

Sajnog, Artur

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The role of comprehensive income in predicting banks' future earnings

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**The role of comprehensive income in predicting banks'
future earnings**

Artur Sajnóg

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Artur Sajnog

asajnog@uni.lodz.pl

Department of Business Analysis and Strategy, Institute of Applied Economics and Informatics, Faculty of Economics and Sociology, University of Łódź, Rewolucji 1905 r. no. 41, 90-214 Łódź

The role of comprehensive income in predicting banks' future earnings

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Keywords: *comprehensive income; net income; financial reporting; predictive power; banks*

Abstract

Research background: In the economic literature there are many arguments presented by critical supporters and opponents of measuring and reporting comprehensive income. There is a justified need to examine the relevance and usefulness of comprehensive income, especially the predictive power of comprehensive income for forecasting future earnings. It may be assumed that the comprehensive income has a better predictive power for future bank performance than net income, because this measure includes many elements, presented in the statement of changes in equity.

Purpose of the article: The major subject in this paper is the evaluation of the usefulness of comprehensive income for predicting banks' future earnings. Realization of the fundamental objective of this paper was centered around the main research hypothesis, stating that in economic practice of banks listed on the Warsaw Stock Exchange it can be assumed that there is a positive predictive power of financial result in forecasting financial standing of these entities.

Methodology/methods: The research comprised bank joint-stock companies listed on the Warsaw Stock Exchange (qualified on 15.09.2016). Empirical data for the study was obtained from the quarterly financial statements (the period from 2009 to 2015) from EMIS. The research method was the regression analysis conducted by means of Spearman's rank correlation coefficient and by two regression models in two versions.

Findings & Value added: The research showed that the analyzed bank companies were characterized by a diversity usefulness of comprehensive income for predicting banks' future earnings. Nevertheless, it must be stressed that the calculated Spearman's rank correlation coefficients confirm in most instances a positive character of dependence between the comprehensive income and future return ratios. The results of the estimation of econometric models shows the positive association of comprehensive income with future profitability of banks.

Introduction

Profit of every economic entity is a measurement of enterprise effectiveness, on the other hand it is an instrument of wealth growth that is identified with comprehensive income (Hendriksen, & van Breda, 2002, pp. 294-295; Szychta, 2012, p. 66). Within the first concept the financial result that is calculated based on current operating profit is treated as a measurement of management effectiveness that undoubtedly concerns basic enterprise activity and is generally characterized by continuity and repetitiveness. According to the concept of comprehensive income, profit is generated when a value of net assets of entity (equity) at the end of accounting period is higher than their value at the beginning of that period. In these terms, capital is identified with wealth while expressing a value that was generated or lost by an enterprise in a given period.

The main purpose of the paper was to verify a research hypothesis stating that in economic practice of banks listed on the Warsaw Stock Exchange it can be assumed that there is a positive predictive power of comprehensive income in forecasting financial standing of these entities. Justification of the purpose of study results from high usefulness of presenting comprehensive income in financial reporting not only in the banking sector (Eccher *et al.*, 1996; Evans *et al.*, 2014; Park *et al.*, 1999; Petroni & Wahlen, 1995; Venkatachalam, 1996). These aspects of comprehensive income of banks are a result of providing reliable information that shape a picture of future effects of activity of these entities, enabling to undertake and control creating and realization of future conditions, ways and results of action. Furthermore, revealing bank comprehensive income and its changes allows users of financial statements to make proper reclassification and calculation of more adequate volumes of future earnings than while doing so based on a traditional profit and loss account. Ignoring some values in calculating net profit (loss) can, on the one hand, lead to manipulating or polishing financial results, on the other, it can limit access to important information that influence predictive value of presented results of activity and development of banks.

Research Methodology

Presented empirical research concerns banking companies listed on the Warsaw Stock Exchange (as of 15 September, 2016). In order to realize the aim of the study, a 7-year research period was adopted i.e. years between 2009-2016 in the aftermath of the need to prepare statements of comprehensive income by Polish listed companies from January 1, 2009. Thor-

ough analysis covered quarterly financial statements of banks¹ where, due to availability of data, the last studied accounting period was the second quarter of 2016. Empirical data was taken from the EMIS (Emerging Markets Information Services) database and from the websites of analysed companies.

Presented research problem is realized on the basis of evaluation of profitability of analysed companies by means of traditional ratio analysis and using accounting measures. Analysis of dependencies between comprehensive income in a given reporting period and selected measures of profitability in absolute and relative terms in subsequent accounting periods, was conducted by means of Spearman's rank correlation coefficients while using *t* statistics to study significance of these dependencies.

A leading dimension of evaluation of predictive power of comprehensive income in shaping future profitability of banks was oriented at using two single equation models (M1 and M2) in two versions (A and B) i.e. influence of comprehensive income in *t* period on profitability in *t+1* and *t+2* periods (Bratten *et al.*, 2016, p. 290) (see table 1).

Table 1. Analytical forms of applied single equation models

Model version	Analytical form
M1A	$\ln NI_{t+1} = \alpha_0 + \alpha_1 \times \ln NI_t + \alpha_2 \times \ln CI_t + \alpha_3 \times \ln A_t + \alpha_4 \times (\ln NI_t \times \ln A_t) + \mu$
M1B	$\ln NI_{t+2} = \alpha_0 + \alpha_1 \times \ln NI_t + \alpha_2 \times \ln CI_t + \alpha_3 \times \ln A_t + \alpha_4 \times (\ln NI_t \times \ln A_t) + \mu$
M2A	$ROA_{t+1} = \alpha_0 + \alpha_1 \times ROA_t + \alpha_2 \times \ln CI_t + \alpha_3 \times \ln A_t + \alpha_4 \times (ROA_t \times \ln A_t) + \mu$
M2B	$ROA_{t+2} = \alpha_0 + \alpha_1 \times ROA_t + \alpha_2 \times \ln CI_t + \alpha_3 \times \ln A_t + \alpha_4 \times (ROA_t \times \ln A_t) + \mu$

Marks:

NI_t – net income, CI_t – comprehensive income, ROA_t – return on asset.

Source: own study on the basis of (Bratten *et al.*, 2016).

Taking into account the fact that enterprise profitability is associated with productivity of specific outlays (assets, capital, sales) and determines a scale of generated profits, the measures of bank profitability in absolute and relative terms used in these models were calibrated by means of volume of total wealth of a given bank (Bratten *et al.*, 2016, p. 290). This type

¹ For two banks (SANTANDER and UNICREDIT) due to lack of individual reports data from consolidated financial statements was used.

of approach is justified by excluding a possible impact of scale of conducted activities on bank comprehensive incomes.

In the abovementioned models time asymmetry between periods that were profitable for banks (profits) and unprofitable (losses) should be taken into consideration (Basu, 1997, pp. 3-37). However, bearing in mind values of quarterly earnings generated by 16 analysed banks, in which in 95% of analysed accounting periods positive financial results were noted, it was assumed that the problem of asymmetry was minimized and what followed, no additional artificial variables were introduced (Braumoeller, 2004, pp. 807-820).

Predictive power of comprehensive income – overview of literature

Total financial result, defined in the literature as global and overall, is also referred to as comprehensive income. It is understood as a change in equity that appeared as a result of transactions and events other than changes resulting from transactions with owners acting as shareholders (Buk, 2013, p. 9). It can be stated that comprehensive income comprises all elements of profit and loss account as well as “other comprehensive income”, which includes: changes from revaluation of wealth elements, actuarial profits and losses from programmes of specific employee benefits, profits and losses resulting from recalculating a position of financial statement of an entity active abroad, profits and losses from revaluation of elements of financial assets available for sale as well as an effective part of profits and losses connected with a hedging instrument within cash flow hedges. Other comprehensive income provide information about potential profits or losses, which an entity realizes in the subsequent periods, and which already caused these changes in a current period (see figure 1).

Comprehensive income is a clearer financial result than net profit for users of reporting as, among others, it expresses a bigger potential of enterprise to generate profits in the future (Kanagaretman *et al.*, 2009, p. 352), is more consistent and compliant with the theory of enterprise valuation (Dhaliwal *et al.*, 1999, p. 45), shows a higher correlation with rates of return on shares (Biddle, & Choi, 2006, pp. 1-32), and above all, it seems to be less vulnerable to accounting manipulations and implementation of a strategy of legal or illegal management of financial result (Chambers *et al.*, 2007, p. 561).

In literature provides some statements that comprehensive incomes are an irrelevant and inconstant resulting item (elements of other comprehensive income are characterized by the biggest volatility) (Goncharov, & Hodgson, 2011, pp. 27-59), to a slight extent they are linked to a rate of

return on shares, they are unreliable reflection of final measurement of enterprise performance as well as they do not help to forecast future flows and revenues (Dhaliwal *et al.*, 1999, p. 45; Barton *et al.*, 2010, pp. 753-89). Statement of comprehensive income additionally includes external and unclear components (Rees, & Shane, 2012, p. 794), which diminish a possibility of predicting long-term results (O’Hanlon, & Pope, 1999, pp. 459-482) and show different usefulness in creating enterprise value (Louis, 2003, pp. 1027-1047).

Figure 1. Comprehensive income against changes in equity

Changes in equity			
Comprehensive income			Investments and payments for owners
Resulting income/costs	Capital income/costs		
Net income		Balance sheet corrections of current period	Other chang- es in equity (not for owners)
Income	Aggregate effects of changes in equity resulting from accounting policy		

Source: (Gerbaulet, 1999, p. 54).

Critics of the category of comprehensive income also indicate that changes in fair value that is a base for evaluation of comprehensive income, are only temporary and related to short-term movements in the market, which have not much in common with expectations concerning future financial results (Chisnall, 2001). As a result, comprehensive income is more volatile than categories of traditional financial results (Barth *et al.*, 1995; Hodder *et al.*, 2006) and is subject to a bigger measurement error that weakens reliability and predictive value of this economic category (Landsman, 2007). Furthermore, there is an opinion that using a fair value to evaluate enterprises contributed to market crash in the years 2007-2009, forcing, first of all, banks to use unjustified corrections down to fair values of assets, leading at the same time to a diametrical decrease in market value (Bhat *et al.*, 2011; Bowen, & Khan 2014).

Results of empirical studies

The results of empirical studies show that calculated Spearman's rank correlation coefficients indicate a positive character of dependencies between comprehensive income achieved by examined banks in a given quartile (CI_t) and future net income (NI_{t+1} and NI_{t+2}). What is important, analysed dependencies turned out to be statistically significant and showed a considerable impact of comprehensive income on the future profitability of banks in absolute terms (see table 2).

Table 2. Spearman's rank correlation coefficients between analysed categories

Relations	Values of correlation coefficients	Statistical significance (level 0,05)
CI_t vs. NI_{t+1}	0,799	YES
CI_t vs. NI_{t+2}	0,784	
CI_t vs. ROA_{t+1}	0,448	
CI_t vs. ROA_{t+2}	0,444	

Source: own study on the basis of quarterly financial reports of companies available in EMIS.

Conducted analysis of multiple regression that was necessary to evaluate four single equation economic models (M1A, M1B, M2A, M2B), with one dependent variable and four independent variables showed that directions of impact of the main independent variable ($\ln CI_t$) on dependent variables ($\ln NI_{t+1}$, $\ln NI_{t+2}$, ROA_{t+1} , ROA_{t+2}) were positive, and estimated parameters at this variable proved statistically significant at confidence level of 0,05. At the same time it can be indicated that future profitability of analysed banks, both in absolute and relative terms, was positively influenced comprehensive income (see table 3).

It has to be undeniably emphasized that values of estimated parameters at the $\ln CI_t$ variable were, yet, lower than at $\ln NI_t$ and $\ln ROA_t$, whose influence on dependent variables also proved statistically significant. This situation can be translated into slightly weaker predictive power of comprehensive income in forecasting bank profitability, contrary to net income and return on total assets, calculated by means of a traditional financial result.

Table 3. Results of estimation of M1A, M1B, M2A, M2B models

Model version (dependent variable)	Independent variables	Parameter values	t Statistics	Test significance level	Critical value t_{α} when $\alpha = 0.05$	Coefficient of determination R^2
M1A ($\ln NI_{t+1}$)	$\ln NI_t$	0,775	2,846	0,005	1,960	0,69
	$\ln CI_t$	0,180	2,964	0,003		
	$\ln A_t$	0,483	2,960	0,003		
	$\ln NI_t \times \ln A_t$	-0,030	-1,154	0,249		
M1A ($\ln NI_{t+2}$)	$\ln NI_t$	0,615	2,266	0,024		0,70
	$\ln CI_t$	0,396	6,613	0,000		
	$\ln A_t$	0,512	3,148	0,002		
	$\ln NI_t \times \ln A_t$	-0,035	-1,385	0,167		
M1B (ROA_{t+1})	ROA_t	3,290	7,363	0,000		0,43
	$\ln CI_t$	0,242	3,327	0,001		
	$\ln A_t$	-0,205	-2,481	0,014		
	$ROA_t \times \ln A_t$	-0,387	-5,899	0,000		
M2B (ROA_{t+2})	ROA_t	-0,268	-0,851	0,395	0,29	
	$\ln CI_t$	0,031	0,609	0,543		
	$\ln A_t$	-0,042	-0,736	0,462		
	$ROA_t \times \ln A_t$	0,088	1,889	0,060		

Statistically significant independent variables are shown in bold.

Source: Own study on the basis of quarterly financial reports of companies available in EMIS.

It is worth stressing that in the fourth model (M2B) a direction of influence of ROA_t variable on dependent variables was negative. However, in this only model, estimated parameters at all independent variables proved statistically insignificant at the confidence level of 0,05, thereby, relations between examined categories cannot be unequivocally confirmed.

Conclusions

Presented results of studies on the role and significance of comprehensive income in forecasting profitability of selected banks indicate numerous important and complex problems concerning a process of management of information about financial results of entities. An important role of comprehensive income in shaping future gains is visible in increasingly wider

application of fair value as a basis for evaluation of elements of assets and liabilities of economic entities in recent years.

Analysis of collected and processed figures concerning examined banks points out that there are positive dependencies between comprehensive income and future gains of these entities, both in absolute and relative terms. Estimated coefficients of correlation confirmed that there is a positive relation between analysed categories, however, the character of these relations was either significant or moderate, but, what is important, statistically significant. Estimated values of parameters of four economic models also indicated a positive direction of influence of comprehensive income on future financial net results and return on total assets, which is confirmed by the set research hypothesis about a positive predictive power of comprehensive income in shaping future financial standing of entities.

While forecasting bank profitability it must be emphasized that there is a certain dominance of net income category and return on assets over comprehensive income, which enables to reflect, among others, effects of combined influence of many media and components of profitability, which however, create premises of conducting further deepened theoretical-empirical studies. Hence, presented results should be regarded as a foundation for further theoretical studies as well as empirical studies on the predictive power of comprehensive income, its components, in particular, in shaping future financial results of bank. They cannot, yet, claim to be regarded as generalized reflections and scientific conclusions.

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