

DOES EARNINGS QUALITY MODERATE THE PREDICTIVE CONTENT OF NONOPERATING INCOME?

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The objective of this study is to empirically examine a hypothesis that earnings quality enhances the ability of nonoperating income to predict future operating cash flow. The magnitude of income smoothing index, measured by Eckel's (1981) index formula, is used to capture a firm's quality level of earnings. Higher index is assumed to represent higher level of earnings quality. A linear regression model is developed to test the hypothesis. The model parameters are estimated based on sixty-two manufacturing firms listed in the Jakarta Stock Exchange (JSX) up to the end of 1997. This study finds empirical evidence that supports the proposed hypothesis. That is, earnings quality enhances the predictive content of nonoperating income.

Keywords: earnings quality; income smoothing; moderating; nonoperating income; predictive content

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Introduction

Although accounting profession (e.g., IAI¹ 2002) strongly assumes that both operating income and nonoperating income have a value-relevance, a recent study (Sugiri 2003b) using semiannual data finds that nonoperating income in the presence of operating income is not significant to predict future operating cash flow. Sugiri (2003b) concludes that predicting future operating cash flow may ignore nonoperating income. The conclusion suggests that nonoperating income does not possess a predictive content or value-relevance, which contradicts the accounting profession's strong assumption. The contradiction leaves a room for further research. This study argues that nonoperating income when interacts with earnings quality is relevant to predict future operating cash flow for the following reasons.

By its very nature, accounting information—one of which is nonoperating income—relates to each other. The very nature of accounting income is that it results from the use of accrual-basis, instead of cash-basis. The use of accrual-basis, together with managers' freedom to choose one among various alternative accounting methods, causes the accounting information to interrelate. The freedom, unfortunately, might motivate managers to do artificial earnings management (see, for instance, Watts and Zimmerman 1990). When accounting income has been managed, the association between accounting income and cash flow is impaired. Any cash flow forecasting models using accounting income or its components as the predictor(s), therefore, are more accurate if earnings management factor is considered. One technique of the earnings

management is income smoothing (Scott 2000).

Munter (1999) argues that earnings management reduces the quality of earnings. Jin and Machfoedz (1999), Assih and Gudono (2000), Salno and Baridwan (2000), Sutopo (2001), and Gumanti (2003), among others, suggest that some firms listed in the JSX manage their income and some others do not. Firms listed in the JSX, then, vary in terms of their earnings quality. Although it is rationally hypothesized that market differently reacts to smoothed income *vis-à-vis* nonsmoothed income, previous studies show inconsistent findings. Assih and Gudono (2000) find that market reaction to earnings announcement differs between firms that artificially smooth their income and those that do not. Sutopo (2001) finds that cash flow provides incremental information to earnings surprise when the cash flow interacts with income smoothing index. Findings of these studies suggest that earnings quality is relevant and should not be ignored in the investment decision-making, which needs information about future cash flow. Salno and Baridwan (2000), however, find that returns of smoothing firms do not differ from those of nonsmoothing firms. The evidence suggests that market reaction to high-quality earnings does not differ from that of low-quality earnings. Salno and Baridwan (2000) posit that the insensitiveness of Eckle's (1981) index in classifying firms into smoothing and nonsmoothing ones causes empirical evidence inconsistent with their hypothesis. Since firms' stock prices or returns reflect their future cash flow (Barth et al. 2001), cash flow forecasting models using accounting income (and/or cash flow) should consider earn-

¹ IAI stands for *Ikatan Akuntan Indonesia* (The Indonesian Institute of Accountants).

ings quality. This rationale leads to the following research question.

Does earnings quality moderate the predictive content of nonoperating income?

Previous market- and nonmarket-based accounting studies (Isgiyarta 1997; Supriyadi 1999; Parawiyati and Baridwan 1998; Werdiningsih and Jogiyanto 2001; Sugiri 2003a, 2003b; Assih and Gudono 2000; Salno and Baridwan 2000; Sutopo 2001) that investigate the value-relevance of cash flow, accounting income, and components of income, void the research question. The voidance motivates this study to empirically examine whether earnings quality improves the ability of nonoperating income to predict future operating cash flow.

This study extends Sugiri (2003b) by considering earnings quality that Sugiri (2003b) does not. It is important for two reasons. *First*, it is useful to capture whether earnings quality can enhance the ability of nonoperating income to predict future operating cash flow. *Second*, it contributes to extant positive accounting theories (e.g., Lev and Thiagarajan 1993; Abarbanell and Bushee 1998), which provide evidence as to the value-relevance of earnings quality.

Based on 62 manufacturing firms listed in the JSX, using semiannual accounting data for the period of 1991-1997, this study finds that the two-way interaction between earnings quality and nonoperating income is significant, indicating that nonoperating income when interacts with earnings quality has a predictive content. This evidence documents that earnings quality enhances the ability of nonoperating income to predict future cash flow, consistent with the proposed hypothesis.

The remaining manuscript is organized as follows. The next three sections discuss theory and related works, hypothesis, and research method. The penultimate section describes empirical results and the analysis as well. The final section explicates conclusions and limitations.

Theory and Related Works

Value-relevance of Nonoperating Income

Previous studies document that accounting income is useful to predict both future cash flow and future income (e.g., Greenberg et al. 1986; Krishnan and Largay III 2000; Finger 1994; Parawiyati and Baridwan 1998; Supriyadi 1999; Sugiri 2003a, 2003b). This evidence supports accounting profession's (e.g., IAI 2002; FASB 1978) assertion that accounting income is useful to estimate a firm's cash flow potential. In relation to earnings components, previous empirical studies document consistent findings on the value-relevance of operating income but inconsistent findings on the value-relevance of nonoperating income. Fairfield et al. (1996) and Isgiyarta (1997), for instance, find that both operating income and nonoperating income are significant to predict future return on equity (ROE). Gonedes (1975), Bowen (1981), Lipe (1986), and Barth et al. (1990), among others, find that operating income as well as nonoperating income is significant to explain stock returns. Chandarin and Tearney (2000) find that stock market reacts to exchange rate losses—a component of nonoperating income. All of these studies use annual accounting income data. A recent study (Sugiri 2003b) using semiannual accounting income data, however, finds that oper-

ating income in the presence of non-operating income is significant, but non-operating income in the presence of operating income is not significant to predict future operating cash flow. Sugiri (2003b) concludes that predicting future operating cash flow must consider operating income but may ignore nonoperating income. The conclusion suggests that nonoperating income does not possess a predictive content or value-relevance, which contradicts the accounting profession's strong assumption. This study argues against the conclusion. This study posits that earnings quality can moderate the association between nonoperating income and future operating cash flow for reasons that follow.

Accrual-based accounting income together with freedom to choose one of the available various accepted accounting methods causes the accounting information to interrelate. The freedom, unfortunately, might motivate managers as financial statements preparers to do artificial earnings management (see, for instance, Watts and Zimmerman 1990), one technique of which is artificial income smoothing (Scott 2000). If accounting income has been artificially smoothed, on one hand, while cash flow is not affected by different accounting methods chosen, on the other hand, then the assumed association between accounting income and cash flow will be impaired because the quality of artificially managed earnings is reduced. Therefore, any cash flow forecasting models using accounting income or its components as the predictor(s) will be more accurate when earnings quality is considered.

Earnings Quality and Income Smoothing

Earnings quality constitutes an important concept, which financial statements

users should be aware. Cornell and Apostolou (1992) assert the importance of the concept for investors and creditors as cited below.

The concept is especially important when investment and/or credit decisions are made on the basis of current and estimated future earnings, since estimates are often based on current accounting-based earnings. In effect, the difference between economic reality and current accounting-based earnings is compounded into the estimates of future earnings. As such, earnings quality is important not only for a summary of the current period, but also for the assessment of future earnings.

Earnings quality can be defined in several ways. Analysts, for instance, define earnings quality as the association between earnings and cash flow or stock return (Wolk and Tearney 1997). The higher the association between earnings and cash flow or stock return, the higher the earnings quality, and vice versa. Earnings quality also relates to the overall persistence of earnings (Ayres 1994). As such, high-quality earnings represent earnings that persist for a long period of time. Earnings quality, as Cornell and Apostolou (1992) state, is concerned with differences between net income and the underlying economic reality. They also state that freedom to choose accounting policy causes the economic reality underlying the reported income difficult to interpret. All these indicate that quality of earnings is related to earnings management.

In determining periodic income, accounting uses accrual-basis, instead of cash-basis, so that costs should be properly matched against revenues (Hendriksen and Breda 1992). Accrual-based accounting income raises an issue as to earnings

quality because the income is potentially subject to earnings management, defined by Schipper (1989) as "... the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain." Healy and Wahlen (1998) delineate earnings management as follows.

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.

Various motivations to manage earnings as stated in bonus plan, political cost, and debt covenant hypotheses (Watts and Zimmerman 1990) are consistent with those stated in the definition. The hypotheses are developed based on agency theory, which describes contractual relationship between agents and principals (Jensen and Meckling 1976). Since rational corporate managers will maximize their own utilities, then there is a compelling reason to believe that managers as agents will not necessarily act in the best interest of stockholders as principals (Jensen and Meckling 1976). Earnings management is subject to serious attentions by Securities and Exchange Commission (SEC) members as well as investors in the United States because it reduces the quality of earnings (Munter 1999), which, in turn, will affect decision-making (Subramanyam 1996).

Income smoothing is one of the earnings management techniques (Scott 2000). It can be categorized as real smoothing and artificial smoothing (Dascher and Malcom 1970). Real smoothing, on one hand, represents the real earnings man-

agement in business decisions, which result in smoothed income from period to period. Artificial smoothing, on the other hand, represents management action to smooth income using accounting procedures to shift expenses or revenues from period to period. It is the artificial smoothing that is presumed to mislead user's decision-making. Income smoothing defined by Eckel (1981) that follows is classified as artificial income smoothing.

... accounting manipulation undertaken by management to smooth income. These manipulations do not represent underlying economic events or affect cash flows, but shift costs and/or revenues from one period to another. ...

Based on the so defined artificial income smoothing, accounting income that has been artificially smoothed neither reflects events and/or transactions that actually occur in the company nor reflects real cash flow. Thus, net income that is manipulated by artificial smoothing reflects its lower association with cash flow compared to net income that is not so manipulated. Also, based on the definition that earnings quality represents high association (correlation) between income and cash flow or stock return (Ayres 1994; Wolk and Tearney 1997), income that is artificially managed constitutes a low-quality income in comparison with income that is not so managed. This explanation leads to a conjecture that any cash flow forecasting models using earnings or earnings components as the predictor(s) should consider the artificial income smoothing, which presumably affects the quality of earnings. Whether or not the accounting income is artificially smoothed, unfortunately, cannot be directly identified and measured by the magnitude of the income itself, rather, as the definition of income

smoothing suggests, it must be linked to other accounting information. As the IAI (2002) states, accounting information relates to each other. The interrelation, of course, results from accrual-based accounting procedures in determining net income.

Eckel (1981) operationally defines income smoothing as the following index:

$$ISI = \left| \frac{CV_{\Delta I}}{CV_{\Delta S}} \right|$$

where,

ISI = Income smoothing index;

$CV_{\Delta I}$ = Coefficient of variation of time-series income changes;

$CV_{\Delta S}$ = Coefficient of variation of time-series sales revenues;

$|\cdot|$ = Absolute value;

CV_{Δ} = (Standard deviation of Δ)/(Mean of Δ).

The coefficient of variation (CV), according to textbooks in statistics (e.g., Mandenhall and Beaver 1992), is useful to measure the uniformity (stability) of a data set. The smaller the CV of a data set, the more stable the data set. Eckel (1981) classifies a firm into a smoother or a nonsmoothing. A firm is classified as a smoother if its smoothing index is less than one and a nonsmoothing if it is one or greater. Referring to the definition of CV, a smoother is, then, a firm whose changes in its earnings are relatively more stable than the changes in its sales revenues. A smoother is, then, a firm whose income constitutes a nonquality income because the firm manipulates it.

Eckel's (1981) index is broadly used in market-based accounting research. The following three studies use the index measured on the basis of annual accounting data. Assih and Gudono (2000), for instance, investigate whether market reac-

tion to earnings announcement is closely related to income smoothing action. They predict that mean abnormal returns after earnings announcement date are stronger for nonsmoothing firms than for smoothing firms. Based on 99 sample firms listed in the JSX up to the end of 1996, they find empirical evidence that supports the prediction. The evidence indicates that income smoothing is relevant in investment decision-making, which needs information about future cash flow. This also suggests that capital market reacts more to quality earnings than to nonquality earnings.

Salno and Baridwan (2000) examine factors affecting income smoothing and its relation to performance of firms listed in the JSX. One of their proposed hypotheses is that returns of smoothing firms differ from those of nonsmoothing firms. Based on 74 sample firms listed in the JSX up to the end of 1995, they find evidence that does not support the hypothesis. The evidence suggests that market reaction to quality earnings does not differ from that of nonquality earnings. They posit that the evidence, which is not consistent with their hypothesis, is due to the insensitivity of Eckel's (1981) index to classify firms into smoothing and nonsmoothing ones.

Sutopo (2001) examines the incremental information content of cash flow. He hypothesizes that cash flow after being interacted with income smoothing index provides incremental information content beyond that provided by the earnings surprise. Based on 62 manufacturing firms listed in the JSX for the period of 1995–1998, he finds evidence that supports his hypothesis. The evidence indicates that income smoothing is relevant for investment decision-making and possesses information content.

Hypothesis

Nonoperating income as one of accounting income components is strongly assumed to have a value-relevance (IAI 2002). Previous studies show that nonoperating income is significant both to predict future ROE (Fairfield et al. 1996; Isgiyarta 1997) and to explain stock prices or market returns (Gonedes 1975; Bowen 1981, Lipe 1986; Barth et al. 1990) but is not significant to predict future operating cash flow (Sugiri 2003b). Since accounting income might be subject to earnings management action, nonoperating income might also be subject to the action. As described earlier, the relationship between cash flow and artificially managed accounting income is rationally assumed to decrease. Previous studies document that some firms listed in the JSX do artificial earnings management (e.g., Assih and Gudono 2000; Salno and Baridwan 2000; Sutopo 2001; Gumanti 2003). Assih and Gudono (2000) and Sutopo (2001) suggest that earnings management, which is assumed to affect the quality of earnings (Munter 1999), has a value-relevance. Any cash flow forecasting models using accounting income (and/or cash flow) would be rationally stronger when earnings quality is considered. This rationale leads this study to hypothesize that nonoperating income must interact with earnings quality to have a predictive content. The following testable hypothesis is, therefore, advanced.

H1: Earnings quality enhances the ability of nonoperating income to predict future cash flow.

Since it is predicted in Sugiri (2003b) that the association between nonoperating income and future cash flow is significantly positive, this study predicts that the two-way interaction between earnings

quality and nonoperating income has a significantly positive association with future cash flow.

Research Method

Variables and Measurements

Variables of this study are cash flow, operating income, nonoperating income, and the interaction between nonoperating income and earnings quality. For convenience, the interaction, hereafter, will be interchangeably called *Q-N* interaction. Cash flow is defined as net cash flow classified in cash flow statements as cash flow from operating activities; operating income as income from ongoing, major operations; and nonoperating income as other revenues (expenses) and gains (losses).

Earnings quality is defined as the magnitude of Eckel's (1981) income smoothing index as described earlier. To measure this index, time-series data of sales revenues and of accounting income are required. Sales revenues used to measure the time-series changes in the sales revenues are defined as net sales revenues after sales returns and discounts, while income used to measure the time-series changes in the income is defined as the sum of operating income and nonoperating income. A firm having a relatively higher (lower) index is assumed to have higher (lower) level of earnings quality. Only one index is identified for each sample firm. So, the index seemingly acts as a dummy variable. This study exerts the magnitude of the index for every firm as Sutopo (2001) does in his market-based accounting research.

This study uses semiannual, instead of annual data, aimed to obtain a large number of observations. All variables,

except earnings quality, are deflated by total assets of the beginning period for the following reasons. *First*, Maddala (2001) recommends the use of size as the deflator to control for heteroscedasticity. *Second*, previous studies (e.g., Sloan 1996; Supriyadi 1999) use total assets as a proxy of the size and as a deflator of their research variables.

The first semester data are directly observed from the first semester reports, while the second semester ones are manipulated based on annual and first semester reports. This manipulation is conducted because sample firms do not issue the second semester reports. Before 1995 cash flow data are manipulated based on income statements and comparative balance sheets because sample firms do not issue cash flow statements for any period before 1995. Model parameters are estimated using pooled data, aimed to get a large number of observations.

Empirical Model

Firms listed in the JSX issue the first semester, the annual, but not the second semester financial statements. Although the second semester financial statements are not issued, sophisticated users of financial statements can get the information about the second semester income by manipulating the first semester and the annual reports. In other words, information about income for the first and second semesters is actually available. A smoothing firm must do the smoothing from semester to semester to optimize the smoothed income. It is logical, therefore, to assume that a smoothing firm is motivated to artificially smooth its income from one semester to another.

This study predicts that earnings quality enhances the ability of nonoperating income to predict future cash flow. Based

on the aforementioned assumption, this study uses lag-1 regressors. This means that earnings quality enhances the ability of nonoperating income of the first (second) semester to predict cash flow of the second (first) semester of the same (following) year. To test the hypothesis the following empirical model—Model 1—is developed.

$$C_t = \hat{\alpha} + \hat{\beta}N_{t-1} + \hat{\chi}(N_{t-1} * Q) + \hat{\delta}O_{t-1} + \hat{\phi}C_{t-1} + \varepsilon_t \dots \dots \dots (1)$$

Where:

- C = Cash flow from operating activities;
- N = Nonoperating income;
- Q = Earnings quality;
- O = Operating income;
- t = Period *t* (in semiannual period);
- ε = Error term;

$\hat{\alpha}, \hat{\beta}, \hat{\chi}, \hat{\delta}, \hat{\phi}$ = Estimated parameters.

Among independent variables, only the *Q-N* interaction acts as the variable of interest. Lag-1 cash flow is included as an additional regressor to overcome the problem of autocorrelation. It also acts as a control variable, which is documented in Supriyadi (1999) as a significant predictor of one-semester ahead cash flow.

Data and Sample Selection

Sample firms are drawn from manufacturing companies listed in the JSX up to the end of 1997 as shown (classified) in (by) Indonesian Capital Market Directory (ICMD) 1998. Data cover the period from the first semester of 1991 to the second semester of 1997. Data sources are Center for Capital Market Reference and Multifiling Media Indonesia (located in Jakarta). To enter into the sample, a firm must meet the following criteria.

Table 1. Sample Selection Procedure

Number of firms listed in the JSX up to the end of 1997	286
(-) Number of nonmanufacturing firms	(136)
Number of manufacturing firms	150
(-) Number of firms with incomplete financial statements	(32)
	118
(-) Less than the last 8 consecutive observations	(56)
Number of final sample firms	62
Number of firm-semester observations*	634
Average number of observations per firm	10.23

* Two extreme values in the regressand and the associated values in the regressors are excluded, but no single firm is deleted from the sample. Exclusion of these two values produces a number of 634 observations and a normal distribution of expected residuals of Model 1.

- (1) A firm is still listed in the JSX as of the end of 1997 shown in ICMD 1998.
- (2) A firm's complete annual and semiannual financial statements are available.
- (3) At least, the last eight consecutive, semiannual observations can be obtained.

This study, based on the criteria, produces a final sample of 62 manufacturing firms, constituting 41.33 percent of 150 manufacturing firms listed in JSX up to the end of 1997. Two of those 62 sample firms—PT Astra International Tbk and PT Ultrajaya Milk Industry and Trading Tbk—operate in both manufacturing and nonmanufacturing industries. These two firms, however, are not excluded from the sample because their business core is manufacturing industry. Table 1 shows the sample selection procedure, while Table 2 exhibits the composition of sample firms by business sector category within manufacturing industry, based on ICMD 1998 classification.

Table 2 shows that there are 19 business sectors in the manufacturing industry. The percentage of sample firms in the sectors ranges from 0 to 100 percent. At one extreme, no single firm is selected from Lumber and Wood Products sector. At another extreme, all firms are selected from Adhesive sector. The percentages of selected firms in other than those two sectors range from 15.38 to 66.67 percent. All sectors, except Lumber and Wood Products sector, have their representative(s) although the percentage of the sample differs among sectors.

Based on Eckle's (1981) index, this study finds that 34 (28) of the sample firms have smoothing index of less than one (one or greater), ranging from .03 to 16.95 (not reported here). Levels of sample firms' earnings quality, therefore, range from low to high ones. In terms of smoothing/nonsmoothing classification, 34 (28) firms are classified as smoothers (nonsmothers).

Table 2. Number of Sample Firms by Business Sector within Manufacturing Industry Based on ICMD 1998

No.	Sector (Number of All firms in the Sector)	Number of Sample Firms in the Sector	Percentage of Sample in the Sector
01	Adhesive (4)	4	100.00%
02	Apparel and Other Textile Products (15)	5	33.33%
03	Automotive and Allied Products (14)	8	57.14%
04	Cable (6)	2	33.33%
05	Cement (3)	2	66.67%
06	Chemical and Allied Products (6)	2	33.33%
07	Consumer Goods (3)	1	33.33%
08	Electronic and Office Equipment (5)	2	40.00%
09	Food and Beverages (23)	7	30.43%
10	Lumber and Wood Products (5)	0	00.00%
11	Machinery (2)	1	50.00%
12	Metal Product (11)	6	54.55%
13	Paper and Allied Products (6)	3	50.00%
14	Pharmaceutical (8)	4	50.00%
15	Photographic Equipment (3)	2	66.67%
16	Plastics And Glass Products (10)	5	50.00%
17	Textile (10)	4	40.00%
18	Tobacco Product (3)	2	66.67%
19	Other Manufacturing (13)	2	15.38%
Total = 150 firms in 19 sectors		62	41.33%

Empirical Results

Descriptive Statistics

Table 3 summarizes some descriptive statistics for cash flow, nonoperating income, $Q-N$ interaction, and operating income. Each variable ranges from negative to positive values. Cash flow and lag-1 cash flow range from minimum of -.320 (-1.371) to maximum of .390 (.620) respectively; lag-1 operating income ranges from -.132 to .388; lag-1 nonoperating income ranges from -.124 to .223; and $Q-N$ interaction ranges from -.171 to .389. Mean (standard deviation) values of cash flow and lag-1 cash flow are -.035 (.101)

and .032 (.137) respectively; of lag-1 operating income and lag-1 nonoperating income are .064 (.058) and -.005 (.026) respectively; and of $Q-N$ interaction is -.001 (.001).

Table 4 presents Pearson correlation of the model variables. The correlation between cash flow and operating income is 21.6 percent and significant at one-sided level of 1 percent; that between cash flow and nonoperating income is -.6 percent and insignificant; and that between cash flow and $Q-N$ interaction is 5.4 percent and moderately significant at one-sided level of 10 percent. The correlation between operating income and nonoperating income is -2 percent and insignificant and

Table 3. Descriptive statistics (n = 634)

	Minimum	Maximum	Mean	Standard Deviation
C_t	-.320	.390	-.035	.101
O_{t-1}	-.132	.388	.064	.058
N_{t-1}	-.124	.223	-.005	.026
$Q-N_{t-1}$	-.171	.389	-.001	.001
C_{t-1}	-1.371	.620	.032	.137

C = cash flow from operating activities;
 N = nonoperating income;
 Q-N = interaction of earnings quality with nonoperating income;
 O = operating income;
 t = period t (semiannual)

Table 4. Pearson Correlation among Variables (634 Observations)

	C_t	O_{t-1}	N_{t-1}	$Q*N_{t-1}$	C_{t-1}
C_t	1.000				
O_{t-1}	.216 *	1.000			
N_{t-1}	-.006	-.020	1.000		
$Q*N_{t-1}$.054 ***	-.010	.695 *	1.000	
C_{t-1}	-.140 **	.202 *	-.041	.032	1.00

* Significant at the level of 1 percent (1-tailed)
 ** Significant at the level of 5 percent (1-tailed)
 *** Significant at the level of 10 percent (1-tailed)
 Meanings of symbols are as noted earlier (see Table 3)

that between operating income and $Q-N$ interaction is -1 percent and insignificant. The correlation between nonoperating income and $Q-N$ interaction is 69.5 percent and significant at one-sided level of 1 percent. This correlation is very high because the two-way interaction is the product between earnings quality and nonoperating income. This high correlation, however, does not produce a perfect multicollinearity.

Model and Diagnostic Tests

Table 5 presents the estimated coefficients of Model 1, some statistical tests,

coefficient of determination, and results of some diagnostic tests. One-sample Kolmogorov-Smirnov normality test is used to test the normality of expected residuals. This test produces Kolmogorov-Smirnov Z of 1.549. The two-tailed asymptotic significance of this is 1.6 percent. At significance level of 1 percent, the null hypothesis that the expected residuals are normally distributed is not rejected. Thus the expected residuals of Model 1 are normally distributed. Two-stage least square (as used by Greenberg et al. 1996 and Krishnan and Largay III 2000) is used to test whether there is autocorrelation

Table 5. Regression Results

$$C_t = \hat{\alpha} + \hat{\beta}N_{t-1} + \hat{\chi}(N_{t-1} * Q) + \hat{\delta}O_{t-1} + \hat{\phi}C_{t-1} + \varepsilon_t$$

	Coefficients (Standard Error)	t-value	p(t >)	VIF
Constant	-.011 (.006)	1.827	.034	
O _{t-1}	.436 (.067)	6.474	.000	1.05
N _{t-1}	-.245 (.205)	-1.194	.115	1.94
N _{t-1} *Q	.223 (.116)	1.918	.028	1.66
C _{t-1}	-.141 (.029)	-4.916	.000	1.94
F (p) value		= 14.995 (.000)		
R ² (Adjusted R ²)		= .087 (.081)		
One-sample Kolmogorov-Smirnov Z (asymptotic significance, two-tailed)		= 1.549 (.016)		

problem. Durbin-Watson *d* statistic is not used because the model contains a lag dependent variable as one of the regressors (Gujarati 1995). Use of the two-stage least square produces an insignificant coefficient of lag-1 error term (not reported in the table), meaning that the model does not suffer from autocorrelation problem. Glejser test is used to test heteroscedasticity problem. This test indicates (not reported in the table) that the model does not suffer from heteroscedasticity problem. Another diagnostic test conducted is multicollinearity test. As shown in Table 5, the *VIF* (variance inflation factor) of each variable is considerably less than 10, indicating that the perfect multicollinearity problem does not exist. The calculated *F* (p) value of Model 1 is 14.995 (.000). The probability indicates that Model 1 is significant to predict future cash flow. Based on results of the diagnostic and statistical tests, the coefficients of Model 1 described shortly are good estimators.

The coefficient of determination (*R*²) of Model 1 is .087 indicating that 8.7

percent of cash flow variation is simultaneously explained by lag-1 operating income, lag-1 nonoperating income, *Q-N* interaction, and lag-1 cash flow. The *R*² of 8.7 percent is relatively low, which is not uncommon in accounting studies.

Hypothesis Testing and Analysis

As Table 5 presents, the coefficient of operating income is +.436 and significant with the probability value of zero percent, indicating that there is a significantly positive association between operating income and future cash flow. The finding is consistent with Sugiri (2003b). The evidence indicates that the predictive content of operating income is robust. The coefficient of nonoperating income is -.245 with the probability value of 11.5 percent (one-sided tail). Even at significance level of 10 percent (one-sided), nonoperating income is not significantly associated with future cash flow. This is consistent with Sugiri (2003b) that finds insignificant association between nonoperating income and future cash flow

when earnings quality is not considered in the cash flow forecasting model.

The coefficient of Q - N interaction is +.223 with the probability value of 2.80 percent (one-sided tail). At one-sided significance level of 5 percent, the interaction does have a significantly positive association with future cash flow. The positive association indicates that an increase (decrease) in the Q - N interaction positively associates with an increase (decrease) in one-semester ahead operating cash flow. Recalling that earnings quality of every sample firm is considered constant between semesters, the increase (decrease) in the interaction is interpreted as dependent on the increase (decrease) in nonoperating income. In addition, since the levels of earnings quality differ among sample firms, the increase (decrease) in the interaction is interpreted as dependent on the different levels of earning quality. Therefore, a firm with a relatively higher earnings quality, other things held constant, will have more (less) one-semester ahead operating cash flow, depending on the magnitude of increase (decrease) in current semester nonoperating income. The magnitude of change in one-semester ahead operating cash flow, on average, is 22.30 percent of the magnitude of change in the Q - N interaction. All of these interpretations lead to conclude that nonoperating income actually has a predictive content when it interacts with earnings quality. In other words, earnings quality enhances the predictive content of nonoperating income, consistent with the advanced hypothesis.²

The conclusion is consistent with the interpretation that could be addressed to

prior findings based on firms listed in the JSX. *First*, market reaction to non-smoothing firms (high quality earnings firms in current study) is greater than that to smoothing firms (Assih and Gudono 2000). The reaction implies that investors interpret nonsmoothing firms as having more fluctuations in their future cash flow indicated by more earnings surprises. *Second*, after being interacted with income smoothing index, cash flow provides incremental information beyond that provided by earnings surprises (Sutopo 2001). This implies that investors react more to relatively high quality earnings than to relatively low quality earnings.

Conclusions and Limitations

The objective of this study is to empirically test a hypothesis that earnings quality enhances the ability of nonoperating income to predict future operating cash flow. To test the hypothesis, a linear regression model is developed where earnings quality—represented by the magnitude of income smoothing index using Eckle's (1981) formula—is treated as the moderator of nonoperating income. This study finds that the coefficient of Q - N interaction in the presence of operating income, nonoperating income, and cash flow is significantly positive. The evidence supports the proposed hypothesis. That is, earnings quality enhances the ability of nonoperating income to predict future cash flow. The significantly positive association between Q - N interaction and future cash flow is consistent with Assih and Gudono (2000) that document that market reaction to nonsmoothing firms'

² Using lag-2, instead of lag-1, regressors as an additional analysis, this study also finds that earnings quality moderates the predictive content of lag-2 nonoperating income. This seems more complex than originally thought. This additional evidence might lead to future investigation whether the motivation of income smoothing action is more pronounced for annual accounting income.

earnings announcements is greater than that to smoothing firms'. The evidence is also consistent with Sutopo (2001) that documents the incremental information of cash flow after being interacted with income smoothing index. The evidence, however, is not consistent with Salno and Baridwan (2000) that documents indifferent market reactions between smoothing and nonsmoothing firms.

This study contributes to accounting literature by providing empirical evidence that earnings quality—measured by the magnitude of Eckel's (1981) index—enhances the ability of nonoperating income to predict future cash flow, meaning also that earnings quality has a value-relevance.

This study is subject to several limitations, which might affect the results. *First*, the study uses pooled data that do not take into account across-firm differences, takes different percentages of sample, and takes different number of observations among different sectors in the manufacturing industry. That no single firm is selected from Lumber and Wood Products sector is the more pronounced limitation of representativeness of the sample firms. Refinement can be performed by analyzing individual firms as well as by selecting samples from all sectors if data permit. *Second*, in identifying

firms' income smoothing, this study uses Eckel's (1981) formula. The index might not really reflect the artificial income smoothing behavior. As Dascher and Malcolm (1970) define, the smoothed income might be the results of real business decisions. Hence, higher (lower) index identified by this study may not necessarily reflect higher (lower) level of firms' earnings quality. Another limitation of using Eckel's (1981) index is that one firm has only one index. Using the index, this study identifies only one index for every sample firm so that the index is constant from one semester to another. This cannot be ignored because it requires time-series data, which are very limited in this study. Future research might use fundamental signals as proxies for the earnings quality (see, Lev and Thiagarajan 1993; Abarbanell and Bushee 1998). Not only do fundamental signals exert various indicators but also can identify different levels of a firm's earnings quality between periods.

Third, this study assumes that earnings management is a continuous phenomenon, which does not specify a certain motivation of earnings management (AlNajjar and Riahi-Belkaoui 2001). Future research is recommended to use an event study, which identifies a particular motivation of earnings management.

References

- Abarbanell, J. S., and B. J. Bushee. 1998. Abnormal returns to a fundamental analysis strategy. *The Accounting Review* 73 (1): 19-45.
- AlNajjar, F., and A. Riahi-Belkaoui. 2001. Growth opportunities and earnings management. *Managerial Finance* 27 (12): 72-90.
- Assih, P., and M. Gudono. 2000. Hubungan tindakan perataan laba dengan reaksi pasar atas pengumuman informasi laba perusahaan yang terdaftar di Bursa Efek Jakarta. *Jurnal Riset Akuntansi Indonesia* 3 (1) : 35-53.

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- Ayres, F. L. 1994. Perceptions of income smoothing: what managers need to know. *Management Accounting*: 27-29.
- Barth, M. E., D. P. Cram, and K. K. Nelson. 2001. Accruals and the prediction of future cash flow. *The Accounting Review* 76 (1) (January): 27-58.
- _____, W. H. Beaver, and M. A. Wolfson. 1990. Components of earnings and the structure of bank share prices. *Financial Analysts Journal*: 53-60.
- Bowen, R. M. 1981. The valuation of earnings components in the electric utility industry. *The Accounting Review*: 1-22.
- Chandarin, G., and M. G. Tearney. 2000. The effect of reporting of exchange rate losses on the stock market reaction. *Jurnal Riset Akuntansi Indonesia* 3 (1): 1-16.
- Cornell, D. W., and B. Apostolou. 1992. Direct approach to cash flows enhances credit analysis. *Business Credit*: 10-13.
- Dascher, P. E., and R. E. Malcolm. 1970. A note on income smoothing in the chemical industry. *Journal of Accounting Research*. Autumn: 253-259.
- Eckel, N. 1981. The income smoothing hypothesis: Revisited. *Abacus*: 28-40.
- Fairfield, P. M., R. J. Sweeney, and T. L. Yohn. 1996. Accounting classification and the predictive content of earnings. *The Accounting Review* 71 (3): 337-355.
- Financial Accounting Standards Board. 1978. *Statement of Financial Accounting Concepts No. 1: Objectives of Financial Reporting by Business Enterprises*. Stamford, CT: FASB.
- Finger, C. A. 1994. The ability of earnings to predict future earnings and cash flow. *Journal of Accounting Research* 32 (2): 210-223.
- Gonedes, N. J. 1975. Risk, information, and the effects of special accounting items on capital market equilibrium. *Journal of Accounting Research* 13: 220-256.
- Greenberg, R. R., G. L. Johnson, and K. Ramesh. 1986. Earnings versus cash flow as a predictor of future cash flow measures. *Journal of Accounting, Auditing, and Finance*. 266-277.
- Gujarati, D. N. 1995. *Basic Econometrics*. (3rd Ed.). New York: McGraw-Hill International Editions.
- Gumanti, T. A. 2003. An investigation of earnings management in Indonesian manufacturing initial public offerings. *Gadjah Mada International Journal of Business* 5 (3): 345-362.
- Healy, P. M., and J. M. Wahlen. 1998. A review of earnings management literature and its implications for standard setting. *Working Paper*. Harvard Business School. <http://www.ssm.com>.
- Hendriksen, E. S., and M. F. van Breda. 1992. *Accounting Theory*. (5th Ed.). Homewood, IL: Richard D. Irwin, Inc.

- Ikatan Akuntan Indonesia. 2002. Kerangka dasar penyusunan dan penyajian laporan keuangan. *Standar Akuntansi Keuangan*. Jakarta: Penerbit Salemba Empat.
- _____. 2002. PSAK No. 25: Laba atau rugi bersih untuk periode berjalan, kesalahan mendasar, dan perubahan kebijakan akuntansi. *Standar Akuntansi Keuangan*. Jakarta: Penerbit Salemba Empat.
- Isgiyarta, J. 1997. Klasifikasi akuntansi dan kemampuan peramalan laba. *Tesis S2*. Universitas Gadjah Mada. Jogjakarta.
- Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: managerial behavior, agency cost and ownership structure. *Journal of Financial Economics*: 305-360.
- Jin, L. S., and M. Machfoedz. 1999. Faktor-faktor yang mempengaruhi praktik perataan laba pada perusahaan manufaktur di Bursa Efek Jakarta. *Jurnal Riset Akuntansi Indonesia*. 1 (2): 174-228.
- Krishnan, G. V., and J. A. Largay III. 2000. The predictive ability of direct method cash flow information. *Journal of Business Finance & Accounting* 27 (1 and 2): 215-245.
- Lev, B., and S. R. Thiagarajan. 1993. Fundamental information analysis. *Journal of Accounting Research* 31 (2): 190-215.
- Lipe, R. C. 1986. The information contained in the components of earnings. *Journal of Accounting Research* 24 (Supplement): 37-64.
- Maddala, G. S. 2001. *Introduction To Econometrics* (3rd Ed.). Chichester: John Wiley & Sons, Ltd.
- Mendenhall, W., and R. J. Beaver. 1992. *A Course in Business Statistics* (3rd Ed.). Boston: PWS-KENT Publishing Company.
- Munter, P. 1999. SEC sharply criticizes "earnings management" accounting. *The Journal of Corporate Accounting and Finance* (Winter): 31-38.
- Parawiyati, and Z. Baridwan. 1998. Kemampuan laba dan arus kas dalam memprediksi laba dan arus kas perusahaan go publik di Indonesia. *Jurnal Riset Akuntansi Indonesia* 1 (1): 1-11.
- Salno, H. M., and Z. Baridwan. 2000. Analisa perataan penghasilan (*income smoothing*): faktor-faktor yang mempengaruhi dan kaitannya dengan kinerja saham perusahaan publik di Indonesia. *Jurnal Riset Akuntansi Indonesia* 3 (1): 17-34.
- Schipper, K. 1989. Commentary on earnings management. *Accounting Horizon*. 3: 91-102.
- Scott, W. R. 2000. *Financial Accounting Theory* (International Ed.). Upper Saddle River, New Jersey: Prentice-Hall, Inc.
- Sloan, R. G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*: 289-316.
- Subramanyam, K. R. 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics* 22 (1-2): 249-281.

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- Sugiri, S. 2003a. Nilai tambah informasi arus kas: studi empiris di Bursa Efek Jakarta. *Kompak* 9 (September-Desember): 313-329.
- _____, 2003b. The predictive content of disaggregated normal income: An empirical study in the JSX. *Gadjah Mada International Journal of Business* 5 (3): 363-379.
- Supriyadi. 1999. The predictive ability of earnings versus cash flow data to predict future cash flows: a firm specific analysis. *Gadjah Mada International Journal of Business* 1 (2): 113-132.
- Sutopo, B. 2001. Dampak pemoderasi perataan laba terhadap kandungan informasi inkremental arus kas. *Disertasi*. Jogjakarta: Universitas Gadjah Mada.
- Watts, R. L., and J. L. Zimmerman (1990). Positive accounting theory: A ten year perspective. *The Accounting Review* (January): 131-156.
- Werdiningsih, S., and Jogiyanto, H. M. 2001. Pengaruh klasifikasi komponen laba terhadap kemampuan prediksi laba. *Makalah dalam Simposium Nasional Akuntansi IV*. Ikatan Akuntan Indonesia, Kompartemen Akuntan Pendidik: 709-726.
- Wolk, H. I., and M. G. Tearney. 1997. *Accounting Theory A Conceptual and Institutional Approach* (4th Ed.). Cincinnati, Ohio: South-Western College Publishing.