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THE PREDICTIVE CONTENT OF DISAGGREGATED NORMAL INCOME:
An Empirical Study in the JSX*

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The main objective of this study is to examine a hypothesis that the predictive content of normal income disaggregated into operating income and nonoperating income outperforms that of aggregated normal income in predicting future cash flow. To test the hypothesis, linear regression models are developed. The model parameters are estimated based on fifty-five manufacturing firms listed in the Jakarta Stock Exchange (JSX) up to the end of 1997. This study finds that empirical evidence supports the hypothesis. This evidence supports arguments that, in reporting income from continuing operations, multiple-step approach is preferred to single-step one.

Keywords: aggregated normal income; cash flow; disaggregated normal income; nonoperating income; operating income; outperforming; predictive content

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Introduction

The *Ikatan Akuntan Indonesia* or Indonesian Institute of Accountants (hereafter, IAI) (2002) requires firms to classify their earnings into the following major components: (1) normal income, which is further classified into operating and nonoperating income; (2) income from discontinued operations; (3) cumulative effect of changes in accounting principles; and (4) extraordinary items. Such a classification implies that each component has a predictive content. It is also assumed to contain information as to differences in the underlying economic transactions and or events and is useful to provide incremental information (Fairfield et al. 1996; Lipe 1986).

Previous empirical studies find that some earnings components have a power to explain stock returns (e.g., Gonedes 1975; Bowen 1981; Lipe 1986) and to predict future profitability (e.g., Fairfield et al. 1996; Isgiyarta 1997). The findings imply that classified income statement is useful both for explaining stock returns and for predicting future profitability. No known single study, however, empirically examines whether the normal income disaggregated into operating and nonoperating income possesses a capacity to predict future cash flow. This study is aimed to empirically test that the predictive content of disaggregated normal income outperforms that of aggregated normal income.

This study is important for the following reasons. *First*, cash forecasting is very important to investors or creditors, because information about future cash flow is badly needed for investment or credit decision-making. *Second*, this study supports arguments in financial accounting textbooks (e.g., Kieso and Weygandt 1998) that, in reporting normal income (also called income from continuing operations), multiple-step approach is preferred to single-step one.

This study draws sample from manufacturing firms listed in the JSX up to the end of 1997. It differs from Isgiyarta (1997) and Werdiningsih and Jogiyanto (2001) in some respects. *The first difference* lies on the variable to be predicted. While Isgiyarta (1997) and Werdiningsih and Jogiyanto (2001) predict future return on equity (ROE), this study predicts future cash flow. Predicting future cash flow is more important than predicting future ROE because information about future cash flow is what investors or creditors really need for their rational, economic decisions.

The second difference takes on the earnings components. This study employs only operating and nonoperating income. Income from discontinued operations and extraordinary items are excluded for the following reasons. *First*, observations of the two components are considerably few. This study finds only 3 observations of extraordinary items and 2 observations of income from discontinued operations. *Second*, Isgiyarta (1997) finds that those two components are not significant to predict future ROE, consistent with Fairfield et al. (1996). *Third*, Fairfield et al. (1996) conclude that those two components can be ignored in predicting future profitability. Cumulative effect of changes in accounting principles component is excluded because only 6 observations are found. Income taxes component is also excluded as it is found insignificant in Isgiyarta (1997).

The third difference lies on the definition of nonoperating income. This study defines nonoperating income as that reported in the income statements under the heading "other revenues (expenses) and gains (losses)." Isgiyarta (1997) and Werdiningsih and Jogiyanto (2001) define gains (losses) as special items and other revenues (expenses) as nonoperating income. This study combines those two components because they are under the same heading "other revenues (expenses) and gains (losses)." That the special items are found insignificant (Isgiyarta 1997) is another reason to combine the two components. Isgiyarta (1997), Werdiningsih and Jogiyanto (2001), and Fairfield et al. (1996) combine nonoperating income and income taxes. The combining is really difficult to understand because income taxes component indicates taxes levied on both operating and nonoperating income. Nonoperating income that this study does not combine with income taxes is more rational and understandable.

The fourth difference is in the period and in the number of observations. This study uses semiannually, instead of annually, data to get larger observations. To estimate the model parameters, 453 observations are used. Werdiningsih and Jogiyanto (2001) use 300 observations and Isgiyarta (1997) uses 160 observations. Fairfield et al. (1996) in the USA use more than 33.000 observations.

Literature Review

Aggregated Earnings

Barth et al. (2001) state that the ability of an enterprise to generate future cash flow affects its securities. This statement seems to be based on a valuation model in financial business management that the value of a firm constitutes the present value of its future cash flow (Brigham and Gapenski 1991). Based on the valuation model, cash forecasting becomes considerably important. The IAI (2002) strongly assumes that accounting income is useful to predict future cash flow. Previous empirical studies (Parawiyati and Baridwan 1998; Supriyadi 1999) support the IAI's statement. Using a sample of 48 manufacturing firms listed in the JSX for the period of 1989-1994, Parawiyati and Baridwan (1998) find empirical evidence that accounting income is useful to predict both one-year ahead cash flow and one-year ahead accounting income. Supriyadi (1999), based on 62 manufacturing firms listed in the JSX for the period of 1990-1997, finds that either accounting income or cash flow is useful to predict both one-semester and two-semesters ahead cash flow.

Disaggregated Earnings

Separating nonoperating income from operating income is very important because each of them, according to the IAI (2002), is useful for economic decisions (Conceptual Framework,[1] pars. 76 and 80). Previous studies indicate that accounting income components do have information content. Gonedes (1975), for instance, finds that firms with positive special items have higher stock returns than do firms with zero or negative special items. Bowen (1981) finds that each of the allowance for funds used during construction (AFC) and the operating income significantly positively associates with stock returns and that the coefficient of AFC is significantly less than that of operating income. Lipe (1986) finds that: (1) accounting income components —gross profits, general and administrative expenses, depreciation ex-

[1] This term is used here to refer to the IAI's (2002) concept statement, the title of which is *Kerangka Dasar Penyusunan dan Penyajian Laporan Keuangan* (Framework for the Preparation and Presentation of Financial Statements).

pense, interest expense, income taxes, and other items— provide incremental information beyond that provided by their totals; and (2) coefficients of the components significantly positively associate with the persistent measures of the components.

Previous studies also document that accounting income disaggregated into various components has a power to predict future profitability. Fairfield et al. (1996), for instance, investigate whether more classified earnings is superior to less classified earnings in predicting future ROE. Fairfield et al. (1996) classify earnings into five levels. The lowest level, called ROE model, consists of ROE only, whereas the highest level, called FULL model, disaggregates earnings into the following: (1) gross profit; (2) selling, general, and administrative expenses; (3) depreciation expense; (4) interest expense; (5) minority income; (6) nonoperating income; (7) income tax; (8) special items; (9) income from discontinued operation; and (10) extraordinary items. Other models, in between, are NONREC, SPECIAL, and OPINC models. NONREC model consists of income from continuing operations and income from nonrecurring items. SPECIAL model consists of: (1) income before special items, extraordinary items, and discontinued operations; (2) special items; and (3) nonrecurring items. OPINC consists of (1) operating income; (2) nonoperating income and taxes; (3) special items; and (4) nonrecurring items. All variables are deflated by stockholders' equity. Fairfield et al. (1996) find the following empirical evidence. *First*, all models are significant to predict future ROE. *Second*, the predictive ability enhances from ROE model to OPINC model, i.e., OPINC model is better than SPECIAL model; SPECIAL model is better than NONREC model; and NONREC model is better than ROE model. *Third*, further earnings disaggregation into FULL model does not enhance the predictive ability. Based on each coefficient, Fairfield et al. (1996) find and conclude that: (1) special items provide information about future profitability and should not be ignored in predicting future ROE; and (2) extraordinary items and discontinued operations do not provide information about future profitability and can be ignored in predicting future profitability.

Isgiyarta (1997) slightly modifies Fairfield et al. (1996) in the FULL model. Isgiyarta (1997) replaces selling, general, and administrative expenses component with general and administrative expenses component, and then replaces depreciation component with selling expenses component. Isgiyarta (1997) develops his models based on a sample of 40 manufacturing firms listed in the JSX for the period of 1990-1995. Isgiyarta (1997) finds that all models are significant to predict future ROE, but the predictive ability enhances only from NONREC model to SPECIAL model. In conclusion, Isgiyarta (1997) partially supports the hypothesis that more disaggregated earnings are better than less disaggregated earnings in predicting future ROE. With respect to coefficients of the earnings components, Isgiyarta (1997) finds that the following variables are significant: (1) recurring items in NONREC model; (2) income before special items, extraordinary items, and discontinued operations in SPECIAL model; (3) operating income component and nonoperating income and taxes component in OPINC model; and (4) nonoperating income in FULL model. Isgiyarta (1997) also finds that in OPINC model, the coefficient of operating income is greater than that of nonoperating income and taxes.

Werdiningsih and Jogiyanto (2001) replicate Fairfield et al. (1996). Their models are developed based on a sample of 75 manufacturing firms listed in the JSX for the period of 1990-1994. Werdiningsih and Jogiyanto (2001) find that all models are significant to predict future ROE and that the predictive ability enhances from ROE to FULL models. In conclusion, Werdiningsih and Jogiyanto (2001) find that empirical evidence fully supports the hypothesis that there is incremental information from less disaggregated earnings model to more disaggregated earnings model to predict future profitability. Werdiningsih and Jogiyanto (2001), however, do not report significance of the earnings components.

Theory and Hypothesis

Information about a firm's performance is useful to predict the firm's capacity to generate cash flow from the existing resources (IAI 2002). Supriyadi (1999) finds that income from continuing operations as well as cash flow is a good predictor of future cash flow. Parawiyati and Baridwan (1998) find that accounting income is a good predictor of both future cash flow and future accounting income. One of the major components of accounting income is normal income. It represents income from ongoing major operations. Normal income is further classified into operating and nonoperating income. The classification scheme is based on the argumentation that source of an item is relevant in evaluating the ability of a firm to generate its future cash flow (IAI 2002). Fairfield et al. (1996) and Lipe (1986) posit that such a classification contains information as to differences in the underlying economic transactions and or events and is useful to provide incremental information. Fairfield et al. (1996), Isgiyarta (1997), and Werdiningsih and Jogiyanto (2001) find that various disaggregated accounting income models are useful to predict future profitability. Disaggregated accounting income, therefore, should be useful to predict future cash flow.

Operating income as a component of income from continuing operations reflects income stemming from every activity a firm operates as a part of its ongoing major operations (IAI 2002). Operating income, therefore, constitutes information relevant to financial statements users to make rational, economic decisions. As a part of a firm's ongoing major operations, operating income provides a considerable contribution to generate the firm's operating cash flow. The more the operating income of the firm, the more the cash flow will be generated from its ongoing major operations. Conversely, the less the operating income of the firm, the less the cash flow will be from its ongoing major operations. Bowen (1981) finds that operating income in the electric utility has information content. Isgiyarta (1997) finds that operating income significantly positively associates with future profitability. Based on the IAI's (2002) statement that accounting earnings can be used as a good predictor of future cash flow, on the logical relationship between operating income and cash flow, and on the empirical findings (Bowen 1981; Supriyadi 1999; Parawiyati and Baridwan 1998; Isgiyarta 1997) explicated above, operating income as a component of the normal income should also be a good predictor of future cash flow.

Nonoperating income reflects income generated from every activity related to a firm's ongoing major operations. Nonoperating income, therefore, provides a contribution to generate the firm's cash flow. Separating nonoperating income from operating income is important because both of them are useful in rational, economic decision making. The IAI (2002) states that

> "*When gains are recognized in the income statements, they are usually displayed separately because knowledge of them is useful for the purpose of making economic decisions" (Conceptual Framework: par. 76).*

> "*When losses are recognized in the income statements, they are usually displayed separately because knowledge of them is useful for the purpose of making economic decisions" (Conceptual Framework: par. 80).*

Gonedes (1975) finds that firms with positive special items have higher stock returns than do firms with zero or negative stock returns. The finding indicates that special items have information content. Bowen (1981) finds that special items in the electric utility have information content. Isgiyarta (1997) finds that nonoperating income and taxes (in SPECIAL model) and nonoperating income (in FULL model) significantly positively associate with future profitability. Based on the IAI's (2002) strong assumption that accounting income has an ability to predict future cash flow, on the logical relationship between nonoperating income and cash flow, and on the empirical findings aforementioned (Gonedes 1975; Bowen 1981; Fairfield et al. 1996; Isgiyarta 1997), nonoperating income should be useful to predict future cash flow.

Despite components of the normal income, operating income differs from nonoperating income in their permanence. Operating income is more permanent than nonoperating income. The compelling reasons follow. Operating income stems from every activity a firm operates as a part of its ongoing major operations, while nonoperating income comes from every activity related to its ongoing major operations. The underlying transactions and or events of those two components are different. The difference in the underlying transaction and or events causes difference in its ability to predict (Fairfield et al. 1996). Based on the stochastic process, the degree of earnings permanence differentiates the ability of accounting income components to predict (Beaver 1989; Griffin 1977). The more permanent an earnings component, the stronger the predictive content of the component. Since operating income is more permanent than nonoperating income, operating income can be predicted to have a higher contribution to predict future cash flow than does nonoperating income.

Fairfield et al. (1996) state that the degree of measurement error of a variable also distinguishes the predictive ability of an earnings component. The less the measurement error of a component, the stronger the predictive ability of the component. From the measurement error point of view, operating income has less measurement error than does nonoperating income. Operating income, therefore, is stronger than nonoperating income in predicting future cash flow. Bowen (1981) finds that special items and operating income in the electric industry each has information content and that the coefficient of operating income is greater than that of nonoperating income. Lipe (1986) finds that each of gross profits, general and administrative expenses, depreciation expense, interest expense, income taxes, and other items differs in the magnitude of its coefficient and that the difference positively associates with the persistence of the components. Isgiyarta (1997) finds that to predict future profitability, operating income is better than nonoperating income and taxes. Based on the explanation above, the ability of operating income to predict future cash flow should be stronger than that of nonoperating income.

Since the predictive content of operating income is logically different from that of nonoperating income, cash flow forecasting model that uses the aggregated income is misspecified. Previous studies (Supriyadi 1999; Parawiyati and Baridwan 1998) on future cash flow forecasting that use aggregated accounting income as the regressor indicate that all of the income components are restricted to have the same behavior, hence the same coefficients. The restricted model, unfortunately, hides different pieces of information relevant to predict future cash flow. In other words, the restricted model does not take into account the logical differences in the underlying economic transactions and or event; thus, the model loses a piece of relevant information. The following hypothesis, therefore, is advanced.

H_1: *Normal income that is disaggregated into operating income and non-operating income outperforms the aggregated normal income in predicting future cash flow.*

Research Method

Variables and Measurements

The dependent variable of this study is cash flow, which is defined as cash flow from operating activities (C), while the independent variables are operating income (O) and nonoperating income (N). Operating income is defined as income from ongoing major operations and nonoperating income as other revenues (expenses) and gains (losses). The total of these components are pre-taxed income from continuing operations. All variables are measured based on semiannual period data. Use of semiannual, instead of annual, data is aimed to obtain larger observations. All the variables 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 reduce heteroscedasticity. *Second*, total assets are a variable that generates both cash flow and earnings of a firm. *Third*, 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 first semester reports, while the second semester data are manipulated based on annual and first semester reports. Before 1995 cash flow data are manipulated based on income statements and comparative balance sheets. Model parameters are estimated using pooled data. Use of pooled, instead of pure cross-sectional or time-series, data as well as semiannual data described before is aimed to get more observations.

Models

To test the hypothesis, Model 1 and Model 2 are developed. Model 1 is the restricted model, which restricts that the coefficient of operating income is not different from that of nonoperating income. Model 1 is a benchmark, to which Model 2 is compared. Model 2 is the unrestricted model, which separates operating income from nonoperating income. Models 1 and 2 are as follows.

$$C_t = \beta_0 + \beta I_{t-2} + \varepsilon_t \quad (1)$$

$$C_t = \beta_0 + \beta_1 O_{t-2} + \beta_2 N_{t-2} + \varepsilon_t \quad (2)$$

Where,

C = Cash flow from operating activities;

I	=	Aggregated income, defined as before taxed income from continuing operations (normal income). This income is the sum of operating income (O) and nonoperating income (N) in Model 2;
t	=	Period *t* (in semiannual period);
ε	=	Error term;
$\beta_0, \beta_1, \beta_2$	=	Estimated parameters.

Data and Sample Selection

The sample used in this study is drawn from manufacturing companies listed in the JSX up to end of 1997 and listed in the Indonesian Capital Market Directory 1998. Data of this study cover the period of second semester of 1990 to first semester of 1997. Data used to develop the models, described later on, cover the period of second semester of 1990 to second semester of 1996, while those used to validate the models are earnings for the period of first semester of 1996 and cash flow for the period of first semester of 1997. Sources of data are *Pusat Referensi Pasar Modal* (Center for Capital Market Reference) and Multifiling Media Indonesia (MMI) (both are located in Jakarta). To enter into the sample, a firm must meet the following criteria.

1) A firm is still listed in the JSX as of the end of 1997 and listed in the Indonesian Capital Market Directory 1998.
2) A firm's complete financial statements, in Indonesian monetary unit (Rp), the reporting periods of which end on December 31 (June 30) for annual (semiannual) reports are available in either Center for Capital Market Reference or Multifiling Media Indonesia.

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
(-) Annual reporting periods do not end as of December 31	(4)
	146
(-) Financial statements are not stated in Rupiah (Rp)	(1)
	145
(-) Less than 6 consecutive observations	(49)
	96
(-) Complete financial statements are not available causing that consecutive time-series data are missing	(27)
	69
(-) Outliers	(14)
Number of final sample	55
Number of observations	563
Average number of observations per firm	10.24

3) At least, 6 consecutive semiannual reports can be observed (4 observations to develop and 2 observations to validate the model).
4) Outliers, mean plus (minus) 2 standard deviations, are excluded from selected sample.

This study, based on the criteria, produces final sample of 55 manufacturing firms, constituting 36.67 percent of 150 manufacturing firms listed in JSX up to the end of 1997. Table 1 shows the sample selection procedure.

Hypothesis Testing

To test the hypothesis, this study compares between the absolute percentage error (APE) of Model 1 and that of Model 2. Statistically significantly positive differences between the APE of Model 1 and that of Model 2 indicate that there is an incremental predictive content from the aggregated normal income to the disaggregated normal income. Wilcoxon Signed Rank Test is used because, as will be discussed shortly, the APEs are not normally distributed.

Empirical Results

Descriptive Statistics

Table 2 summarizes the descriptive statistics for variables used to estimate the

Table 2. **Descriptive statistics for variables used to estimate the model parameters (n = 453)**

	C_t	O_{t-2}	N_{t-2}	I_{t-2}
Minimum	-.864	-.132	-.082	-.164
Maximum	.454	.388	.183	.453
Mean	.035	.067	-.003	.064
Standard Deviation	.131	.059	.026	.066

C = Cash Flow; O = Operating Income; N = Nonoperating Income;
I = Aggregated Normal Income

Table 3. **Pearson Correlation of Model Variables**

	C_t	O_{t-2}	N_{t-2}	I_{t-2}
C_t	1,000			
O_{t-2}	0,295 *	1,000		
N_{t-2}	0,014	-0,004	1,000	
I_{t-2}	0,276 *	0,916 *	0,399 *	1,000

C = Cash Flow; O = Operating Income; N= Nonoperating Income; I = Aggregated Normal Income; * = Significant at 0.01 (2 tail) model parameters. Minimum and maximum values of: (a) period t cash flow are -.864 and .454; (b) period *t*-2 operating income are -.132 and .388; (c) period *t*-2 nonoperating income are -.082 and .183; and (d) period *t*-2 aggregated normal income are -.164 and .453. Mean and standard deviation values of: (a) period *t* cash flow are .035 and .131; b) period *t*-2 operating income are .067 and .059; c) period *t*-2 nonoperating income are -.003 and .026; and period *t*-2 aggregated normal income are .064 and .066. Only nonoperating income does have a negative mean.

Table 3 presents Pearson correlation of the model variables. The correlation between cash flow and (a) aggregated normal income is .0276; (b) operating income is .295; (c) nonoperating income is .014. The correlation between operating income and (a) nonoperating income is -.004; and (b) aggregated normal income is .916. The correlation between nonoperating income and aggregated normal income is .399. Only the correlation between nonoperating income and cash flow and that between nonoperating income and operating income are not significant.

Models and Econometric Issues

Tables 4 and 5 present the estimated coefficients of Models 1 and 2 and some statistical tests. Diagnostic tests (not reported here) show that the models face autocorrelation problem, resulting in inefficient, but unbiased, predictors (Gujarati 1995). Another econometric issue is that the expected residuals of the models are not normally distributed. According to central limit theorem, however, large observations —as used in this study— approach normal distribution (see, for instance, Mandenhall and Beaver 1988). This nonnormal distribution, therefore, does not affect inferences.

Table 4 shows that the calculated *F* (p) value of Model 1 is 37.18 (0.000). This indicates that Model 1 is significant to predict future cash flow. This finding is consistent with Supriyadi (1999) and Parawiyati and Baridwan (1998). The coefficient of determination (R^2) of Model 1 is .076, which indicates that 7.6 percent of future cash flow variation is explained by the aggregated normal income. This small coefficient of determination is consistent with the small correlation between earn-

Table 4. **Results for Model 1**

$$C_t = \beta_0 + \beta I_{t-2} + \varepsilon_t$$

	Coefficients (Standard Error)	Standardized Coefficients	t-value	p(t>)
β_0	-.001 (.008)		-.061	.476
I_{t-2}	.559 (.092)	.276	6.097	.000
F (p) value	37.180 (.000)			
R^2 ($\bar{R}^2$)	.076 (.074)			

C = Cash Flow; I = Aggregated Normal Income ings and stock prices in market-based accounting research in the USA (Beaver 1989), which indicates that accounting information competes with other information systems (Scott 2001).

As Table 4 also shows, the coefficient of aggregated normal income is .559 with positive sign and significant at the probability value of 0.00. The positive sign indicates that current aggregated normal income positively associates with future cash flow. The magnitude of the coefficient together with the positive sign means that, *ceteris paribus*, two-semester ahead cash flow from operating activities can be predicted to increase (decrease) Rp.559 if there is an increase (decrease) in current semester operating income of Rp1.00.

Table 5 shows that the calculated *F* (p) value of Model 2 is 21.47 (.000). This indicates that normal income disaggregated into operating income and nonoperating income is significant to predict future cash flow. The magnitude of R^2 of Model 2 is 8.7 percent, indicating that 8.7 percent of future cash flow variation is simultaneously explained by operating income and nonoperating income. The R^2 of Model 2 (8.7 percent) is greater than that of Model 1 (7.6 percent), showing a good indication that Model 2 is better than Model 1 in predicting future cash flow.

As Table 5 presents, the coefficient of operating income is .651 with positive sign and significant at the probability value of zero percent (one-sided tail). The magnitude of the coefficient as well as its sign means that current operating income significantly positively associates with future cash flows. This finding is consistent with Isgiyarta (1997) that finds operating income as a significant predictor of future profitability. This consistency means that operating income is a good predictor of both future profitability and future cash flow. This finding also shows that operating income reflects economic reality that generates operating cash flow. As described before, operating income stems from a firm's ongoing major operating activities. Cash flow generated from the activities also will recur from period to period. Therefore, operating income possesses a significant power to predict future cash flow. The finding indicates that operating income cannot be ignored in estimating future cash flow.

Table 5. **Results for Model 2**

$$C_t = \beta_0 + \beta_1 O_{t-2} + \beta_2 N_{t-2} + \varepsilon_t$$

	Coefficients (Standard Error)	Standardized Coefficients	t-value	p(t>)
β_0	-.008 (.009)		-.929	.177
O_{t-2}	.651 (.099)	.295	6.545	.000
N_{t-2}	.077 (.227)	.015	.337	.368
Calculated F (p) value	21.47 (.000)			
R^2 ($\bar{R}^2$)	0.087 (.083)			

C = Cash Flow; O = Operating Income; N = Nonoperating Income

Table 5 also presents that the coefficient of nonoperating income is .077 with positive sign. The probability value of this coefficient is 36.8 percent, indicating that nonoperating income does not statistically significantly positively associate with future cash flow. This finding is neither consistent with the prediction that nonoperating income is significant to predict future cash flow nor with Isgiyarta (1997) that finds significant nonoperating income and taxes in his OPINC model and significant nonoperating income in his FULL model. This inconsistency indicates that nonoperating income is a good predictor of future profitability but not of future cash flow. The finding indicates that nonoperating income can be ignored in estimating future cash flow.

Table 5 also shows that the standardized coefficient of operating income (.295) is greater than that of nonoperating income (.015).) When stated in their standard terms, the regression coefficients reflect the relative importance of the associated independent variables values (Emory and Cooper 1991). Operating income, therefore, is more important than nonoperating income in predicting future cash flow. The degree of importance of the operating income is 19.6 times that of nonoperating income (.295/.015). This is a good indication that the behavior of the two components is different. This also supports that the use of aggregated normal income to predict future cash flow is misspecified.

Hypothesis Testing

This study hypothesizes that normal income disaggregated into operating income and nonoperating income outperforms the aggregated normal income. Testing this hypothesis is essentially examining that the statistical difference between the absolute prediction error (APE) of Model 1 and that of Model 2 is significantly greater than zero or positive. Table 6 summarizes descriptive statistics of the APEs of both Model 1 and Model 2. The table shows that the calculated ratio of skewness (skewness over standard error

Table 6. **Descriptive Statistics of APEs of Models 1 and 2**

Statistics	**N**	**APE of Model 1**	**APE of Model 2**
Minimum	55	.062	.087
Median	55	.866	.832
Maximum	55	7.121	5.381
Mean	55	1.029	.988
Standard Deviation	55	1.040	.940
Skewness	55	4.557	3.339
Standard Error of Skewness	55	.322	.322
Ratio of Skewness = Skewness/Standard Error of Skewness		14.16	10.38

Table 7. **Results for Wilcoxon Signed Rank Test**

$$C_t = \beta_0 + \beta_1 G_{t-2} + \beta_2 OE_{t-2} + \beta_3 N_{t-2} + \varepsilon_t$$

APE of Model 1 less APE of Model 1	N	Mean Rank	Sum of Ranks
Positive Ranks	32	32.66	1,045
Negative Ranks	23	21.52	495
Ties	0		
Total	55		

Test statistics	
z	-2.304 *
One tail asymptotic significance	.011

*Based on negative ranks

of skewness) of Model 1 is 14.16 and that of Model 2 is 10.38. These values are beyond the range between -2 and +2, indicating that the APEs are not normally distributed (see, for example, Kuncoro 2001). Test of normality using Kolmogorov-Smirnov also shows (not reported here) that the APEs of both Models are not normally distributed. Therefore, nonparametric test, specifically Wilcoxon Signed Rank Test, is used to test the hypothesis. Fairfield et al. (1996), Isgiyarta (1997), and Werdiningsih and Jogiyanto (2001) also use this type of test.

Wilcoxon Signed Rank Test essentially tests the differences in median. As presented in Table 6, the median (mean) of APE of Model 2 is .832 (.988) and that of Model 1 is .866 (1.029). The median of APE of Model 2 is less than that of Model 1, indicating that there is enhancement in prediction accuracy from Model 1 to Model 2. Result of hypothesis testing using Wilcoxon Signed Rank Test is shown in Table 7.

Table 7 shows that the calculated z is -2.304 based on negative ranks. The one-tail asymptotic significance of the calculated z is .011. This indicates that the difference between the APE of Model 1 and that of Model 2 is statistically significantly greater than zero or positive. The empirical evidence, therefore, supports the hypothesis that normal income disaggregated into operating income and nonoperating income outperforms aggregated normal income in predicting future cash flow. This finding supports arguments that, in reporting income from continuing operations, multiple step approach is preferred to single step approach. This finding also supports the IAI (2002) that requires firms to classify their income from continuing operations into operating and nonoperating income.

Additional Analyzes

This study conducts additional analyses to capture the predictive content of more normal income disaggregations. Model 3 and model 4 are then developed. In Model 3, operating income in Model 2 is further disaggregated into gross profit (G) and operating expenses (OE), defined as the sum of general and administrative expenses and selling expenses. In Model 4, gross profit in Model 3 is further classified into net sales revenue (S) and cost of goods sold (CS). In both models, nonoperating income (N) is not further disaggregated. Models 3 and 4 are as follows.

$$C_t = \beta_0 + \beta_1 G_{t-2} + \beta_2 OE_{t-2} + \beta_3 N_{t-2} + \varepsilon_t \quad (3)$$

$$C_t = \beta_0 + \beta_1 S_{t-2} + \beta_2 CS_{t-2} + \beta_3 OE_{t-2} + \beta_4 N_{t-2} + \varepsilon_t \quad (4)$$

To run the regressions, *OE* as well as *CS* is given minus sign so that positive (negative) sign in empirical results of the estimated coefficient must be interpreted as negative (positive) association with future cash flow. These two additional models also face econometric issues that Models 1 and 2 do. Another econometric issue is that net sales revenue (S) and costs of goods sold (CS) in Model 4 suffer from multicollinearity problems. If the objective is prediction, however, imperfect multicollinearity is not a serious problem (Gujarati 1995). Results of the estimated models are presented in Tables 8 and 9.

The calculated *F* values of Model 3 (Table 8) and of Model 4 (Table 9) are 14.50 and 10.95 respectively, indicating that those two models are significant. As also shown in Tables 8 and 9, all components of operating income are significant and the coefficient of nonoperating income is insignificant. These findings are consistent with the significance of operating income and insignificance of nonoperating income in Model 2.

Using Wilcoxon Signed Rank Test (not reported here), empirical evidence supports that Model 3 as well as Model 4 outperforms Model 1. However, Model 4 does not outperform Model 3 and Model 3 does not outperform Model 2. These findings show that any disaggregated income models are better than the aggregated income model. Further disaggregations, however, do not add information. In other words, there is no information lost to use operating income and nonoperating income classification for predicting future cash flow. Further disaggregations do not enhance the predictive content.

Table 8. **Result for Model 3**

$$C_t = \beta_0 + \beta_1 G_{t-2} + \beta_2 OE_{t-2} + \beta_3 N_{t-2} + \varepsilon_t$$

	Coefficients (Standard Error)	Standardized Coefficients	t-value	p(t>)
β_0	-.008 (.009)		-.934	.176
G_{t-2}	.638 (.137)	.585	4.676	.000
OE_{t-2}	.619 (.231)	.338	2.682	.004
N_{t-2}	.052 (.230)	.010	.224	.412
F (p) value	14.50 (.000)			
R^2 ($\bar{R}^2$)	.088 (.082)			

C = Cash Flow; G = Gross Profit; OE = Operating Expenses; N = Nonoperating Income

Table 9. **Results for Model 4**

$$C_t = \beta_0 + \beta_1 S_{t-2} + \beta_2 CS_{t-2} + \beta_3 OE_{t-2} + \beta_4 N_{t-2} + \varepsilon_t$$

	Coefficients (Standard Error)	Standardized Coefficients	t-value	p(t>)
β_0	-.007 (.012)		-.534	.294
S_{t-2}	.641 (.136)	1.291	4.709	.000
CS_{t-2}	.647 (.142)	.969	4.554	.000
OE_{t-2}	.618 (.231)	.337	2.678	.004
N_{t-2}	.047 (.233)	.009	.204	.419
F (p) value	10.95 (.000)			
R^2 ($\bar{R}^2$)	.089 (.081)			

C = Cash Flow; CS = Costs of Goods Sold; OE = Operating Expenses; N = Nonoperating Income; S = Net Sales Revenue

Conclusions and Limitations

This study finds that normal income disaggregated into operating and nonoperating income outperforms aggregated normal income in predicting future cash flow. Additional analyses also find that more disaggregations possess predictive content and are better than aggregated normal income. More disaggreations, however, do not enhance the predictive ability of operating and nonoperating income classification. These findings support multiple-step approach in reporting income from continuing operations. In predicting future cash flow, however, one may ignore nonoperating income because this component is found insignificant.

This study is subject to the following several limitations, which may affect the results. *First*, this study uses pooled data that ignore across-firm differences. *Second*, this study takes different number of observations among manufacturing firms. This cannot be ignored because this study selects sample using purposive sampling by certain criteria. Use of the criteria itself cannot be ignored because if random sampling was used, many observations would be missing due to limited data filed by Center for Capital Market Reference and Multifiling Media Indonesia. *Third*, variable measurements for second semester and before 1995 cash flow data, as noted earlier, result from data manipulation, instead of directly observed from financial statements. *Fourth*, result of hypothesis testing is only an approximation due to nonnormal distribution of residuals.

Refinement for future research under the study can be performed by (1) extending time-series and across-firm observations; and (2) use of various lags if data permit. One possible future research is to investigate whether earnings quality moderates the predictive content of nonoperating income. Another possible future research is disaggregating earnings into accruals and cash flow components.

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