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The Relevance of the Fair Value of Securities Investment in Predicting the Income and Stock Prices of the Banking Industry in Indonesia

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***Abstract*— The use of fair value as a measurement in accounting should have relevant information if the information can be used to predict the company's performance in the next period. The purpose of this study is to analyze the relevance of the implementation of the fair value of securities in predicting future income and the stock price of the Banks. This study uses the sample of 23 banks listed on the Indonesia Stock Exchange with time series data of 8 years from 2010-2017. This study uses panel data and regression analysis to examine the effect of independent variables on dependent variables. The independent variable used in this study is the Bank's income and stock price and the dependent variable used is the difference fair value and amortized cost which is the difference between the fair value securities and the amortized cost securities. The controlling variables used in this study consisted of assets, interest income, capital tier 1, non-performing loans and asset-liability repricing gap. The results analysis found that the difference in fair value and the amortized cost has a significant effect on the future income and stock price and the book value of equity has a positive effect on the stock price.**

Keywords— Fair value; Amortized cost; Income; Stock price

I. INTRODUCTION

In September 2016, the Indonesian Institute of Accountants as a professional organization that oversees all accountants in Indonesia has issued a new accounting standard namely Statement of Financial Accounting Standards (PSAK) 71 which regulates changes in requirements related to financial instruments. PSAK 71 explains that the classification and measurement of financial instruments are no longer based on the intention of management to sell or have financial instruments to maturity but based on the contractual characteristics of cash flows and business model entities. The issuance of PSAK 71 is the answer from the world of banking and capital markets that an investment portfolio in a financial instrument conducted by a bank can demonstrate the performance of its securities portfolio, not as a tool to be able to change intentions with the intention of benefiting from changes in accounting treatment that is allowed in PSAK 50 and 55. On the other hand, PSAK 71 still uses fair value concepts such as the previous PSAK namely PSAK 50 and 55 as the measurement of investment value, especially debt securities owned with a business model aim to obtain contractual cash flows and to be traded. The problem is whether the concept of fair value applied in accounting can provide predictive value. The concept of measuring fair value in accounting has been a debate for a long time because the application of the concept of fair value should meet the principles of an accounting conceptual framework wherein an accounting information is said to be relevant if the information can provide predictive value, meaning can be used as a basis for predicting or predicting the future (IAS, 2008).

Several opinions say that debt securities are more relevant if the accounting used is the amortized cost if the intention is to hold the securities until maturity (Park et al., 1999, p. 348). This is due to the purpose of holding debt securities to deal with the high risk of liquidity faced by the bank. In addition, according to Park et al. (1999, p. 348) that debt and equity securities are more relevant in fair value measurement if the intention of bank management is to be resold in the future, this is due to the bank's management strategy to take a better rate of return than holding securities to maturity.

Changes in the measurement in the financial statements that previously used historical values to become fair values after Institute of Indonesia Chartered Accountants (IAI) adopted the International Financial Reporting Standards (IFRS) and International Accounting Standard (IAS) in the Statement of Financial Accounting Standards (PSAK) show positive results because the fair value of the financial statements in bank will provide predictions on the bank's revenue generated in the future. In addition, the application of the concept of fair value in accounting standards contributes to the bank so that it can reflect the fair value of equity presented in the financial statements. This facilitates investors in analyzing the fairness of equity prices that have been presented in the financial statements.

The problem in Indonesia is that investors do not know much or understand the concept of fair value presented in the financial statements can be used to see whether the market price of banking stocks is overvalued or undervalued. But on the

other hand, the problems that arise from bank management are the existence of several accounting treatment methods that use the concept of fair value in financial instruments such as trading, available for sale and held to maturity whose selection depends on management intentions causing misuse of accounting policy selection with the intention to improve published financial reports. Financial statement reports that show good performance do not necessarily indicate the actual condition due to the recognition of unrealized gains or losses on the sale of securities owned. Therefore, this study will analyze whether the application of the concept of fair value on securities can predict future income and banking stock prices in Indonesia. If the results of the study show positive results that fair value of securities can predict income and stock, the banking management has used the concept of fair value with the intention to show the actual performance conditions and conversely investors have understood the financial statements. This study is to examine the relevance of the implementation of measurements of fair value in financial statements in predicting future earnings and stock prices that have never been done in Indonesia, especially the banking industry, so this study wants to know the relevance of applying fair values in predicting future earnings and stock prices Indonesia banking industry.

II. LITERATURE REVIEW

Research on the relevance of fair value of investment securities to income and stock prices has been widely done outside of Indonesia. Several studies have been conducted such as research conducted by Barth et al. (1994) by using a comparison between the fair value of investment securities and fair value based on historical costs. It shows that the fair value of securities has a clearer power than historical costs. The results of this study indicate that historical costs do not provide additional explanatory power for fair value. In the study of Barth et al. (1994) also uses a comparison between the fair value of gains/losses investment securities and gains/losses securities based on historical costs of investment securities, where the results show that the fair value of gains/losses investment securities has a value of relevance that is difficult to apply.

Park et al. (1999) in his research conducted separation between securities available for sale (AFS) and held to maturity (HTM) to examine the differences between AFS and HTM securities against raw returns and abnormal returns. The results show that the ability of AFS securities to provide an explanation exceeds that of HTM securities where AFS securities can explain raw returns and abnormal returns, while HTM securities only explain raw returns. The results of their research show that objective-based securities classification in the disclosure of fair value is relevant to investors in evaluating equity.

Evans et al. (2014) conduct testing using the accumulation of fair value adjustments to future income and stock prices. The results show that the accumulation of fair value adjustments affects the accumulation of fair value and affects the future income of the securities and has relevance to the stock price. In addition to his research also shows that the fair value of interest-bearing securities is a factor that influences stock prices.

The intention of the bank management to have AFS securities to be sold soon reflects more future earnings because changes in fair value of AFS securities have implications for unrealized gains and losses reported in other comprehensive income, so as to predict the gain and loss realized in the future. Accordingly, gains and losses due to changes in the fair value of AFS securities are also part of the book value of bank equity which can reflect the value of equity in the market. This is because the fair value of a security represents the present value of cash flows received in the future. The same as Evans et al. (2014, p 42) gains and losses that have not been realized are not only due to sales but by holding the securities owning these securities will have an opportunity to generate higher or lower profits than expected.

Fair Value of debt securities can provide a gain and loss realized in the next accounting period which can influence the future income. The fair value of the previous period will be compared to the book value of securities with AFS classification that provides benefits will make the intention of bank management to maintain the debt securities until the end of the year because management is optimistic with the increase in fair value for the next period. For investors who understand the management strategy for holding securities, this can certainly predict the income to be achieved in the next period and in the end investors will conduct a bank stock sale and purchase transaction that reflects the performance of the next period and there will be an adjustment in the bank's stock market price in accordance with supply and demand bank's stock. Based on this, this research wants to examine the effect of applying fair value to future income and stock prices in Indonesia by using the research model Evans et al. (2014) with the following hypothesis:

1. $H_0$1: There is no significant effect difference between fair value and amortized cost for investment securities on income.
2. $H_0$2: There is no significant effect difference between fair value and amortized cost for investment securities on the stock price.
3. $H_0$3: There is no significant effect difference between fair value and amortized cost for investment securities on the stock price at the bank have the big asset.
4. $H_0$4 There is no significant effect difference between fair value and amortized cost for investment securities on the stock price at the bank has the small asset.

III. METHOD

A. Sample

The population used in the study are 28 banks that are listed on the Indonesia Stock Exchange consistently in the period of 2010-2017. The sample population is selected through purposive sampling where the selected banks were being sampled based on the following criteria:

1. The Bank publishes financial reports annually from 2010 - 2017 consistently.
2. Companies that have historical stock price data consistently during the observation period.

Based on the predetermined criteria, there are 21 Bank samples that are consistently listed on the Indonesia Stock Exchange, issue financial statements and have quoted market prices in the period 2010 to 2017. Following are the Banks that meet the criteria:

TABLE I. SAMPLE OF THE STUDY

No.	*Code*	*Bank*
1	BBAP	Bank MNC International
2	BACA	Bank Capital Indonesia
3	BBCA	Bank Central Asia
4	BBNI	Bank Negara Indonesia
5	BBNP	Bank Nusantara Parahyangan
6	BBRI	Bank Rakyat Indonesia
7	BBTN	Bank Tabungan Negara
8	BDMN	Bank Danamon
9	BEKS	Bank Pembangunan Daerah Banten
10	BKSW	Bank QNB Indonesia
11	BMRI	Bank Mandiri
12	BNGA	Bank CIMB Niaga
13	BNII	Bank Maybank Indonesia
14	BBLI	Bank Permata
15	BTPN	Bank Tabungan Pensiunan Nasional
16	BVIC	Bank Victoria International
17	INPC	Bank Artha Graha International
18	MAYA	Bank Mayapada Indonesia
19	MEGA	Bank Mega
20	NISP	Bank OCBC NISP
21	PNBN	Bank Pan Indonesia

B. Operational Definition

The dependent and independent variables used and the operational definition in this study are:

TABLE II. RESEARCH VARIABLE

Variable	*Definition*
Income (t+1)	The total interest income on securities and unrealized profit/loss for the next period is divided by the total book value of securities.
Stock Price	Daily average market value per share for a year multiplied by the number of shares outstanding
Difference fair value and amortized cost	The difference in the fair value of FVTPL securities, AFS securities against the value of HTML securities after amortized divided by the total book value of security letters FVTPL, AFS and HTML
The difference between fair value and amortized cost securities	The difference in the fair value of FVTPL securities, AFS securities, and HTML securities value after amortized.
Book Value of Equity	The total book value of equity as of December,31
Interest Securities	Interest income on debt securities divided by debt securities
Assets	Total Assets on December 31
Capital Tier 1	Amount of capital classified tier 1
Non-Performing Loan	Credits whose arrears exceed 60 days
Gap Repricing	The amount of assets with a maturity of less than 1 year is reduced by the total liabilities that are less than 1 year

C. Analysis

In this study, the analytical method used is the descriptive statistical analysis that is used for data analysis by describing the data that has been collected as it is without the aim of making conclusions for generalization. Next to test the hypothesis using

panel data regression which is a combination of time series data and cross-section data. Panel data can explain two types of information, namely: cross-section information on differences between subjects, and time series information that reflects changes in the subject of time. The regression model used to test hypothesis 1 is as follows:

$$\text{Income } (t+1)_{it} = \alpha + \beta_1 \text{DiffFV\_HTML}_{i,t} + \beta_2 \text{IntSec}_{i,t} + \beta_3 \text{Asset}_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where; Income (t + 1) is letter income keeping the following year period, DiffFV_HTML is the fair value of securities with the amortized cost divided by the total book value of the security, IntSec is Interest income on debt securities divided by debt securities and Asset interest income is total assets as of December 31.

Meanwhile the regression model for testing hypothesis 2 is:

$$\text{MVE}_{it} = \alpha + \beta_1 \text{DiffSecFV\_HTML}_{i,t} + \beta_2 \text{BVE}_{i,t} + \beta_3 \text{Asset}_{i,t} + \beta_3 \text{Cap\_Tier 1}_{i,t} + \beta_3 \text{NPL}_{i,t} + \beta_3 \text{Gap\_Rep}_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where; MVE is the average market value of the stock price per year multiplied by the number of shares outstanding, Diff_SecFV_HTML is Difference in fair value of FVTPL securities, AFS securities, and HTML securities value after amortized., BVE is the book value of equity as of 31 December, Asset is total assets as of 31 December, Cap_Tier1 is capital tier 1 divided by the average asset, NPL is the number of outstanding loans above 90 days and Gap_Rep is the number of assets with maturities below one year that need to be repricing less the total liabilities that have maturities below one year that need repricing.

Due to testing using panel data regression analysis, the Hausman test is needed to determine the model used between the random effect model or the fixed effect model. Testing of the Hausman test is done with the following hypothesis:

H_o: The right model is the Random Effect Model

H_a: The right model is the Fixed Effect Model

Hausman Test statistic follows the Chi-Square statistical distribution with degree of freedom as much ask, where k is the number of independent variables. If the Hausman statistic value is greater than the critical value, then H0 is rejected and the right model is the Fixed Effect model whereas on the contrary if the Hausman statistical value is smaller than the critical value then the right model is the Random Effect model. If by using the probability value, if the probability value is <0.05, then reject the null hypothesis, and accept the alternative hypothesis and vice versa.

IV. RESULT AND DISCUSSION

Descriptive statistical analysis in this study aims to provide an overview of the results of the estimation of statistical data in the form of mean, median, minimum values, maximum values and standard deviations of each variable are as follows:

TABLE III. DESCRIPTIVE ANALYSIS

No	*Variable*	*Descriptive Analysis*				
		Min	*Max*	*Mean*	*Median*	*Std.Dev*
1	Income	0.004207	0.285435	0.079585	0.072476	0.038062
2	MVE	72.68000	439555.6	29034.36	11766.37	60667.68
3	DiffFV_HTML	-1.000000	1.000000	0.414176	0.568038	0.632589
4	DifSecfFV_HTML	-23558.29	132513.1	11106.35	3401.024	21837.52
5	BVE	176.9250	175429.7	25262.95	10905.19	38181.39
6	InterSec	0.004207	0.143770	0.063656	0.61714	0.024903
7	Asset	0.000000	1.000000	0.535714	1.000000	0.500214
8	Cap_Tier1	0.044810	0.654304	0.115334	0.107442	0.052779
9	NPL	0.169500	50.95500	2.83300	2131900	4.228058
10	GAP_Rep	-446018.4	52315.76	-46442.50	-8658.762	83320.46

The Hausman test results for hypothesis 1 in the table below show that income as a dependent variable that uses the independent variable DiffFV_HTML, InterSec, Asset indicates that the Random Cross-Section probability value is lower than alpha 0.05 (0.0000 <0.05). So that the null hypothesis is rejected, and the best method used to estimate the panel data model in this study is the Fixed Effect Model (FEM).

TABLE IV. HAUSMAN TEST RESULT FOR HYPOTHESIS I

Test Summary	*Chi-Sq. Statistic*	*Chi-Sq. d.f*	*Prob.*
Cross-Section Random	34.743929	3	0.0000

Output results obtained from regression estimates on dependent variables of income with Fixed Effect Model can be seen in the table as follows:

TABLE V. TEST FOR HYPOTHESIS 1

Variable	Coefficient	St. Error	t-Statistic	Prob.
C	0.071364	0.009788	7.291100	0.0000
DiffFV_HTML	0.029394	0.007378	3.984031	0.0001
IntSec	-0.018700	0.114473	-0.163362	0.8705
Asset	-4.00E-08	3.12E-08	-1.284555	0.2014
No. Of Obs	147			
No. Of Banks	21			
Adj. R^2	0.326940			
F value	4.083466			0.0000

The table above shows that Difference fair value and amortized cost have a positive and significant effect on income a year later where this result shows a 99% confidence level. This means that the application of fair value in securities investment accounting can predict income for the next 1-year period. Variable interest securities and assets have a negative effect but not significant on income for the period 1-year later.

In testing hypothesis 2, it is the same as testing hypothesis 1 where before testing hypotheses requires the Hausman test to determine the use of random effects or fixed effect models for panel data regression analysis. The following table is the Hausman test output on the Stock Price as the dependent variable that uses the independent variable DiffSecFV_HTML BVE, Cap_Tier1, NPL, Gap_Rep and Asset indicating that the Random Cross-Section probability value is higher than alpha 0.05 (0.6967> 0.05). So that the null hypothesis is accepted, and the best method used to estimate the panel data model in this study is the Random Effect Model (REM).

TABLE VI. HAUSMAN TEST FOR HYPOTHESIS 2

Test Summary	***Chi-Sq. Statistic***	***Chi-Sq. d.f***	***Prob.***
Cross-Section Random	3.851736	6	0.6967

Output results obtained from regression estimates on the dependent variable Stock Price with Random Effect Model can be seen in the table as follows:

TABLE VII. TEST FOR HYPOTHESIS 2

Variable	Coefficient	St. Error	t-Statistic	Prob.
C	15188.04	11616.17	1.307491	0.1929
DiffSecFV_HTML	0.812899	0.165070	4.924563	0.0000
BVE	1.202008	0.259537	4.631350	0.0000
Asset	-0.150974	0.052317	-2.885729	0.0044
CAP_TIER1	-14073.60	28013.69	-0.502383	0.6161
NPL	-58.57723	380.1089	-0.154106	0.8777
GAP_REP	-0.081122	0.055081	-1.472759	0.1428
No. Of Obs	168			
No. Of Banks	21			
Adj. R^2	0.550254			
F value	35.05351			0.0000

The results of hypothesis testing show that the Difference variable fair value and the amortized cost has a significant positive effect on the stock price, this indicates that the application of fair value can predict the stock price. A positive influence shows that an increase in fair value on investment securities gives a positive response from investors to the expected return on the investment in the future. In addition, the Book Value of Equity variable also has a positive effect on the stock price, this indicates that the use of fair value accounting on bank assets and liabilities shows that it has relevance to the stock price. Assets have a negative and significant effect on the stock price, indicating that the ability of the bank's management in asset management to generate revenue has not met investor expectations because of the many risks inherent in the bank that require high returns expected by investors.

To better understand how assets to affect the relationship of independent variables to the stock price, panel data regression analysis is needed by separating banks that have big assets and small assets. The separation is done by calculating the median of the total assets of 21 banks, the result is that banks that have assets above the median are categorized as banks that have big assets while banks that assets below the median are categorized as banks that have small assets. In testing this hypothesis, there was an addition of the held to maturity (HTM) securities value variable (Amort_Sec) that had been amortized to see the

relationship between the application of fair value and the stock price. Due to the addition of HTM securities, there were only 8 banks that had big assets and 5 banks that had small assets because only 13 of them had invested in HTM securities during the period 2010-2017 consistently. Banks that have big and small assets below as follows:

TABLE VIII. BANK CLASSIFICATION BASED ON ASSET

Big Assets		***Small Assets***	
Code	Bank	Code	Bank
BBCA	Bank Central Asia	BBNP	Bank Nusantara Parahyanan
BBNI	Bank Negara Indonesia	BSIM	Bank Sinar Mas
BBRI	Bank Rakyat Indonesia	BTPN	Bank Tabungan Pensiunan Nasional
BBTN	Bank Tabungan Negara	BVIC	Bank Victoria International
BDMN	Bank Danamon	INPC	Bank Artha Graha Internasional
BMRI	Bank Mandiri		
BNGA	Bank CIMB Niaga		
PNBN	Bank Pan Indonesia		

Hypothesis testing of the influence of the DifSecfFV_HTML BVE, Amort_Sec, Cap_Tier1 variables on the stock prices of banks that have big assets requires the Hausman test to determine the test using panel data regression analysis between the random effect model and fixed effect models. Hausman test results are as follows:

TABLE IX. HAUSMAN TEST FOR HYPOTHESIS 3

Test Summary	***Chi-Sq. Statistic***	***Chi-Sq. d.f***	***Prob.***
Cross-Section Random	2.549217	4	0.6358

The table that is the Hausman test output on Stock Price as the dependent variable that uses the independent variables DiffFV_HTML BVE, Amort_Sec and Cap_Tier1 shows that the Random Cross-Section probability value is higher than alpha 0.05 (0.6358> 0.05). So that the null hypothesis is accepted, and the best method used to estimate the panel data model in this study is the Random Effect Model (REM). Output results obtained from regression estimates on the dependent variable Stock Price with Random Effect Model can be seen in the table as follows:

TABLE X. TEST FOR HYPOTHESIS 3

Variable	Coefficient	St. Error	t-Statistic	Prob.
C	-29891.65	37429.72	-0.798607	0.4277
DiffFV_HTML_FV	0.267313	0.290261	0.920940	0.3608
BVE	0.718545	0.301048	2.386808	0.0202
Amort_Sec	-0.093071	0.503158	-0.184974	0.8539
Cap_Tier1	552087.2	258241.9	2.137868	0.0367
No. Of Obs	64			
No. Of Banks	8			
Adj. R^2	0.590332			
F value	21.25473			0.0000

The results of testing the hypotheses in the table above show that the Difference fair value and amortized cost have a positive and insignificant effect on the stock price, but on the contrary, the test results show the book value of equity and capital tier 1 has a positive and significant effect on the stock price. These results indicate that in banks that have large assets, more transactions are made to buy and sell securities to anticipate the dynamics of market risk. This is done to adjust the duration of the gap between assets and liabilities. Therefore, investors will pay more attention to the fair value of equity and capital tier 1 which is the result of the management of bank assets and liabilities. The same thing was done to test the hypothesis of the influence of the DiffFV_HTML BVE, and Amort_Sec, Cap_Tier1 variables on the stock prices of banks that have small assets where the results of the Hausman test can be seen as follows:

TABLE XI. HAUSMAN TEST FOR HYPOTHESIS 4

Test Summary	***Chi-Sq. Statistic***	***Chi-Sq. d.f***	***Prob.***
Cross-Section Random	38.915265	4	0.0000

Hausman test output results show that the Random Cross-Section probability value is lower than alpha 0.05 (0.0000 <0.05). So that the null hypothesis is rejected, and the best method used to estimate the panel data model in this study is the Fixed

Effect Model (FEM). The output results obtained from the regression estimation on the dependent variable Stock Price with Fixed Effect Model can be seen in the table as follows:

TABLE XII. TEST FOR HYPOTHESIS 4

Variable	Coefficient	Std Error	t-Statistic	Prob.
C	6210.467	2843.962	2.183738	0.0367
DiffFV_HTML_FV	1.750369	0.631519	2.771682	0.0093
BVE	-0.389790	0.766629	-0.508446	0.6147
Amort_Sec	-4.011236	1.816235	-2.208545	0.0347
Cap_Tier1	-33727.88	27334.61	-1.233889	0.2265
No. Of Obs	40			
No. Of Banks	5			
Adj. R^2	0.825925			
F value	24.13024			0.0000

The results of the table above show that Difference fair value and amortized cost have a positive and significant effect on the stock price so that it can be said that in banks that have small assets, the application of fair value on securities investment has relevance to the stock price. This is because banks that have small assets have a large weight of investment in securities against assets compared to banks that have large assets, so the application of fair value is more likely to predict future cash flows that have a fundamental relationship to the stock price. This result also has a negative and significant value on held to maturity (HTM) securities that have been amortized from the stock price. This result shows the premium/discount on amortized HTM securities has relevance to interest payments received and receipts from repayment at the maturity date which are cash flows received by the bank in the future that are predictable and have a fundamental relationship to the stock price.

V. CONCLUSION

Difference fair value and amortized cost have a positive and significant effect on income a year later where this result means that the application of fair value in investment accounting for securities can predict income for the next 1-year period. The difference in fair value and amortized cost also has a significant positive effect on the stock price, this result shows that fair value implementation can predict the stock price. These results provide findings that the increase/decrease in fair value of securities investment gets a response from investors on the expected returns from the investment in the future. In addition, the book value of equity also has a positive effect on the stock price, this shows that the use of fair value accounting on bank assets and liabilities shows relevance to the stock price. This study found that banks that have big assets, the fair value of equity and capital tier 1 is more likely to have relevance to the stock price because investors are more likely to pay attention to information regarding the management of assets and liabilities that contribute to the fair value of the equity recorded, because the application of PSAK 71 to be carried out by the Bank can provide value relevance to the stock price. This is because banks will need a greater reserve of losses in applying PSAK 71. This study also found that in banks that have small assets, the difference fair value and amortized cost have a positive and significant effect on the stock price. From these findings, it can be concluded that banks that have a high investment in securities against total assets can predict future cash flows and have relevance to the stock price. Like the difference in fair value and amortized cost, the value of amortized HTM securities has relevance to the stock price because the information can predict future cash flows.

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