activities". *Contemporary Accounting Research*, 11 (2), 689-731.
- Fields, T. D. M., Lys, T. Z. and Vincent L. (2001). "Empirical Research on Accounting Choice". *Journal of Accounting and Economics*, 31, 255-307.
- Francis, J. and Schipper, K. (1999). "Have Financial Statements Lost Their Relevance?" *Journal of Accounting Research*, 37(2), 319-352.
- Graham, R. C. and King, R. D. (2000). "Accounting Practices and the Market Valuation of Accounting Numbers: Evidence from Indonesia, Korea, Malaysia, the Philippines, Taiwan, and Thailand". *The International Journal of Accounting*, 35(4), 445-470.
- Graham, R., King, R. and Bailes, J. (2000). "The Value Relevance of Accounting Information During A Financial Crisis: Thailand and the 1997 Decline in the Value of the Baht". *Journal of International Financial Management and Accounting*, 11(2), 84-107.
- Graham, J. R., Harvey, C. R. and Rajgopal, S. (2005). "The Economics Implications

- of Corporate Financial Reporting”. *Journal of Accounting and Economics*, 40 (1-3), 3-73.
- Gu, Z. (2004). “Across-Sample Incomparability of R^2 and Additional Evidence on Value Relevance Changes Over Time”. *Paper available from www.ssrn.com/papers.cfm?abstract_id=312761*, downloaded on 12 November 2006.
- Gul, F. A., Leung, S. and Srinidhi, B. (2000). ”The Effect of Investment Opportunity Set and Debt Level on Earning-Return Relationship and Pricing of Discretionary Accruals”. *Paper available from http://www.papers.ssrn.com/sal3/papers.cfm?abstract_id=236080*, downloaded on 11 November 2006.
- Gul, F. A., Leung, D. and Srinidhi, B. (2003). ”Informative and Opportunistic Earning Management and the Value Relevance of Earnings: Some Evidence on the Role of IOS”. *Paper available from http://papers.ssrn.com/sal3/papers.cfm?abstract_id=429800*, downloaded on 10 November 2006.
- Gumanti, T.A. (2004). “Value Relevance of Accounting Information and the Pricing of Indonesian Initial Public Offerings”. *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) VII at Udayana University, Bali Indonesia 2-3 December 2004*.
- Habib, A. (2004). “Impact of Earnings Management on Value-Relevance of Accounting Information: Empirical Evidence from Japan”. *Managerial Finance*, 30 (11), 1-15.
- Harris, T. S., Lang, M. and Moller, H. P. (1994). ”The Value Relevance of German Accounting Measures: An Empirical Analysis”. *Journal of Accounting Research*, 32(2), 187-209.
- Healy, P. M. (1985). “The Effect of Bonus Schemes on Accounting Decisions”. *Journal of Accounting and Economics*, 7 (1-3), 85-107.
- Healy, P. M. and Wahlen, J. M. (1999). “A Review of the Earnings Management Literature and Its Implications for Standard Setting”. *Accounting Horizons*, 13 (4), 365-383.
- Hirschey, M., Richardson, V. J. and Scholz, S. (2001). “Value Relevance of Nonfinancial Information: The Case of Patent Data”. *Review of Quantitative Finance and Accounting*, 17, 223-235.
- Indra, and Syam, F. (2004). ”Hubungan Laba Akuntansi, Nilai Buku, dan Total Arus Kas dengan Market Value: Studi Akuntansi Relevansi Nilai”. *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) VII at Udayana University, Bali Indonesia 2-3 December 2004*.
- Jones, J. (1991). “Earnings Management during Import Relief Investigations”. *Journal of Accounting Research*, 29, 193-228.
- Kang, S. and Sivarakrishnan, K. (1995). “Issues in Testing Earnings Management and an Instrumental Variable Approach”. *Journal of Accounting Research*, 33, 353-367.
- Kothari, S. P. (2001). “Capital Markets Research in Accounting”. *Journal of Accounting and Economics*, 31, 105-231.
- Kothari, S. P. and Zimmerman, J. L. (1995). ”Price and Return Models”. *Journal of Accounting and Economics*, 20, 155-192.
- Kothari, S.P., Leone, A.J. and Wasley, C.E. (2005). “Performance Matched Discretionary Accrual Measures”. *Journal of Accounting and Economics*, 39 (1), 163-197.
- Landsman, W. (1986). “An Empirical Investigation of Pension Fund Property

- Right". *The Accounting Review*, 61, 662-691.
- Leuz, C., Nanda, D. and Wysocki, P.D. (2003). "Investor Protection and Earnings Management: An International Comparison". *Journal of Financial Economics*, 69, 505-527.
- Lo, K. (2007). "Earnings Management and Earnings Quality". *Journal of Accounting and Economics*, doi: 10.1016/j.jacceco.2007.08.002.
- Louis, H. and Robinson, D. (2005). "Do Managers Credibly Use Accruals to Signal Private Information? Evidence from the Pricing of Discretionary Accrual Around Stock Split". *Journal of Accounting and Economics*, 39, 361-380.
- Marquardt, C.A. and Wiedman, C.I. (2004). "The Effect of Earnings Management on the Value Relevance of Accounting Information". *Journal of Business Finance and Accounting*, 31 (3), 297-331.
- Myers, J. N., Myers, L. A. and Skinner, D. J. (2007). "Earning Momentum and Earnings Management". *Journal of Accounting, Auditing, and Finance*, 22 (2), 249-284.
- Ohlson, J. A. (1995). "Earnings, Book Value, and Dividends in Equity Valuation". *Contemporary Accounting Research*, 11 (2), 661-687.
- Ota, K. (2001). "The impact of valuation Models on Value-Relevance Studies in Accounting: A Review of Theory and Evidence". *Paper available from http://papers.ssrn.com/sal3/papers.cfm?abstract_id=280873, downloaded on January 29, 2007.*
- Pinasti, M. (2004). "Faktor-faktor yang Menjelaskan Variasi Relevansi-Nilai Informasi Akuntansi: Pengujian Hipotesis Informasi Alternatif". *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) VII at Udayana University, Bali Indonesia 2-3 December 2004.*
- Rahmawati. (2005). "Relevansi Nilai Informasi Akuntansi dengan Pendekatan Terintegrasi: Hubungan Nonlinier". *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) VIII at Sebelas Maret University, Surakarta Indonesia 15-16 September 2005.*
- Roychowdhury, S. (2006). "Earnings Management through Real Activities Manipulation". *Journal of Accounting and Economic*, 42, 335-370.
- Sari, S. M. (2004). "Analisa terhadap Relevansi Nilai (Value Relevance) Laba, Arus Kas dan Nilai Buku Ekuitas: Analisa Diseputar Periode Krisis Keuangan 1995-1998". *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) VII at Udayana University, Bali Indonesia 2-3 December 2004.*
- Shamy, M. A. E. and Kayed, M. A. (2005). "The Value Relevance of Earnings and Book Values in Equity Valuation: An International Perspective-The Case of Kuwait". *International Journal of Commerce and Management*, 14(1), 68-79.
- Subramanyam, K.R. (1996). "The Pricing of Discretionary Accrual". *Journal of Accounting and Economics*, 22, 249-291.
- Susanto, S. and Ekawati, E. (2006). "Relevansi Nilai Informasi laba dan Aliran Kas terhadap Harga Saham dalam Kaitannya dengan Siklus Hidup Perusahaan". *Preceding of Simposium Nasional Akuntansi (Nationally Symposium of Accounting) IX at Andalas University, West Sumatra Indonesia 23-26 August 2006.*
- Taufik. (2004). "Tanpa Kepercayaan, Tanpa Eksistensi". *Media Akuntansi*, Januari-Februari, 8-10.

Whelan, C. and McNamara, R. (2004). “The Impact of Earnings Management on the Value Relevance of Financial Statement Information”. *Paper available from*

http://paper.ssrn.com/papers.cfm?abstract_id=585704, downloaded on 10 November 2006.

Appendix A1: Categorizing procedures of discretionary accruals matched performance into short-term and long-term

The purpose of categorizing discretionary accrual into short-term and long-term is to investigate forms of earnings management in greater details. The existing discretionary accrual models (Jones, 1991; Defond and Jimbalvo, 1994; and Dechow et al., 1995) have limitations in estimating discretionary accrual because these models do not effectively segregate the short-term and long-term components. These models appear to focus on short-term through examination of working capital accruals; meanwhile the long-term discretionary accruals have been ignored (Whelan and McNamara 2004).

Categorizing of discretionary accrual into short-term and long-term was conducted by Whelan and McNamara (2004) based on Jones (1991) model. In contrast, this research categorizes Kothari et al. (2005) model referred from Dechow et al. (1995). Procedures for categorizing of the discretionary accrual into short and long are as follows:

$$ACC_{i,t} = EARN_{i,t} - CFO_{i,t} \tag{1}$$

Where:

- $ACC_{i,t}$ = Total accrual for firm i in year t
- $EARN_{i,t}$ = Earnings before extraordinary items for firm i in year t
- $CFO_{i,t}$ = Operation cash flow for firm i in year t

Determination of short term and long accruals accrual follows formula developed by Dechow (1994), Loftus and Sin (1997), Pfeiffer and Elgers (1999), and Guay and Sidhu (2001) as shown below:

$$STACC_{i,t} = \Delta AR_{i,t} + \Delta INV_{i,t} + OCA_{i,t} - \Delta AP_{i,t} - \Delta TXP_{i,t} - \Delta OCL_{i,t} \tag{2}$$

Where:

- $STACC_{i,t}$ = Short-term accrual for firm i in year t
- $\Delta AR_{i,t}$ = Accounts receivable at end year t less accounts receivable at end year t-1 for firm i
- $\Delta INV_{i,t}$ = Inventory at end year t less inventory at end year t-1 for firm i
- $\Delta OCA_{i,t}$ = Other current assets at end year t less other current assets at end year t-1 form firm i
- $\Delta AP_{i,t}$ = Accounts payable at end year t less accounts payable at end year t-1 for firm i
- $\Delta TXP_{i,t}$ = Tax payable at end year t less tax payable at end year t-1 for firm i
- $\Delta OCL_{i,t}$ = Other current liabilities at end year t less other current liabilities at end year t-1 for firm i

Total accruals are the sum of the short-term and long-term accruals. Further, long-term accruals can be obtained from the difference between total accruals and short-term accruals (Teoh et al. 1998).

$$LTACC_{i,t} = ACC_{i,t} - STACC_{i,t} \tag{3}$$

Where:

- $LTACC_{i,t}$ = Long-term accrual for firm i in year t
- $ACC_{i,t}$ = Total accruals for firm i in year t (calculated using equation 1)
- $STACC_{i,t}$ = Short-term accrual for firm i in year t (calculated using equation 2)

An estimation of expected accruals matched performance (ROA) for a firm are determined using equation as follows:

$$\frac{ACCOMP_{i,t}}{TA_{i,t}} = 1 \left[\frac{1}{\text{Log } TA_{i,t-1}} \right] + 2 \left[\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right] + 3 \left[\frac{PPE_{i,t}}{TA_{i,t-1}} \right] + 4 \left[\frac{INC_t}{TA_{i,t-1}} \right] \varepsilon_{i,t} \tag{4}$$

Where:

- $ACCOMP_{i,t}$ = Total accruals matched performance for firm i in year t
- $TA_{i,t-1}$ = Total assets for firm i in year t-1
- $\text{Log} \cdot TA_{i,t-1}^2$ = Logarithm of total assets for firm i in year t-1

² The current research applies Logarithm function. Aim of this adjustment is to ignore meaningless of the variable value. Rupiah (Indonesian currency) is very low rather than US Dollar; average in the last seven years that 1 US

- $\Delta REV_{j,t}$ = Revenues in year t less revenues in year t-1 for firm i
- $\Delta REC_{j,t}$ = Account receivables in year t less account receivables in year t-1 for firm i
- $PPE_{j,t}$ = Property, plant and equipment for firm i in year t
- INC_{it} = Net Income for firm i in year t
- $\varepsilon_{j,t}$ = Error term for firm i in year t

The estimated coefficients from equation 4 are used to obtain the expected accruals for each firm. A deviation between this estimation and actual accruals is supposed as the total discretionary accrual.

$$DACCMP_{i,t} = \frac{ACCMP_{i,t}}{TA_{i,t-1}} - \left[\delta_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \delta_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \delta_3 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \delta_4 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \right] \quad (5)$$

Where:

$DACCMP_{i,t}$ = Discretionary accruals matched performance for firm i in year t

An estimate of expected short-term accruals matched performance for a firm is determined using the revenue components.

$$\frac{STACMP_{i,t}}{TA_{i,t-1}} = \gamma_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \gamma_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \gamma_3 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) + \varepsilon_{i,t} \quad (6)$$

Where:

$STACMP_{j,t}$ = Short-term accruals matched performance for firm i in year t

The estimated coefficients from equation 6 are then used to determine the expected short-term accruals matched performance for each firm and each year. This forecast is assumed to represent non-discretionary component of short-term accruals. The difference between the estimation and actual short-term accruals matched performance is supposed as the discretionary component of short-term accruals.

$$STDAMP_{i,t} = \frac{STACMP_{i,t}}{TA_{i,t-1}} - \left[\eta_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \eta_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \eta_3 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \right] \quad (7)$$

Where:

$STDAMP_{i,t}$ = Short-term discretionary accruals matched performance for firm i in year t

Furthermore, an expected long-term accruals matched performance for a firm is determined using the key drivers of long-term accruals. The relevant assets include property, plant and equipment, intangibles.

$$\frac{LTACMP_{i,t}}{TA_{i,t-1}} = \mu_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \mu_2 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \mu_3 \left(\frac{INT_{i,t}}{TA_{i,t-1}} \right) + \mu_4 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \varepsilon_{i,t} \quad (8)$$

Where:

$LTACMP_{i,t}$ = Long-term accruals matched performance for firm i in year t.

$INT_{i,t}$ = Intangibles assets for firm i at end year t

The estimated coefficients from equation 8 are used to calculate the expected long-term accruals for each firm. This forecast is assumed to represent non-discretionary component of long-term accruals. The difference between the estimation and actual long-term accruals is deemed to be the discretionary component of long-term accruals.

$$LTDAMP_{i,t} = \frac{LTACMP_{i,t}}{TA_{i,t-1}} - \left[\omega_1 \left(\frac{1}{Log.TA_{i,t-1}} \right) + \omega_2 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \omega_3 \left(\frac{INT_{i,t}}{TA_{i,t-1}} \right) + \omega_4 \left(\frac{INC_{i,t}}{TA_{i,t-1}} \right) \right] \quad (9)$$

Where:

$LTDAMP_{i,t}$ = Long-term discretionary accruals matched performance for firm i in year t.

Dollar is similar 10.000 Rupiah. If the current research applies data in actual Rupiah, the value of variable will be meaningless, or too close zero.