

Accounting Rules on Loan Losses and Security Gains Contribute to Earnings Management for the Banking Industry in Sri Lanka

G. K. Suren W. de Chickera^{1,2*} and Liu Qi¹

¹*School of Accounting, Zhongnan University of Economics and Law, Wuhan, P. R. China.*

²*Department of Accounting, Sri Lanka Institute of Advanced Technological Education, Galle, Sri Lanka.*

Authors' contributions

This work was carried out in collaboration between both authors. Author GKSWC designed the study, wrote the protocol, managed the analysis and wrote the first draft of the manuscript. Author LQ finalized the manuscript for publication. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/SAJSSE/2019/v3i3330104

Editor(s):

(1) Dr. Gerald Aranoff, Professor, Department of Economics and Business Management, Ariel University, Israel.

Reviewers:

(1) H. L. Garbharran, University of Technology, South Africa.

(2) Imam Mukhlis, Universitas Negeri Malang, Indonesia.

Complete Peer review History: <http://www.sdiarticle3.com/review-history/48329>

Received 27 January 2019

Accepted 10 April 2019

Published 24 April 2019

Original Research Article

ABSTRACT

One of the most serious concerns presently facing the accounting profession is the growing complexity, extension, and significance of issues adjoining fair value measurements. Many researchers and practitioners criticized the fair value accounting and blame for it causing economic failure. This paper studies licensed commercial banks and the financial institution listed under the Colombo stock exchange to examine the association between fair value accounting and earnings management. In this research, we are examining the provisions for loan loss and discretionary security gains and losses by introducing the fair value assets and liabilities. We used the statistical methodology followed by Beatty et al. (2002) to test the banks reported fair value assets and liabilities associated with provisions for loan loss. We test several robustness tests and sensitivity analysis for our research design. We use both the current year and one-year ahead data test the provision for loan loss, discretionary security gains, and losses after controlling bank-specific features. We found evidence that; banks reported fair value assets and liabilities are positively

*Corresponding author: Email: dechickera@gmail.com;

associate with provision for loan loss. We found the evidence that the level 2 fair value assets and liabilities are a predominant determination for the association between provisions for loan loss. Our evidence is consistent with past research and persuades us that banks use fair value measurements to manage the earnings.

Keywords: Provision for loan loss; earnings management; fair value; level 2 fair value assets and liabilities; IFRS 13; security gains and losses.

1. INTRODUCTION

One of the most serious concerns presently facing the accounting profession is the growing complexity, extension, and significance of issues adjoining fair value measurements. The Statement of Financial Accounting Concepts No. 8 (2010) of the Financial Accounting Standard Board (FASB) defines relevance, and faithful representation is the fundamental features of financial information quality. The fast expansion of different kinds of fair value measurements techniques will raise complexity, volatility, increased sensitivity to economic fluctuations. Accordingly, the change from the traditional historical cost-based accounting system to the market based fair value accounting system creates the opportunity to research the impact of a fair value measurement system on the earnings management [1]. As he mentions *“fair-value accounting is represents a potentially sea-changing development in the accounting environment. Fair-value accounting essentially follows from the explicit rejection of the concept of conservatism by standard setters in the newly proposed conceptual framework for financial reporting (IASB, 2008). Changing to a fair-value-based accounting system portends a marked shift from the traditional historical cost-based accounting model upon which our existing earnings quality research is based. How a fair value accounting model is likely to impact earnings quality, and what earnings quality will look like under such a model is very much an open question”*. Accordingly, to change in the traditional historical cost-based accounting system into the market based fair value accounting system; create the opportunity for our existing research-providing problem of what is the impact of a fair value measurement system on the earnings management?

The increasing application of fair value accounting in financial reporting has given rise to a range of challenges for those in developing nations. These challenges included lack of technical knowledge, the prevalence of inactive markets in developing countries, difficulties

associated with the variation in techniques used to ascertain fair values across different industries, general complexities in ascertaining fair values, and the incorporation of future events and conditions into valuations. The business organizations in the transitional and developing economies in South Asia depend on a large extent on equity capital. Many business organizations, the majority of debt capital consists of a bank loan or other kind of loan rather than the debt capital instruments. Thus, the debt capital market in the transitional and developing economies in South Asia is under-developed. Hence, the attention of financial reporting has oriented towards the needs of investors on equity markets, bankers and other financial institution who provide the loans and other users in the transitional and developing economies in South Asia.

2. RELATED LITERATURE AND METHODOLOGY

The association between fair value accounting and earnings management is a key research design choice; however, before we establish the association between fair value accounting and earnings management, we focus on the evolution of earnings management and models & proxies for earnings management. The empirical research studies of earnings management are mostly base on a proxy for management discretion. However, that evidence is controversial due to complications originate from the earnings management proxies [2,3]. According to the McNichols [3], the accruals use as a proxy for management discretion in two ways. Such as the specific accrual approach and the aggregate accruals approach. The specific accruals approach is adopting a specific portion of discretionary, such as provision for loan loss for banks [4], provision for bad debt, and provision for property-casualty insurers. The aggregate accruals have several issues of correlated omitted variables and low power. The most commonly used of Jones 1991 models are like to be correlated with performance and growth.

The 'earnings management define as the tactical exercise of managerial discretion in manipulating the earnings figure reported to outside viewers. The 'earnings management accomplished principally by timing reported or actual economic events to transfer the earnings between periods. The earnings can manage by actually swiping income over time. It is simply rearranging an earnings amount from one year to another year. The earnings management arise from the game of information disclosure that managers and external parties must play. The investors make their decisions based on information collect reported earnings announcements. To enhance the investor interest, the manager manages the earnings in a self-serving manner such as to continue with incentives, to enlarge the incentives or to present better their performance, etc.

2.1 Fair Value Accounting

2.1.1 What is it and what are the key arguments?

The primary users of financial statements are the actual and potential investors as per the Financial Accounting Standard Board. Under the fair value accounting, preparation of financial statement required to use market values for more relevant representation of the financial statements. Therefore, under this fair value accounting system, the income statement has documented the potential and not fully realized income and losses due to the recognition of unrealized gains and losses to make even the value of assets and liabilities at their market price even those assets and liabilities do not subject to trade. This indicates the profound change in accounting system compares to the historical cost accounting system. Fair value estimate using expected future cash flows of assets and liabilities more like to have the gain to capture the portion of income accruing for the current year. This could be beneficial for investor motivated on the ability to generate future cash flow from existing assets.

2.1.2 Fair value and discretion in accounting measurement

The fair value defines as the "fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" [5] (IFRS 13.9). The fair value generally

refers to the market value if there are active markets for assets or liability. If active markets are unavailable then fair value calculates using valuation techniques by referring the asset or liability realized in the market. Furthermore, fair value refers to the liquid market value for balance sheet elements, despite that balance sheet elements do not trade in liquid markets. Thus, managers exercise judgment over the measurements. However, this estimation process creates countless opportunities for exercise the earnings management practices which can lead to poor quality of financial reporting [6–12]. Furthermore, bankers, banking regulators, researchers, and many others argue that one of the key factors of the global financial crisis was a fair value measurement paradigm. The fair value measurement paradigm is amplifying the financial crisis by creating a round of dropping prices for causing the financial collapse and thereby escalating the overall risk in the economic system [13].

Where fair value income is becoming unreliable or volatile and frequently being a subject of managerial judgment when the market is distressed or illiquid. Dichev et al. [14] state that CFOs disagree with the current standard setting on a number of issues including the sheer number of promulgated rules, the top-down approach to rule-making, the neglect of the matching principle, and the emphasis on fair value accounting. The accounting system based on fair value helpful for various stakeholders which provide useful information for an economic decision [15]. Ayres et al. [16] provide evidence showing that firms with higher fair value intensity have more accurate analyst earnings forecasts. They find significant positive associations between analyst forecast accuracy and Level 1 and Level 2 fair value measurements and do not find such association for Level 3 measurements. Some show that the hypothesis of an increase in earnings quality after IFRS adoption [17,18]. The study supports the relevance of fair value, as indicated by the predictive ability for performance. According to [19] fair value earnings cannot aggregate into components that can be used to assess firm value, as well as components that provide information about various types to shocks to value, e.g., effects of changes in expected cash flows. This disaggregation is possible because fair value embodies expected return on the firm's assets, as well as current expectations of future cash flows and risk. Thus, fair value earnings can be used to assess firm value. [20] show the

evidence of mandatory adoption of IFRS improves earnings quality in all countries. They further indicate that the impact of mandatory adoption of IFRS on earnings quality is stronger the higher the level of privacy in a country. [21] show a strong relationship between fair value accounting and earning management for US banks; results for European listed banks do not provide any reliable evidence.

Wang and Zhang [22] argue that fair value accounting affects agency conflicts between debtholders and shareholders via its impact on financial reporting. There are many investigate the source of input information used to calculate the fair values to measure the value relevance [23–25]. According to their results, level 1 and level 2 fair values are high value relevant. Besides, if financial statements prepared base on fair values estimation, it is commonly believed that the fair value amount will change from period to period than historical cost base financial reporting system [26].

Beatty et al. [27] examine banks' earnings management incentives by comparing the use of discretionary provisions to avoid earnings decreases for publicly traded versus privately held banks. They find that public banks use more discretion in the provision for loan loss to achieve earnings targets than private banks. If the ability to use provisions for loan losses, losses to manage earnings are limited, then we should find evidence of lower earnings management. Adoption of IFRS has significantly changed earnings management behavior, engaged in relatively greater earnings management when compared to the less risky. The focus on bank fair values arises primarily due to the greater extent of fair value accounting requirements for banks relative to nonfinancial firms and due to the evolution of fair value accounting around banking crises. There is a rich literature based on financial accounting choices of bank holding companies and earnings manipulation practices. Previous research studies elaborate on that banks are motivated to meet regulatory capital requirements and earnings targets and to decrease the taxes. Financial reporting standards require that bank managers estimate provisions for loan loss to reflect changes in expected future loan losses. This process allows them wide latitude for discretion in the estimation of provisions for loan loss. How managers use that discretion and the underlying motivations for their behavior are questions that have received much attention from academics. The objectives

can be accomplished by dealing accruals such as provisions for loan losses, losses or adjusting investment strategies ,loan charge-offs, security gains [27–31]. Banks have an inducement to handle earnings because accounting earnings deliver firm information to investors and play a vital role in firm performance evaluation and accounting-based diminishing. Beatty et al. [27] deliver evidence that public banks report more small earnings growths than private banks. The authors display that public banks are possible to use loan loss provisions and security gains and losses to overcome earnings decreases than private banks.

2.2 Research Design

2.2.1 The provision for loan loss

The provision for loan loss plays a considerable role in bank accounting literature. The investigation of a single accrual to the marginalization of utmost other accruals in the banking literature compares with the literature examining non-financial firms, which tends to study overall earnings, total accruals or total current accruals. The loan loss provisions are accruals of essential importance to bank performance, and because they are assessments of loan losses, loan loss provisions reflect information asymmetry, which is the greater importance of the banking literature.

Banking allows a textured examination of accounting policy choices by focusing on loan loss provisioning behavior. Provision for loan loss is a crucial accounting policy choice that directly influences the volatility and cyclicity of bank earnings, as well as information properties of banks' financial reports with respect to reflecting loan portfolios' risk attributes. While both the FASB and IASB have long required the use of the incurred loss model for provision for loan loss, the complexity of loan portfolios allows substantial scope for discretion within the prescribed rules. When a bank delays recognition of an expected provision for loan loss, it creates an overhang of unrecognized expected losses that carry forward to the future. Loss overhangs can increase capital inadequacy concerns during economic downturns by compromising the ability of loan loss reserves to cover both unexpected recessionary loan losses and loss overhangs from previous periods.

Furthermore, prior research discovers that banks' incentive to achieve earnings is linked to

managers' compensation. Dechow et al. (2010) display that managers have a compensation incentive to employ securitization improvements under SFAS 140. The research based on financial reporting in the banking industry, some research studies precisely observe flexible choice on loan loss provisions that significant accrual of bank holding companies.

The research studies discover that loan loss provisions can be decomposed into a component that might be predicted and another component which is subject to managerial discretion. The market prices these two components differently [4]. Wahlen [32] discovers a positive association between discretionary loan loss provisions and future cash flow increases after controlling for the unexpected change in non-performing loans and unexpected loan charge-offs. When studying earnings management, discretionary provisions for loan loss and discretionary security gains are essential tools used by bank managers for managing earnings. Some researchers provide evidence that bank managers tend to raise discretionary provisions for loan loss and discretionary security gains in periods of high operating earnings in order to lower volatility of reported earnings. These findings supported by many studies focusing on banks [4,28,33]. All these studies concluded that, in the discretionary provisions for loan loss and discretionary security gains used by banks as a mechanism for aggressive earnings management, mainly for stock market purposes. Therefore, in this research define the following hypothesis

H1 Higher the dependence on market value by fair value accounting for measuring assets and liabilities the more likely earnings management.

To deliver more straight evidence of earnings management, we examine two components of banks' earnings that researchers have shown are subject to manipulation: provision for loan loss and security gains and losses realized. Bank managers can possibly escape reporting small earnings declines by undervaluing the loan loss provision by using fair value measurements. Bank managers may also be able to avoid a small decline in earnings by realizing more security gains or fewer security losses. Therefore, in this research define the following two testable hypotheses

H1a: The Banks reporting fair values assets and liabilities more likely have a positive association with the provision for loan loss of the banks after controlling for other bank-specific features.

H1b: Banks reporting higher level 2 fair values assets and liabilities are more likely to have a positive association with the provision for loan loss of the banks after controlling for other bank-specific features.

Beaver et al. (1989) argue that this positive association between market value and loan loss reserves suggests that managers convey to the market that the bank's earnings power can withstand an increased provision for loan loss hit to earnings. Elliot et al. (1991) also find a positive market reaction to large banks' announcements of increased provisions for loan loss for their problem loans made to lesser-developed countries. In contrast, these large banks experience negative market returns surrounding Bank of Boston's announcement of large charge-offs, when the loans are written-off as uncollectible. Elliot et al. (1991) posit that the market interprets loan loss provisions favorably as a signal of banks' willingness to deal with the problem loans and that the market reacts negatively to charge-offs because charge-offs reduce a bank's capital adequacy ratio, while provisions for loan loss actually increase the capital adequacy ratio during this period [34]. Griffin et al. (1991), examining a similar context, also interpret the positive market reaction for large banks' additions to provisions for loan loss as credible signals about banks' intentions and abilities to resolve the bad debt situations [35].

2.3 Research Methodology

We discuss the research methodology including the research design, by providing empirical evidence related to the research. Empirical research provides the sources of empirical information, the measurement variables, and measurement procedures in the analysis of fair value accounting. In addition to we discuss the variable construction and the sample selection procedure in this section.

2.3.1 Discretionary provisions for loan loss and discretionary security gains and losses

We intend to use the following regression models from [27] to estimate the discretionary provisions for loan loss and discretionary security gains and losses.

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FV_{i,t} + \beta_4 RLL_{i,t} + \beta_5 RELOAN_{i,t} + \beta_6 CLOAN_{i,t} + \beta_7 DILOAN_{i,t} + \beta_8 AGLOAN_{i,t} + \beta_9 HLOAN_{i,t} + \beta_{10} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FVL1_{i,t} + \beta_4 FVL2_{i,t} + \beta_5 FVL3_{i,t} + \beta_6 RLL_{i,t} + \beta_7 RELOAN_{i,t} + \beta_8 CLOAN_{i,t} + \beta_9 DILOAN_{i,t} + \beta_{10} AGLOAN_{i,t} + \beta_{11} HLOAN_{i,t} + \beta_{12} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$SGLR_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 TSGL_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t} \quad (3)$$

<i>PLL</i>	Provision for loan loss divided by the average total loans ((beginning + End)/2)
<i>Log(TA)</i>	Natural log of total assets
<i>ΔNPL</i>	change in nonperforming loans, divided by the average total loans
<i>FV</i>	The sum of assets and liabilities measured at fair value divided by the total assets at the starting of the year
<i>FVL1</i>	The sum of level 1 assets and liabilities measured by fair value divided by the total assets at the starting of the year
<i>FVL2</i>	The sum of level 2 assets and liabilities measured by fair value divided by the total assets at the starting of the year
<i>FVL3</i>	The sum of level 3 assets and liabilities measured by fair value divided by the total assets at the starting of the year
<i>RLL</i>	Reserve loan loss balance at the start of the year divided by the total loans at the end of the year
<i>RELOAN</i>	loans to the real estate divided by total loans
<i>CLOAN</i>	commercial loans divided by total loans
<i>DILOAN</i>	loans to depository institution loans divided by total loans
<i>AGLOAN</i>	loans to agricultural productions divided by total loans
<i>HLOAN</i>	loans to households and individuals divided by total loans
<i>OLOAN</i>	Other loans, divided by total loans
<i>SGLR</i>	security gains and losses realized the end of year divided by total assets at the starting of the year
<i>TSGL</i>	total security gains and losses, (security gains and losses realized plus unrealized security gains and losses) divided by total assets at the starting of the year

According to prior research, we have identified the provisions for loan loss are change with changes of nonperforming loans [4,27,28,36–38]. Also, provisions for loan loss are increasing with increasing of bank size [27]. Further, provisions for loan loss are fluctuate based on loan size [4,27,32]. Subsequently, past research found that the security gains and losses realized are enhancing with the total security gains and losses [27,31]. The above two regression models are derived from the variation model used by [27]. We add few fair value measurements variable to original regression models to estimate the impact of fair value changes on provision for loan loss. The impact of overall total fair value changes on provision for loan loss is tested by the equation (1). In equation (2), we further study the fair value changes in the fair value hierarchy by replacing *FV* with *FVL1*, *FVL2*, and *FVL3*. We anticipate that the coefficient of *FV* is positive

and significant. If the coefficient of *FV*, *FVL1*, *FVL2*, and *FVL3* are positive and significant, provide us the evidence of fair value measurements more likely enhance the provision for loan loss of the bank including financial institutions.

Equation (2) assess the influence of the three fair value levels independently. By referring to the fair value hierarchy, the level 1 fair value assets and liabilities are directly observable inputs from the active markets, indicating that managers have no or minimal discretion when measuring the level 1 fair value assets and liabilities. Therefore, we do not expect that level 1 fair value assets and liabilities significantly influenced the earnings management. Hence, we do not expect that the coefficient of *FVL1* is significant. However, the manager can use indirectly observable from inactive market inputs or use

internal measurement models base on judgment and assumptions, when it comes to level 2 and level 3 fair value assets and liabilities. This situation implies that managers can have more discretion over level 2 and level 3 fair value assets and liabilities measurements. However, the manager has more discretion over the level 3 fair value assets and liabilities, banks manager apparently, are not able to manipulate the earnings due to a few reasons. Then, the bank required to report more details disclosure when it comes to the level 3 fair value assets and liabilities under the IFRS 13 and central banks regulations. This reflects that many banks reported that few items of level 3 fair value assets and liabilities compared to level 1 and level 2. According to the bank's financial statements, many banks reported level 3 fair value assets and liabilities as freehold land and buildings. The fair value changes in freehold land and building is directly credited to the equity rather than to earning other than freehold land buildings. Hence, the bank managers have a small room of earning discretion over the level 3 fair value assets and liabilities. Therefore, we do not expect to coefficient on level 3 fair value assets and liabilities are significant. We expect that the level 2 fair value assets and liabilities have more room for manipulation compared to the other two levels. This is due to use of indirectly observations from inactive market inputs and due to less disclosure requirements compared to level 3 fair value assets and liabilities under the IFRS 13. Therefore, we expect that the coefficient of *FVL2* is positive and significant.

In order to get better estimation from the equations, we control the change in bank size, changes in nonperforming loans, bank types, and changes in cash flows subsequent to the [27]. The change in total assets controls for growth, and the natural log of the total assets controls for bank size. If more extensive and higher- growth

banks are increasingly more profitable or more likely to manage earnings to avoid reporting a decline in earnings, then the coefficients on the change in total assets (ΔTA) and natural log of the total assets ($Log(TA)$) should be positive. The change in nonperforming loans ΔNPL controls for the effect of changes in the quality of the loan portfolio on nondiscretionary changes in earnings. The change in nonperforming loans (ΔNPL) is an important predictor of the loan loss provision, which is a major component of earnings. We use the change in nonperforming loans because our dependent variable is the change in earnings. An increase in nonperforming loans should lead to an increase in the loan loss provision and a decrease in earnings; therefore, we predict a negative coefficient on ΔNPL . The variables such as loans to the real estate divided by total loans (RELOAN), commercial loans divided by total loans (CLOAN), loans to depository institution loans divided by total loans (DILOAN), control for changes in the characteristics of the loans in each bank's portfolio because these characteristics may affect nondiscretionary changes in earnings. We do not predict how these variables are likely to affect the sign of provision for loan loss. We estimate the discretionary provisions for loan loss and the discretionary security gain and losses by using residual estimation from equation (1) and equation (3) respectively. These residuals further used for the logistic regression analysis.

2.3.2 Data and sample selection

As stated at the following table, there are 299 companies listed in the Colombo Stock Exchange as of 29th March 2018 with a Market Capitalization of Rs. 3,032.7Bn, and out of 299 listed companies. Our sample base on the period from 2013 to 2017, which cover the adopting period of IFRS 13 fair value measurement. Sri Lanka adopted IFRS Standards and the IFRS for

Table 1. Panel A: Sample selection

	Bank-years	Unique Banks
Listed companies		299
Bank, financial and insurance sector	310	62
Less: Insurance companies	(45)	(09)
Banking institution including financial companies	265	53
Less: Banks with missing years data	(15)	(03)
Less: Observations with missing data on fair value assets and liabilities	(30)	(06)
Final sample	220	44

SMEs Standard for all companies including banking institution. Those standards became operative for financial statements for periods beginning on or after 1 January 2012 (“IFRS - Sri Lanka,” n.d.). All domestic companies whose securities trade in a public market are required to use Sri Lanka Financial Reporting Standards (SLFRS), which are nearly identical to IFRS Standards.

Table 1 panel A; present the sample selection procedure. The initial sample includes 62 banking, financial and insurance companies which all the listed in the Colombo Stock Exchange of the period of 2013 to 2017. We reduce the 09 insurance companies that not cover our research scope and initial sample includes 265 bank-year observations for 53 individual banks. From the initial bank-year sample of 265, we reduce banks with missing data and the missing data on fair value assets and liabilities. Therefore, the final sample includes 220 bank-years observations for 44 individual banks.

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistics

3.1.1 Composition of fair value assets and liabilities

Fig. 1 examines the composition of fair value assets and liabilities of the banks. According to Fig. 1, the total of fair value assets and liabilities, 89% are fair value assets, and 11% are fair value liabilities.

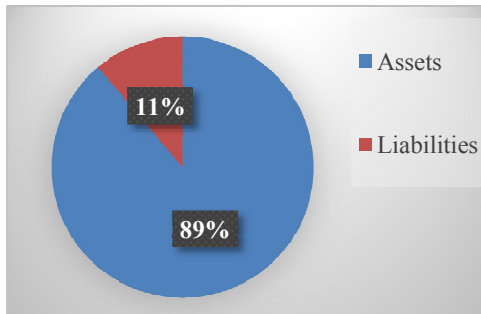


Fig. 1. Panel A: Composition of fair value assets and liabilities

Fig. 2 shows the composition of fair value assets and liabilities in each level of the fair value hierarchy. The level 2 fair value assets and liabilities account for around 54% of total fair

value assets and liabilities measurements, and the level 2 assets and liabilities is the most significant component of the fair value measurements. The level 1 fair value assets and liabilities account for around 32% of total fair value assets and liabilities measurements and the level 1 assets and liabilities is the second most significant component of the fair value measurements. The level 3 fair value assets and liabilities account for around 14% of total fair value assets and liabilities measurements the level 3 assets and liabilities is the lowest component of the fair value measurements.

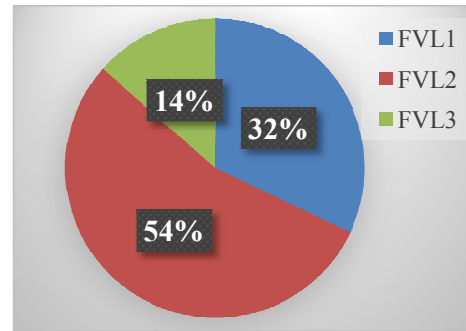


Fig. 2. Composition of fair value assets and liabilities on a fair value hierarchy

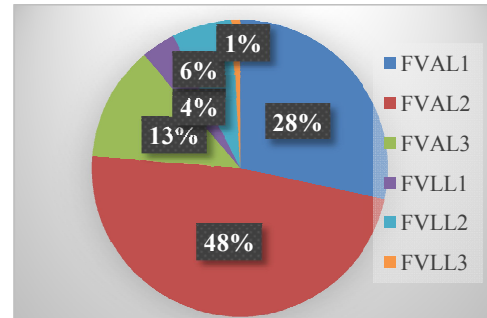


Fig. 3. Composition of fair value assets and fair value liabilities on each level of the fair value

Fig. 3 shows the composition of fair value assets and fair value liabilities separately in each level of the fair value hierarchy. The level 2 fair value assets account for around 48% of total fair value assets and liabilities measurements and it almost nearly half of the total fair value measurements. The level 1 fair value assets account for around 28% of total fair value assets and liabilities measurements, and the level 1 assets are the second most significant component of the fair value measurements. The level 3 fair value assets account for around 13%

of total fair value assets and liabilities measurements. The level 2 fair value liabilities is account for 6% of the total fair value assets and liabilities measurements, while the level 1 fair value liabilities and The level 3 fair value liabilities are account for 4% and 1% of the total fair value assets and liabilities measurements respectively.

3.2 Multivariate Tests

In here, we estimate the provisions for loan loss after introducing the fair value variables. Table 2 presents the statistical output of provisions for loan loss including fair value assets liabilities. The adjusted R-Squire equal to 41.2%. As we expected, the sign of *FV* is positive and significant. The coefficient of *FV* accounted as 0.019 at 0.000 significant level. This implies that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks. This finding is consistent with our first and second hypothesis.

Furthermore, the variable of *Log(TA)*, ΔNPL , are significant at 1% level. Further, we explain the natural log of the total assets controls for bank size. If more extensive and higher- growth banks are increasingly more profitable or more likely to manage earnings to avoid reporting a decline in earnings, then the natural log of the total assets (*Log(TA)*) should be positive. The change in nonperforming loans ΔNPL controls for the effect

of changes in the quality of the loan portfolio on nondiscretionary changes in earnings. The change in nonperforming loans (ΔNPL) is an essential predictor of the loan loss provision, which is a major component of earnings. We use the change in nonperforming loans because our dependent variable is the change in earnings. An increase in nonperforming loans should lead to an increase in the loan loss provision and a decrease in earnings; therefore, we predict a negative coefficient on ΔNPL , and we got the negative coefficient. The variable of *RLL*, *AGLOAN*, *HLOAN*, and *OLOAN*, significant at 1% level while variable *CLOAN* significant at 5% level. However, *RELOAN* and *DILOAN* are not significant. We do not predict how these variables are likely to affect the sign of provision for loan loss. However, among this variable, the reserve for loan loss give the highest contribution to provisions for loan loss while and the coefficients *RLL* is 0.824 at 1% significant level. This implies that the large reserve for loan loss at the starting of the year will report the more substantial provision for loan loss. In addition to that the bank size also positively and significant association with Provisions for loan loss and all other significant variables are negatively associated with provisions for loan loss. Our primary research finding implies that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks. This finding provides evidence for our first and second hypothesis.

Table 2. Estimating provisions for loan loss including fair value assets and liabilities

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FV_{i,t} + \beta_4 RLL_{i,t} + \beta_5 RELOAN_{i,t} + \beta_6 CLOAN_{i,t} + \beta_7 DILOAN_{i,t} + \beta_8 AGLOAN_{i,t} + \beta_9 HLOAN_{i,t} + \beta_{10} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.031	(0.005) ***
Log(TA)	0.002	(0.001) ***
ΔNPL	-0.251	(0.000) ***
FV	0.019	(0.000) ***
RLL	0.824	(0.000) ***
RELOAN	- 0.112	0.251
CLOAN	- 0.027	(0.035) **
DILOAN	0.003	0.721
AGLOAN	0.017	(0.000) ***
HLOAN	0.041	(0.005) ***
OLOAN	- 0.041	(0.000) ***
N	220	
Adj R-sq	0.412	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 3. Estimating provisions for loan loss including level of fair value assets and liabilities

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FVL1_{i,t} + \beta_4 FVL2_{i,t} + \beta_5 FVL3_{i,t} + \beta_6 RLL_{i,t} + \beta_7 RELOAN_{i,t} + \beta_8 CLOAN_{i,t} + \beta_9 DILOAN_{i,t} + \beta_{10} AGLOAN_{i,t} + \beta_{11} HLOAN_{i,t} + \beta_{12} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.033	(0.011) **
Log(TA)	0.003	(0.000) ***
ΔNPL	-0.312	(0.000) ***
FVL1	0.001	0.124
FVL2	0.012	(0.000) ***
FVL3	0.000	(0.000) ***
RLL	0.756	(0.000) ***
RELOAN	- 0.142	0.254
CLOAN	- 0.031	(0.036) **
DILOAN	0.002	0.542
AGLOAN	0.015	(0.002) ***
HLOAN	0.051	(0.000) ***
OLOAN	- 0.034	(0.003) ***
N	220	
Adj R-sq	0.435	
Year variables	Yes	

, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 4. Estimating provisions for loan loss one-year ahead

$$PLL_{i,t+1} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FV_{i,t} + \beta_4 RLL_{i,t} + \beta_5 RELOAN_{i,t} + \beta_6 CLOAN_{i,t} + \beta_7 DILOAN_{i,t} + \beta_8 AGLOAN_{i,t} + \beta_9 HLOAN_{i,t} + \beta_{10} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.042	(0.012) **
Log(TA)	0.025	(0.000) ***
ΔNPL	-0.125	(0.005) ***
FV	0.009	(0.012) **
RLL	0.758	(0.000) ***
RELOAN	- 0.103	0.425
CLOAN	- 0.051	(0.024) **
DILOAN	0.010	0.524
AGLOAN	0.031	(0.001) ***
HLOAN	0.026	(0.031) **
OLOAN	- 0.021	(0.000) ***
N	220	
Adj R-sq	0.235	
Year variables	Yes	

, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively.

Table 3 present the statistical results of provisions for loan loss including fair value assets liabilities in more deeply by considering levels of fair values. In Table 7, we replace the FV with FVL1, FVL2, and FVL3 to measure the impact of three levels of fair value hierarchy. The coefficient on FVL1 is positive but insignificant. This indicates that managers have no or minimal discretion when measuring the level 1 fair value assets and liabilities due to level 1 fair value assets and liabilities are directly observable inputs from the active markets. As we expect and

consistent with our third hypothesis, the FVL2 coefficient estimate to positive 0.012 and p-value estimate to 0.000 which is significantly influenced provision for loan loss. This provides evidence of banks report more level 2 fair value assets and liabilities in the financial statements are more likely to manage the earnings to avoid the earnings falls. The FVL3 coefficient also significant however influence is negligible. Consequently, the positive relationship between total fair values assets & liabilities and provision for loan loss increases more likely determined by

the level 2 fair values assets and liabilities compared to the other two levels of fair value hierarchy.

3.3 Robustness and Sensitivity Tests

We implement several robustness checks to assess the sensitivity of our results to our research design choices.

3.3.1 The provisions for loan loss one-year ahead and fair value assets and liabilities

First, we change the time period base on the assumption that the change in fair value may influence the future earnings of the banks. The fair value, itself defined as the present value of future expected cash flow. Therefore, change in

fair value today will affect the future earnings of the banks. To capture this, we estimate the regression between provisions for loan loss one-year ahead on fair value variables. Similar to earlier, first we used the total fair value as a proxy and then replaced the *FV* with *FVL1*, *FVL2*, and *FVL3* to measure the impact of three levels of fair value hierarchy. The coefficient on *FV* is positive and significant. Table 4 presents the statistical results of provisions for loan loss one-year ahead on fair value variables. Similar to earlier, consistent with the above results, the sign of *FV* is positive and significant. The coefficient of *FV* accounted as 0.009 at 0.012 significant level. This implies that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks. This finding is continuously consistent with our first and second hypothesis.

Table 5. Estimating provisions for loan loss one-year ahead and level of fair value assets and liabilities

$$PLL_{i,t+1} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FVL1_{i,t} + \beta_4 FVL2_{i,t} + \beta_5 FVL3_{i,t} + \beta_6 RLL_{i,t} + \beta_7 RELOAN_{i,t} + \beta_8 CLOAN_{i,t} + \beta_9 DILOAN_{i,t} + \beta_{10} AGLOAN_{i,t} + \beta_{11} HLOAN_{i,t} + \beta_{12} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.124	(0.016) **
Log(TA)	0.008	(0.000) ***
ΔNPL	-0.284	(0.000) ***
FVL1	0.001	0.181
FVL2	0.008	(0.000) ***
FVL3	0.000	(0.000) ***
RLL	0.574	(0.002) ***
RELOAN	- 0.439	0.351
CLOAN	- 0.064	(0.027) **
DILOAN	0.004	0.341
AGLOAN	0.021	(0.000) ***
HLOAN	0.037	(0.001) ***
OLOAN	- 0.046	(0.005) ***
N	220	
Adj R-sq	0.325	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 6. Estimating security gains and losses realized one-year ahead

$$SGLR_{i,t+1} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 TSGL_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.002	(0.421)
Log(TA)	0.003	0.214
TSGL	0.184	(0.000) ***
N	220	
Adj R-sq	0.325	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 7. Estimating provisions for loan loss with a dichotomous variable of FVD

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FVD_{i,t} + \beta_4 RLL_{i,t} + \beta_5 RELOAN_{i,t} + \beta_6 CLOAN_{i,t} + \beta_7 DILOAN_{i,t} + \beta_8 AGLOAN_{i,t} + \beta_9 HLOAN_{i,t} + \beta_{10} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.971	(0.075) *
Log(TA)	0.067	(0.000) ***
ΔNPL	-0.568	(0.000) ***
FVD	0.011	(0.007) ***
RLL	0.864	(0.000) ***
RELOAN	-0.201	0.651
CLOAN	-0.057	(0.067) **
DILOAN	0.081	0.821
AGLOAN	0.057	(0.000) ***
HLOAN	0.064	(0.036) **
OLOAN	-0.016	(0.000) ***
N	220	
Adj R-sq	0.191	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 8. Estimating provisions for loan loss with a dichotomous variable of FVDL1, FVDL2, and FVDL3

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FVDL1_{i,t} + \beta_4 FVDL2_{i,t} + \beta_5 FVDL3_{i,t} + \beta_6 RLL_{i,t} + \beta_7 RELOAN_{i,t} + \beta_8 CLOAN_{i,t} + \beta_9 DILOAN_{i,t} + \beta_{10} AGLOAN_{i,t} + \beta_{11} HLOAN_{i,t} + \beta_{12} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	0.251	0.821
Log(TA)	0.014	(0.000) ***
ΔNPL	-0.331	(0.000) ***
FVDL1	0.002	0.328
FVDL2	0.004	(0.000) ***
FVDL3	0.001	0.241
RLL	0.641	(0.000) ***
RELOAN	-0.327	0.412
CLOAN	-0.081	(0.047) **
DILOAN	0.011	0.341
AGLOAN	0.036	(0.000) ***
HLOAN	0.087	(0.000) ***
OLOAN	-0.067	(0.000) ***
N	220	
Adj R-sq	0.261	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

Table 5 presents the statistical results of provisions for loan loss one-year ahead including fair value assets liabilities in more deeply by considering levels of fair values. Similar to earlier, in Table 5, we replace the FV with FVL1, FVL2, and FVL3 to measure the impact of three levels of fair value hierarchy.

The coefficient on FVL1 is significant, but the impact is negligible. This indicates that managers

have no or minimal discretion when measuring the level 1 fair value assets and liabilities due to level 1 fair value assets and liabilities are directly observable inputs from the active markets. As we expect and with consistent with our third hypothesis, the FVL2 coefficient estimate to positive 0.008 and p-value estimate to 0.000 which is significantly influenced provision for loan loss one-year ahead. Hence, this provides evidence of banks report more level 2 fair value

Table 9. Re-construction using median regression

$$PLL_{i,t} = \alpha + \beta_1 \log(TA)_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 FV_{i,t} + \beta_4 RLL_{i,t} + \beta_5 RELOAN_{i,t} + \beta_6 CLOAN_{i,t} + \beta_7 DILOAN_{i,t} + \beta_8 AGLOAN_{i,t} + \beta_9 HLOAN_{i,t} + \beta_{10} OLOAN_{i,t} + YEARDUMMY_{i,t} + \varepsilon_{i,t}$$

Variables	Coefficient estimate	p-value
INTERCEPT	1.521	(0.524)
Log(TA)	0.091	(0.000) ***
ΔNPL	-0.941	(0.000) ***
FV	0.008	(0.000) ***
RLL	0.725	(0.000) ***
RELOAN	-0.342	0.421
CLOAN	-0.071	(0.007) **
DILOAN	0.061	0.641
AGLOAN	0.034	(0.000) ***
HLOAN	0.024	(0.054) *
OLOAN	-0.051	(0.000) ***
N	220	
Adj R-sq	0.214	
Year variables	Yes	

*, **, *** indicate significance at 10%, 5%, 1% level, (two-tailed), respectively

assets and liabilities in the financial statements are more likely to manage the earnings to avoid the earnings falls. The *FVL3* coefficient is significant, but the influence is negligible. Consequently, the positive relationship between total fair values assets & liabilities and provision for loan loss increases more likely determined by the level 2 fair values assets and liabilities compared to the other two levels of fair value hierarchy.

Table 6 shows the estimation results of discretionary security gains and losses one-year ahead data. The adjusted R-squire estimate to 32.5%. The variable *TSGL* estimate to 0.184 at 1% significant level. Which mean total security gains and loss is positive and significantly associated with the discretionary security gains and losses. Overall, the estimated results are consistent with prior research [4,27,31] of discretionary loan loss provision models and discretionary security gains and losses models.

3.3.2 Estimating provisions for loan loss with a dichotomous variable

Second, we re-estimated equations by reintroducing *FV* with a dichotomous variable of *FVD*. Further, we elaborate the equation (2), by swapping *FVL1*, *FVL2*, and *FVL3* with a dichotomous variable of *FVDL1*, *FVDL2*, and *FVDL3*. We anticipate that the coefficient of *FVD*, *FVDL1*, *FVDL2*, and *FVDL3* are positive and significant. If the coefficient of *FVD*, *FVDL1*, *FVDL2*, and *FVDL3* are positive and significant, provide us the evidence of fair value

measurements more likely enhance a positive association with the provision for loan loss of the banks. Table 7 shows the estimation results of discretionary security gains and losses. The results are consistent with our main results that the coefficient of *FVD* is positive significant. The coefficient of *FVD* accounted as 0.011 at 0.007 significant level. This implies that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks. This finding is continuously consistent with our first and second hypothesis.

Table 8 presents the statistical results of provisions for loan loss including dichotomous variable fair value assets liabilities in more deeply by considering levels of fair values. The consistent with our main results the coefficient on *FVDL1* is insignificant. This indicates that managers have no or minimal discretion when measuring the level 1 fair value assets and liabilities due to level 1 fair value assets and liabilities are directly observable inputs from the active markets. As we expect and consistent with our third hypothesis, the *FVDL2* coefficient estimate to positive 0.004 and p-value estimate to 0.000 which is significantly influenced provision for loan loss one-year ahead. Hence, this provides evidence of banks report more level 2 fair value assets and liabilities in the financial statements are more likely to manage the earnings to avoid the earnings falls. The *FVDL3* coefficient is significant, but the influence is negligible. Consequently, the positive relationship between total fair values assets &

liabilities and provision for loan loss increases more likely determined by the level 2 fair values assets and liabilities compared to the other two levels of fair value hierarchy.

3.3.3 Re-construction using median regression

So far, we have directed the analysis engaging the regression measures by using the mean of the variables. Table 2 suggests that the means of variables slight differ from the median may suggest that the distribution is might not symmetric. To address this, we use an additional testing procedure to construct the median regression. In Table 9, we recorded the results of re-testing original equation using the median regression. We are comparing these results with our main results. The coefficient of *FV* remains positive and significant. Therefore, the median regression methodology supports our main interpretations.

4. CONCLUSION

The fair value accounting is liable for enhancing financial destruction. Many of researchers have criticized and put the blame on it for causing financial failure. The objective of financial reporting is to present the decision-useful financial information about the firm to the stakeholders such as investors, lenders and other creditors, etc. The use of fair value accounting on financial reporting must be investigated base on the requirement of such stakeholders. This paper study the samples of licensed commercial banks and the financial institution listed under the Colombo stock exchange to examine the association between fair value accounting and earnings management. The research study we are examining the provisions for loan loss and discretionary security gains and losses by introducing the fair value assets and liabilities. We used the statistical methodology follow by Beatty et al. [27] to test the banks reported fair value assets and liabilities associated with earnings management both provisions for loan loss. We test several robustness tests and sensitivity analysis for our research design. We use both the current year and one-year ahead data test the provision for loan loss, discretionary security gains, and losses. This research study we are examining the provisions for loan loss and discretionary security gains and losses by introducing the fair value assets and liabilities. We estimate the provisions for loan loss after introducing the fair value variables. Table 6 presents the statistical

output of provisions for loan loss including fair value assets liabilities. As we expected, the sign of *FV* is positive and significant. The coefficient of *FV* accounted as 0.019 at 0.000 significant level. Therefore, our primary research finding implies that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks. This finding is consistent with our first and second hypothesis. Further, we examine the fair value assets liabilities in more deeply by considering levels of fair values. In Table 3, we replace the *FV* with *FVL1*, *FVL2*, and *FVL3* to measure the impact of three levels of fair value hierarchy. The coefficient on *FVL1* is positive but insignificant. As we expect and consistent with our third hypothesis, the *FVL2* coefficient estimate to positive 0.012 and p-value estimate to 0.000 which is significantly influenced provision for loan loss. This provides evidence of banks report more level 2 fair value assets and liabilities in the financial statements are more likely to manage the earnings to avoid the earnings falls. The *FVL3* coefficient also significant however influence is negligible. Consequently, the positive relationship between total fair values assets & liabilities and provision for loan loss increases more likely determined by the level 2 fair values assets and liabilities compared to the other two levels of fair value hierarchy. We implement several robustness checks to assess the sensitivity of our results to our research design choices. All these robustness checks and the sensitivity analysis provide evidence for that banks are reporting fair values assets and liabilities more likely to have a positive association with the provision for loan loss of the banks and the level 2 fair values assets and liabilities is key are determine item use for earnings management. We found the evidence for our hypothesis that banks report more fair value measurements on assets and liabilities to look likely to see fewer earnings volatility due to manager use the fair value measurements, especially level 2 fair value assets and liabilities smooth the earnings.

However, this reading has some limitations. First, we use a sample of banking industry including financial institutions listed under Colombo stock exchange. Generally, the financial industry is highly regulated by Central banks and security & exchange commission. Therefore, these test results cannot generalize to other industries. Second, our tests of the discretionary components of the provision for loan loss and discretionary components security gains and

losses biased toward finding earnings management for both licensed commercial banks and financial institutions. Third, there are maybe unknown variables (and therefore uncontrolled) which may influence our test results. In summary, we find that, consistent with our expectation, 1) banks reported fair value assets and liabilities are positively associate with provision for loan loss. 3) The level 2 fair value assets and liabilities are a predominant determination for the association between banks reported fair value assets and liabilities associated with provision for loan loss. Our evidence is consistent with past research and persuades us that banks use fair value measurements to manage the earnings.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. DeFond ML. Earnings quality research: Advances, challenges and future research. *J. Account. Econ.* 2010;50(2-3):402-409.
2. Dechow PM, Skinner DJ. Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Account. Horizons.* 2000;14(2): 235-250.
3. McNichols MF. Research design issues in earnings management studies. 2000;19:4-5.
4. Beaver WH, Engel EE. Discretionary behavior with respect to allowances for loan losses and the behavior of security prices. *J. Account. Econ.* 1996;22(1-3): 177-206.
5. IASB. Fair value measurement; 2014.
6. Nissim D. Reliability of banks' fair value disclosure for loans. *Rev. Quant. Financ. Account.* 2003;20(4):355-384.
7. Ryan SG. Fair value accounting: Understanding the issues raised by the credit crunch. *Livre blanc {à} Destin. du Counc. Institutional Investors.* 2008;1-2.
8. Fiechter P, Meyer C. Big bath accounting using fair value measurement discretion during the financial crisis. *Development;* 2009.
9. Chen F, Lam KCK, Smieliauskas W, Ye M. Fair value measurements and auditor versus management conservatism: Evidence from the banking industry. *SSRN Electron. J.;* 2010.
10. Hitz JM. Conceptual thoughts on the decision usefulness of fair value accounting. *Eur. Account. Rev.;* 2007.
11. Badia M, Duro M, Penalva F, Ryan S. Conditionally conservative fair value measurements. *J. Account. Econ.* 2017;63(1):75-98.
12. Šodan S. The impact of fair value accounting on earnings quality in Eastern European Countries. *Procedia Econ. Financ.* 2015;32(15):1769-1786.
13. Khan U. Does fair value accounting contribute to Systemic Risk in the Banking Industry? *Columbia Bus. Sch. Res. Pap. Ser.;* 2010.
14. Dichev ID, Graham JR, Harvey CR, Rajgopal S. Earnings quality: Evidence from the field. *J. Account. Econ.* 2012;56(2-3):1-33.
15. Ehalaiye D, Tippett M, van Zijl T. The predictive value of bank fair values. *Pacific-Basin Financ. J.;* 2016.
16. Ayres D, (Sharon) Huang X, Myring M. Fair value accounting and analyst forecast accuracy. *Adv. Account.* 2017;37:58-70.
17. da Silva RLM, Nardi PCC. Full adoption of IFRSs in Brazil: Earnings quality and the cost of equity capital. *Res. Int. Bus. Financ.* 2017;42:1057-1073.
18. Ehalaiye D, Tippett M, van Zijl T. The predictive value of bank fair values. *Pacific Basin Financ. J.* 2017;41:111-127.
19. Mary E. Barth, Wayne R. Landsman. Using fair value earnings to assess firm value. 2018;9(2013):34-40.
20. Houqe MN, Monem RM, Tareq M, van Zijl T. Secrecy and the impact of mandatory IFRS adoption on earnings quality in Europe. *Pacific Basin Financ. J.* 2016;40: 476-490.
21. Tutino M, Pompili M, Tutino M, Pompili M. Fair value accounting and management opportunism on earnings management in banking sector : First evidence; 2018.
22. Wang H, Zhang J. Fair value accounting and corporate debt structure. *Adv. Account.* 2017;37:46-57.
23. Song CJ, Thomas WB, Yi H. Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *Account. Rev.* 2010;85(4):1375-1410.
24. Goh BW, Li D, Ng J, Ow Yong K. Market pricing of banks' fair value assets reported under SFAS 157 since the 2008 financial crisis. *J. Account. Public Policy.* 2015;34(2): 129-145.

25. Kolev K. Do investors perceive marking-to-model as early evidence from FAS 157 disclosure; 2008.
26. Barth ME. Global financial reporting: Implications for U.S. academics. *Account. Rev.* 2008;83(5):1159–1179.
27. Beatty AL, Ke B, Petroni KR, Beatty AL. Earnings management to avoid earnings declines across publicly and privately held banks. *Account. Rev.* 2002;77(3):547–570.
28. Ahmed AS, Takeda C, Thomas S. Bank loan loss provisions: A reexamination of capital management, earnings management and signaling effects. *J. Account. Econ.* 1999;28(1):1–25.
29. Beatty AL, Ke B, Petroni KR. Earnings management to avoid earnings declines across publicly and privately held banks. *Account. Rev.* 2002;77(3):547–570.
30. Beatty A, Chamberlain SL, Magliolo J. Managing financial reports of commercial banks: The influence of Taxes, regulatory capital, and earnings; 1995.
31. Beatty A, Harris DG. The effects of taxes, agency costs and information asymmetry on earnings management: A Comparison of public and private firms. *Rev. Account. Stud.* 1999;4(3/4):299–326.
32. Wahlen JM. The nature of information bank loan in commercial loss disclosures. *Account. Rev.* 1994;69(3):455–478.
33. Healy PM, Wahlen JM. A review of the earnings management literature and its implications for standard setting. *SSRN Electron. J.*; 1999.
34. Elliott RJ, Siu TK, Fung ES. A double HMM approach to Altman Z-scores and credit ratings. *Expert Syst. Appl.* 2014;41(4): 1553–1560.
35. Baiman S, Verrecchia RE, Bainman S, Verrecchia RE. The relation among capital markets, financial disclosure, production efficiency, and insider trading. *J. Account. Res.* 1996;34(1):1–22.
36. Bank loan loss provisions: A reexamination of capital management, earnings management and signaling effects | on Academic. [Online]. Available: https://www.onacademic.com/detail/journal_1000035487215810_6bee.html# [Accessed: 06-Jan-2019]
37. Kanagaretnam K, Krishnan GV, Lobo GJ. Is the market valuation of banks' loan loss provision conditional on auditor reputation? *J. Bank. Financ.* 2009;33(6):1039–1047.
38. Lobo GJ, Yang DH. Bank managers' heterogeneous decisions on discretionary loan loss provisions. *Rev. Quant. Financ. Account.* 2001;16(3):223–250.

© 2019 Chickera and Qi; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle3.com/review-history/48329>