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BIAS IN ACCOUNTING AND THE VALUE RELEVANCE OF ACCOUNTING INFORMATION

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Abstract

The objective of this study is to examine the value relevance of accounting earnings and book value of equity in explaining stock price. The study investigated whether bias in accounting influence earnings response coefficient and book value of equity coefficients. The study shows that accounting earnings and book value of equity are positively associated with stock price. Accounting earnings and book value of equity are useful to explain stock price changes. The results also shows that earnings response coefficient is smaller in the firms that have both conservative accounting or liberal accounting.

1. Introduction

Financial statements that are published by an entity must actually disclose the condition of the entity, so that give benefit to public. Information that is useful for decision making should have value relevance. One of the indicator that an accounting information is relevant is there is a reaction of investor at the time of announcement of information that can be observed from the existence of move The focus of this research is the examination of the coefficients related to accounting earnings and equity book value information. This coefficients measure share price or equity market value response to an information which implied in accounting earnings and equity book value.

Studies which examine earnings response coefficient (ERC) find that ERC vary by cross-section. The variation can be explained by some factors like risk, growth, earnings persistence, and interest rate (for example Collins and Kothari, 1989; Easton and Zmijewski, 1989). Studies concerning variation of equity book value coefficient also have started to get attention which is generally done with testing the combination

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of earnings coefficient and book value coefficient (Barth et al, 1998; Burgstahler and Dichev, 1997; and Ou and Sepe, 2002). This research tries to find whether bias in accounting influence earnings response coefficient and equity book value response coefficient.

2. Literature Review and Hypothesis

2.1. The Value Relevance

In literature, an accounting numbers is said to have a value relevant if it has a predicted relationship with market value of equity (Amir et al, 1993; Beaver, 1998). For researchers, the purpose of testing the value relevance is expanding knowledge of the relevance and reliability of accounting numbers that are reflected in equity values. The value relevance is the empirical operationalization of the relevance and reliability criteria. An accounting numbers will be relevant, have significant relationship with stock price, if the accounting numbers reflect the information that relevant to investors in valuing a firm and are reliably measured to be reflected in stock prices (Barth et al, 2001) .

Statistical association between accounting data and stock market value is used by Lev and Zarowin (1999) to assess the usefulness of financial information for investors. This association reflect the action of investors, while the other measure such as questionnaires or interviews, simply reflect investors opinions and beliefs.

2.2. The Value Relevance of Accounting Earnings and Book Value of Equity

Various study have proved that accounting earnings relate to share price (Ball and Brown, 1968; Beaver, 1968; Beaver et al, 1979; Kormendi and Lipe, 1987; Lipe 1986; Collins and Kothari, 1989). Some studies also indicate that asset and liabilities relate to share price (Landsman, 1986; Amir, 1993; Francis and Schipper, 1999).

The examination of value relevance of the combined of accounting earnings and book value of equity that is conducted by some researchers is motivated by result of the study of Ohlson (1995) and Feltham and Ohlson (1995, 1996). Ohlson's study (1995) is used as theoretical base of the relation of book value of equity and earnings and share price. This study is relied on the following linear regression (price-levels):

$$P_{jt} = \alpha_0 + \alpha_1 B_{jt} + \alpha_2 E_{jt} + \varepsilon_{jt}$$

where P_{jt} is share market price of firm j at time t, B_{jt} is book value of equity of firm j at time t and E_{jt} is earnings of firm j at time t. Ohlson (1995) have given understanding framework to interpret above mentioned regression coefficient estimation (α_0, α_1, α_2).

The examples of research which is affected by both study which use combined of earnings and book value are Barth et al. (1998), Burgstahler and Dichev (1997), Collins et al. (1997), Collins et al. (1999), Francis and Schipper (1999), Ely and Waymire (1999) and Ali and Hwang (2000). The finding of these studies indicate that book value and earnings represent factor which significantly influences share price.

2.3. Earnings Response Coefficient

The researches that trying to identify and explain differences of market response to earnings information is called the research of earnings response coefficient (ERC). ERC represent coefficient measures abnormal response of security returns to unexpected accounting earnings of firms that issue security. Some results indicate that ERC vary by cross-sectional and intertemporal (Collins and Kothari, 1989; Easton and Zmijewski, 1989; Lipe, 1990; Dhaliwal et al, 1991; Lev and Thiagarajan, 1993; Dhaliwal and Reynolds, 1994; Billings, 1999).

2.4. Earnings Response Coefficient and Book Value of Equity Response Coefficient

The development of next research direct to the examination that book value of equity also represent relevant factor in valuation (for example Ohlson, 1995; Feltham and Ohlson, 1995). Simple earning capitalization model is less adequately assessed. For loss companies, simple earning capitalization model will cause negative price-earning relation (Hayn, 1995). Including book value of equity into valuation model, will eliminate those negative relation (Collins et al., 1999).

Some researchers that grouping observation become subsampel find that accounting number coefficient vary between subsamples (Francis and Schipper, 1999; Nwaeze, 1998; Basu, 1997). Research results also find certain condition which cause book value of equity becomes factor that more relevant than earnings or on the contrary, such monetary health (Barth et al, 1998) and firm profitability (Burgstahler and Dichev, 1997).

2.5. Assessment of Value Relevance in an Inefficient Market

Examination of value relevance in this research is conducted by relating accounting variable which consists of accounting earnings and book value of equity and share price. This method relied on the assumption that market operate efficiently. The effect of market inefficiency in processing information to coefficient estimation in value relevance regression tested analytically by Aboody et al. (2002) by making corrective procedure of potential bias because of the inefficiency. Two assumptions constitute the adjustment. First, existence of market inefficiency resolution which is reflected in future price change. Second, conditional expected returns are determined by risk. The procedure is adapting the market returns of market share for risk of price change in the future. This procedure will result the value relevance coefficient estimation that able to catch the reaction of market in this time and also which delay.

2.6. Hypothesis

2.6.1. Earnings Response Coefficient and Book Value of Equity Response Coefficient

Earlier studies (for example Ball and Brown 1968, Beaver 1968, Foster 1975 and Beaver et al. 1979), proved that accounting earnings relate to share price. The research findings support hypothesis that accounting earnings provide information and useful in valuation of securities. Otherwise, the role of book value cannot be disregarded because of book value also represents relevant factor in explaining equity value. Earnings and book value represent two measures that summarizing financial statement. Book value represents balance sheet measure or net asset that yielding earning, while earnings represent income statement measure that summarizing returns of those assets. Some researches indicate that market give appreciation to book

value and earnings (for example Kothari and Zimmerman, 1995; Ohlson, 1995; Feltham and Ohlson, 1995). Burgstahler and Dichev (1997) have a notion that accounting system can provide information which is completing each other about book value and earnings. Book value resulting from balance sheet gives information about net value of firm resources. In addition, earnings resulting from income statement reflects result of the firm effort in powering its current resources.

Simple earning capitalization model which do not rely on book value of equity as independent variable will yield earning coefficient which is bias negative for loss firm and bias positive for the firm obtaining profit (Collins et al, 1999). Book value of equity can eliminate bias resulted earning coefficient from simple earning capitalization model.

The examination of combined book value and earnings relied on many framework developed by Ohlson (1995) and Feltham and Ohlson (1995) which is relied on clean surplus accounting. This framework expresses share price as amount of book value and present value of expected abnormal earnings. According to the research result and theory, where book value of equity and earnings represent variable having an effect on valuation of equity, so it can be stated the following hypothesis:

Hypothesis 1.1: Accounting earnings positively influence share price, given book value of equity and year.

Hypothesis 1.2: Book value of equity positively influence share price, given accounting earnings and year.

2.6.2. The Influence of Bias in Accounting to the Value Relevance of Accounting Earnings and Book Value of Equity

Bias in accounting is interpreted by Beaver and Ryan (2000) that book value is persistently higher (lower) than market value, so that book-to-market ratio (B/M) is persistently above (below) one or market-to-book ratio (M/B) is persistently below (above) one. More conservative bias (liberal) will result lower (higher) B/M. Result of the analysis of Beaver and Ryan (2000) indicated that book-to-market ratio component which is bias relate to accounting conservatism measure. Conservative (liberal) accounting assess lower (higher) book value than market value so that there are bias in book value.

Conservatism principle represent the tendency to recognize loss faster than gain, so that earning reflect quickly the existence of "bad news" than "good news". The effect of conservatism is anticipating loss into earnings, but deferring gain realization. Basu (1997) interprets conservatism as the tendency of accountant to do higher verification in recognizing good news than bad news. Loss which has not been realized is usually recognized quickly, while gain which has not been realized is not recognized in advance.

Therefore, applying conservative and liberal accounting will generate bias on financial statement. Liberal (conservative) bias will result financial statement expressing higher (lower) condition of company in fact. Conservative (liberal) accounting will decrease (increase) book value of equity relative to market value of equity and earnings relative to operating cash flow (Ahmed et al, 2002).

Hypothesis 2.1: The influence of accounting earnings to share price is smaller at firm applying bias accounting practice, given book value of equity and year.

Hypothesis 2.2: The influence of book value of equity to share price is smaller at firm applying bias accounting practice, given accounting earnings and year.

3. Methodology

3.1. Research Variables and Operational Definition

The research variables consist of dependent variable, and independent variable consisting of explanatory variable, and control variable.

3.1.1. Dependent Variable

Dependent variable is share price of firm i which have been adapted for stock split, stock dividend, and others at three months after fiscal year-end and added by dividend in the year t. The price variable adapted for possibility of the existence of inefficient market by adopting method developed by Aboody et al. (2002).. The Contemporenous price (P_{it}) is changed into the future price which is deflated by expected conditional returns (AP_{it}).

$$AP_{it} = \left(\frac{1 + R_{i(t+\tau)}}{1 + R^v_{i(t+\tau)}} \right) P_{it}$$

where $R_{i(t+\tau)}$ is firm stock return of firm i during 12 months started from three months after fiscal year-end of t, and $R^v_{i(t+\tau)}$ is size decile returns.

3.1.2. Independent Variables

3.1.2.1. Explanatory Variables

The explanatory variable consist of main variables and determinant variables. Main variables consist of accounting earnings and book value of equity. Determinant variables is variables that influence earnings response coefficient and book value of equity response coefficient that is bias in accounting.

1. Main Variable
   a. Accounting earnings (E_{it}) is annual earning divided by the amount of common share outstanding (Ely and Waymire, 1999; Aboody et al, 2002]
   b. Book value of equity (B_{it-1}) is book value of assets substracted by book value of liabilities in the beginning year divided by the amount of common share outstanding (Ely and Waymire Ely, 1999; Aboody et al, 2002)

2. Determinant Variable of Earnings Response Coefficient and Book Value of Equity Coefficient
   Proxy of bias in accounting is mean accrual during certain time period. Negative (positive) mean accrual represent firm that apply conservative (liberal) policy. Specifically, the measure of bias in accounting which is used in this research is mean discretionary accrual during 3 years. Discretionary

accrual can be detected by using expectation model developed by Jones (1991):

$$TA_{it}/A_{it-1} = a_i[1/A_{it-1}] + b_{1i}[\Delta REV_{it}/A_{it-1}] + b_{2i}[PPE_{it}/A_{it-1}] + e_{it}$$

where:

TA_{it} = total accrual of firm i at year t;

ΔREV_{it} = revenues of firm i at year t subtracted by revenues of firm i at year t-1

PPE_{it} = property, plant, and equipment of firm i at year t;

A_{it-1} = total asseis of firm i at year t-1;

Coefficient estimation a_i, b_{1i} and b_{2i} obtained cross-sectionally, where each model estimated separately each year. By assumption that relation between non-discretionary accrual and explanatory variable is stationer, thus the error of prediction can be determined as follows:

$$e_{ip} = TA_{ip}/A_{it} - (a_i[1/A_{ip-1}] + b_{1i}[\Delta REV_{ip}/A_{ip-1}] + b_{2i}[PPE_{ip}/A_{ip-1}]$$

which p = year index for the year of which included in prediction period. Error of prediction e_{ip} represent level of discretionary accrual in the year p. Mean of negative discretionary accrual represent conservative firm, while mean positive discretionary accrual represent liberal firm. To determine the firm categorized by conservative or not, sample is ranked according to mean of discretionary accrual from smallest to largest, then divided by 3 groups. Group 1/3 first is groups of firm applying conservative accounting, 1/3 second is neutral, and 1/3 last is groups of firm applying liberal accounting.

3.1.2.2. Control Variables

The control variables consist of variables influencing price and return other than main variable that is bias in accounting. In Fama and French (1992) study, there are relation between mean of return and firm beta, firm size, leverage, earning to price (E/P) ratio and book value to market value (B/M) ratio. Collins et al (1997) and Ou and Sepe (2002) also include interaction variable influencing earning response and book value coefficients as control variable.

In spite of to control difference of year, each equation added by year dummy variable where $D98_{it}=1$ if in the year 1998 and $D98_{it}=0$ if is other, $D99_{it}=1$ if in the year 1999 and $D99_{it}=0$ if is other, $D00_{it}=1$ if in the year 2000 and $D00_{it}=0$ if is other, $D01_{it}=1$ if in the year 2001 and $D01_{it}=0$ if is other.

3.2. Method of Analysis

Earning response and book value of equity response coefficients are estimated by cross-sectional regression method. Examination of hypothesis is conducted by using model which is generally used in accounting literature that is price model (for example Kothari and Zimmerman, 1995; Lee, 1999). The model obtained from econometrics model developed by Collins et al. (1997) expressing valuation model of Ohlson (1995) as a function of current earnings and lag of book value of equity.Examination is done by pooled cross-section starting at year 1997 until 2001.

3.2.1. Hypothesis 1 Testing

To test hypothesis 1, this model is applied:

$$AP_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 B_{it-1} + \alpha_3 D_{98} + \alpha_4 D_{99} + \alpha_5 D_{00} +$$
$$\alpha_6 D_{01} + \varepsilon_{it} \qquad (1)$$

where:
AP_{it} = share price of firm i at three months after year-end t which have been adapted for possibility of an inefficient market
E_{it} = earnings per share of firm i in the year t
$\qquad\qquad B_{it-1}$ = book value of equity per share of firm i in the year t-1
D_{98} = 1 (0) if observation in the year 1998 (other)
D_{99} = 1 (0) if observation in the year 1999 (other)
D_{00} = 1 (0) if observation in the year 2000 (other)
D_{01} = 1 (0) if observation in the year 2001 (other)
e_{it} = residual
Prediction of each coefficient is $a_2 > 0$ and $a_1 > 0$

3.2.2. Hypothesis 2 Testing

Examination of hypothesis 2 is done according to the model as examination of hypothesis 1 by interacted other variables to accounting earnings and book value of equity variables as done by Barth et al. (1998), Charitou et al. (2001) and Ou and Sepe (2002). This examination is done for the significance test of variable influencing relevance of accounting earnings and book value of equity.

Examination of hypothesis 2 is done by applying model:

$$AP_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 B_{it-1} + \alpha_3 DCON_{it} + \alpha_4 DLIB_{it} + \alpha_5 E_{it}*DCON_{it} + \alpha_6 B_{it-1}*DCON_{it} + \alpha_7 E_{it}*DLIB2_{it} +$$

$$\alpha_8 B_{it-1}*DLIB2_{it} + \alpha_9 D_{98} + \alpha_{10} D_{99} + \alpha_{11} D_{00} + \alpha_{12} D_{01} + \varepsilon_{it} \tag{3}$$

$DCON_{it} = 1$ (0) if firm i in the year t apply conservative accounting principle and is equal to 0 if other.
$DLIB_{it} = 1$ (0) if firm i in the year t apply liberal accounting principle liberal and is equal to 0 if other

Its alternate hypothesis is $a_5<0$, $a_6<0$, $a_7<0$, $a_8<0$. Prediction of each coefficient is $a_1>0$, $a_2>0$, $a_1+a_5 < a_1$, $a_2+a_6 < a_2$, $a_1+a_7 < a_1$, $a_2+a_8 < a_2$

4. Results

4.1. Data Collections

Data obtained from secondary sources that is annual report published by each company, Indonesian Capital Market Directory (ICMD), Jakarta Stock Exchange (JSX) Monthly Statistic, and daily share price data which obtained from JSX.

The sample of the research is manufacturing firms which list in Jakarta Stock Exchange (JSX) on year-end 1994 and have listed up to year-end 2002. The final observations are 449 observations.

4.2. Results of Hypothesis Testing

According to the result summary of regression analysis at table 1, the examination result indicates that accounting earnings and book value of equity have a significant positive effect to share price (significant at a= 1%), as according to the prediction. Earnings response coefficient is 1.143 (α_1) and book value of equity response coefficient is 0.839 (α_2) This means that accounting earnings and book value of equity have value relevance. Accounting earnings and book value of equity represent important explanatory variable for share price. The combined of earning and book value in one valuation model give important information, consistent with Burgtahler and Dichev (1997) that accounting system can provide information which is improving each other about book value and earnings. Book value from balance sheet represents information about net value of company resources, while earnings from income statement expresses result of company effort in using its resources.

Table 1. The Association of Accounting Earnings and Book Value of Equity and Price.

Variables	Prediction	Coefficient	t-statistics
C	No	1322.52	2.154[**]
E_{it}	+	1.14	4.033[***]
B_{it-1}	+	0.84	4.857[***]
D_{98}	No	2571.70	2.839[***]
D_{99}	No	-2425.23	-3.482[***]
D_{00}	No	448.98	0.536
D_{01}	No	-1633.09	-1.911[*]

R^2	0.313	
Adj. R^2	0.304	
D-W Statistic	2.039	
* ** Significant at α	= 1%	
** Significant at α	= 5%	
* Significant at α	= 10%	

According to the result summary of regression analysis at table 2, in company that applying liberal and conservative accounting, earnings response coefficient and book value response coefficient is lower than the coefficients of neutral company. In neutral company, earnings response coefficient is 1.865 (α_1) and book value of equity response coefficient is 1.192 (α_2). Both coefficients are higher than the coefficients of company that applying conservative and liberal accounting. In company that apply conservative accounting, earnings response coefficient is 0.785 ($\alpha_1 + \alpha_5$) and book value of equity response coefficient is 0.702 ($\alpha_2 + \alpha_6$). In company that apply liberal accounting, earnings response coefficient is 0.758 ($\alpha_1 + \alpha_7$) and book value of equity response coefficient is 0.719 ($\alpha_2 + \alpha_8$). This result support the prediction that bias in accounting will decrease value relevance of earnings and book value (Zhang, 2000). Conservative (liberal) accounting practice tend to present lower (higher) of accounting earnings from economic earnings and present lower (higher) book value from market value, so that earning and book value information would be bias. The information that is contained in earnings and book value of equity become less relevant.

Table 2. The Influence of Bias in Accounting to the Association of Accounting Earnings and Book Value of Equity and Price.

Variables	Prediction	Coefficient	t-statistics
C	No	483.690	0.645
E_{it}	+	1.865	5.963***
B_{it-1}	+	1.192	7.141***
$DBIAS1_{it}$	No	936.302	1.153
$DBIAS2_{it}$	No	1481.336	1.746*
$E_{it}*DBIAS1_{it}$	-	-1.080	-2.463***
$B_{it-1}*DBIAS1_{it}$	-	-0.490	-2.084**
$E_{it}*DBIAS2_{it}$	-	-1.107	-2.662***
$B_{it-1}*DBIAS2_{it}$	-	-0.479	-2.360**
D_{98}	No	2652.030	3.500***
D_{99}	No	-2442.327	-3.159***
D_{00}	No	372.251	0.468
D_{01}	No	-1622.886	-1.942**

R^2	0.313
Adj. R^2	0.304
D-W Statistic	2.039
* ** Significant at α	= 1%
** Significant at α	= 5%
* Significant at α	= 10%

5. Conclusion

This objective of this research is to test the value relevance of accounting earnings and value relevance of book value equity. The research tries to identify factor influencing accounting earnings and book value of equity response coefficients. The influence of accounting earnings and book value of equity to share price depend on bias in accounting.

The examination of hypothesis is done by regression model with independent and dependent variables. Independent variables consist of accounting earnings and book value of equity, and factors influencing accounting earnings and book value of equity response coefficients. Dependent variable is share price which have been adapted for possibility of the existence of inefficient market.

The results indicate both accounting earnings and book value of equity influence share price. This result strengthens the result of previous study (for example Burgtahler and Dichev, 1997; Collins et al, 1999). Accounting earnings and book value of equity represent variables that can be used to explain equity value.

The company that applying liberal and conservative accounting practice, have earning response coefficient and book value response coefficient that is lower than the coefficient of neutral company. This result is

according to Zhang, X (2000). Lower earning and book value response coefficient at company applying liberal and conservative accounting, caused by the existence of bias in accounting earnings and book value.

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