"Influence of financial indicators on earnings management behavior: evidence from Vietnamese commercial banks"

| AUTHORS | Tran Quoc Thinh (iD) https://orcid.org/0000-0003-1504-8122 |
| | Tran Ngoc Anh Thu |

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
21	0	8

Tran Quoc Thinh, Ph.D., Associate Professor, Banking University of Ho Chi Minh City, Ho Chi Minh City, Vietnam.

Tran Ngoc Anh Thu, Bachelor of Accountancy, PricewaterhouseCoopers Vietnam Limited, Ho Chi Minh City, Vietnam. (Corresponding author)

Tran Quoc Thinh (Vietnam), Tran Ngoc Anh Thu (Vietnam)

INFLUENCE OF FINANCIAL INDICATORS ON EARNINGS MANAGEMENT BEHAVIOR: EVIDENCE FROM VIETNAMESE COMMERCIAL BANKS

Abstract

The quality of financial disclosures is of great importance than ever; as Vietnam's international economic integration has been accelerating recently. This issue is currently particularly worrying for the banking sector in Vietnam, as banks play a vital role in economic development. However, there is a growing concern that managers tend to manipulate financial information using earnings management techniques to meet analyst expectations and to enhance the firm value in the short term. Such behavior can lead to inappropriateness in the decision-making process of financial statement users, as well as impair firm value in the long term. Therefore, this study examines the impact of factors related to financial indicators on earnings management of Vietnamese commercial banks to give more insight into the issue. The data of this study was collected from a sample of 30 Vietnamese commercial banks during a 5-year period from 2015 to 2019. By using the Ordinary Least Square (OLS) regression method through Eviews 10.0, the findings revealed that financial leverage and loan loss provision have a positive and significant impact on earnings management. Also, bank size and profitability were negatively associated with earnings management. Based on these findings, in the context of Vietnam, the study proposed policy suggestions to improve the quality of accounting information and to assist users of financial statements in recognizing and restricting earnings management in commercial banks.

INTRODUCTION

In general, banks play an essential role in the economic development of a nation. It is a matter of fact that a healthy and transparent banking system is regarded as a decisive factor at all stages of the development process. However, there is a growing concern that the recent trend in international economic integration may put more pressure on banking managers so that they tend to manipulate financial information in order to meet analyst expectations and to enhance firm value. According to the 2018 annual report of the State Bank of Vietnam, the quality of banks' financial information reflected using key financial indicators is not at high level of reliability. Among many financial indicators (FIs), profit is the one that investors are interested in the most and it is, therefore, which managers tend to influence the most. As a result of this manipulation, financial information disclosed in general and information on the enterprise profits in particular become unreliable. This manipulation is also known as earnings management behavior (EMB). The research on factors affecting EMB has attracted great attention from both academia and industry around the world. However, most studies used samples of non-financial enterprises in-

stead of financial ones. In general, empirical results show that FIs, such as profitability ratio (ROE), financial leverage, firm size and liquidity, have had a certain relationship with EMB in both non-financial enterprises and CBs but at different levels (Shen, 2016; Gombola, Ho, & Huang, 2016; Moghaddam & Abbaspour, 2017, Alhadab & Al-Own, 2017). In Vietnam, studies in this regard have been implemented by many authors; similarly, most researchers tend to exclude financial institutions out of their samples. This is because financial institutions are regulated differently and possess typical operation characteristics, leading to several problems regarding the homogeneity of a sample if they are included with other businesses. Recently, only one research on the EMB of CBs in Vietnam was carried out by Tran and Nguyen (2018). Although the authors recognized the impact of financial indicators on EMB of CBs, the study was only concerned with indicators related to the ownership structure. It can be seen that CBs play an important role in maintaining the stability of an economy. Therefore, improving the quality of information related to FIs on the CBs' financial statements is of great importance for ensuring the reliability of financial information and boosting the sustainable development of the banking system and financial markets.

1. LITERATURE

1.1. Related concepts

1.1.1. Earnings management behavior (EMB)

EMB is a "dark area" in which the results of accounting work have been "cut" by managers (Levitt, 1998). However, if the accounting methods used are within the framework of accounting standards, EMB is considered as "legal" behavior. Indeed, EMB is also regarded as a flexible application of accounting techniques to present financial statements in the most favorable way for the company or for the management board's self-benefits rather than unlawful acts (Rahman, Moniruzzaman, & Sharif, 2013). Healy and Wahlen (1999) argue that this is the behavior of adjusting the performance of enterprises by management boards in order to govern the decisions made by investors according to their subjective will. By using subjective judgments, managers manipulate profit information to beautify financial statements and cover business weaknesses (Leuz, Nanda, & Wysocky, 2003). There are many controversies regarding the definition of EMB, and whether it is "legal" or "illegal", this practice will affect the quality of information published on the financial statements (Schipper, 1989).

1.1.2. Financial indicators (FIs)

Khan (2019) supposes that FIs represent the most general information, which is mostly used for comparison purposes. Using mathematical formulas, the relationship between different financial factors and the bonding between the four basic financial statements are clarified (Foster, 1978). Brigham and Ehrhardt (2005) suggest that focusing on FIs is one of the most common ways to assess the financial position of a business. Gitman (2009) agrees that managers will use FIs to assess the overall financial position of a business or to evaluate the effectiveness of the operational activities so that they can make proper adjustments and carry out more suitable strategies.

1.2. Theoretical perspectives

1.2.1. Agency theory

This theory was first developed by Jensen and Meckling (1976). Accordingly, the agency relationship is expressed through a contract whereby an agent will perform a number of jobs on behalf of a principal, such as the contract between shareholders and managers in which managers are authorized to use the owner's capital business purposes. Jensen and Meckling (1976) argued that both parties (principals and agents) want to maximize their benefits; therefore, conflicts of interest always exist in this relationship. This will incur representative costs – the costs related to conflict of interests between the two parties such as monitoring costs or bonuses for managers. Agency theory is often used in empirical studies to verify the influence of factors affecting EMB such as ROE and bank size.

1.2.2. Asymmetry information theory

The theory of asymmetric information was first mentioned by Akerlof (1970). Accordingly, the asymmetric information phenomenon occurs

when one party has less information or less correct information than the other parties. As a result, the ill-informed parties are prone to make incorrect decisions, while the well-informed parties can take advantage of their positions to gain more benefits. Godfrey, Mather, and Ramsay (2003) suppose that imbalances in information between financial statement makers and those in need of information always exist. Businesses tend to hide information that may cause disadvantages to them, and vice versa, information that is beneficial to them is often provided in more detailed and complete manner (Staubus, 2000). The theory of asymmetric information is often used in studies to verify the influence of factors related to monetary policy on EMB.

1.2.3. Positive accounting theory

According to Watt and Zimmerman (1978), empirical accounting theory is developed to identify the factors that influence the choice of managers in applying different accounting methods. Accordingly, individuals in general and managers in particular will tend to manage to maximize their benefits. In such cases, to minimize the adverse impacts by political costs, it is recommended for the management boards to choose suitable accounting methods that reduce the reported profit in the current year. This is because higher profit is supposed to be associated with the higher political costs such as taxes and fees. This theory is often used to test the impact of financial policies, such as financial leverage, bank size, ROE, liquidity, cash flow from business activities, as well as loan loss provision, on the selection of accounting policies of managers.

1.3. Previous studies

A few studies in the world have been conducted to find out the relationship between many factors and EMB at CBs. Shen (2016) used data from 16 CBs in China between 2005 and 2014 to examine the effect of FIs, such as the loan rate of change, total loans to total assets ratio, and total loans to total deposits ratio, on EMB in both private and state sectors. Shen (2016) proposed using a risk factor, namely "risk adjusted loan loss provision rate", as a proxy for EMB at CBs. The research results confirmed the significant influence of the loan rate of change, the total loans and total assets ratio on EMB. Gombola, Ho,

and Huang (2016) studied the impact of financial leverage and liquidity on EMB and capital management at 124 CBs in the United States during 1999–2013. It was indicated that financial leverage had a positive effect on EMB, while the liquidity ratio had a negative effect. Accordingly, CBs with high capital use tend to more perform EMB than those with low capital use. In addition, banks with high liquidity tend to less perform EMB than those with low liquidity. In contrast, the results of Moghaddam and Abbaspour (2017) show that banks with low liquidity will be more likely to perform EMB than those with high liquidity, as the authors use the sample of 14 CBs of Tehran in the period of 2010–2015 and employ the EMB identification model developed by Dechow, Sloan, and Sweeney (1995). Alhadab and Al-Own (2017) studied the relationship between EMB and bank performance (represented by ROA and ROE) at 55 CBs in Europe in the period 2001–2015. The authors used discretionary loan loss provision expenses as a proxy for EMB at banks. Consequently, banks with low ROA and ROE for subsequent years would have a higher tendency to perform EMB via discretionary loan loss provisions, resulting in detrimental consequences lasting for years later on.

Studies on the factors affecting EMB are of great interest to many researchers. However, most of these studies use samples of non-financial enterprises instead of financial ones. In-depth research on CBs is quite modest. In Vietnam, there is only one study, by Tran and Nguyen (2018) that uses the OLS test method with 134 observations of 18 CBs in Vietnam during the period from 2005 to 2016. The results show that four variables related to ownership structure are statistically significant, in which the foreign ownership ratio has a negative impact, while three remaining variables – the proportion of managerial ownership, the proportion of organizational ownership, and the degree of ownership concentration – positively affect EMB.

In general, studies on the factors affecting EMB at banks are relatively unpopular. In Vietnam, it can be seen that there is only one study conducted in this regard, which explores factors related to the ownership structure. However, a majority of previous studies have paid more attention to factors related to FIs, as they represent the most overall picture of a company's financial position and,

more importantly, information users tend to rely on FIs to make financial decisions. Thereby, this paper focuses on the impact of FIs on EMB in CBs in Vietnam over a 5-year period from 2015–2019 to provide useful empirical evidence for practical implementation, as well as for further studies later on. Also, this study aims to support financial statement users, such as investors, business managers, auditors, state management agencies, etc., in the context of the current financial quality status of Vietnamese CBs, which is of great concern.

2. METHODOLOGY

2.1. Research sample

Research sample includes 30 CBs in the total of 31 CBs currently operating in Vietnam (one bank is excluded due to lack of data). To measure variables, secondary data are collected from financial statements of CBs in the period of 2015–2019.

2.2. Research models

This paper employs Shen's EMB model (2016) to measure a dependent variable. The measurement of this variable has been accepted by Vietnamese banking experts, as it is suitable to the typical condition of Vietnamese banking environment during the current period. Accordingly, risk adjusted loan loss provision rate is used as a proxy for EMB, specifically:

$$RISK = \frac{LLP / LOAN_{t-1}}{\sigma_{LLP/LOAN_{t-1}}}, \qquad (1)$$

where LLP_{it} – provision/net interest income of bank (i) in year (t); $LOAN_{t-1}$ – total outstanding loans to customers of bank (i) in year (t-1); $\sigma_{LLP/LOANt-1}$ – standard deviation of $LLP/LOAN_{t-1}$ from 2015 to 2019; if the data cannot be collected sufficiently, standard deviation is determined according to the data that can be collected.

Regarding the independent variables chosen, based on previous research results together with consulting experts' opinions in Vietnamese banking sectors, this paper selects six independent variables, such as bank size (BSZ), financial leverage (LEV), profitability (ROE), liquidity (LIQ), cash flows from operating activities (OCF), and loan loss provision (LLP). As such, the research model of this paper is as follows:

$$RISK = \beta_O + \beta_1 \cdot BSZ + \beta_2 \cdot LEV + \qquad (2)$$
$$+ \beta_3 \cdot ROE + \beta_4 \cdot LIQ + \beta_5 \cdot OCF +$$
$$+ \beta_6 \cdot LLP + \varepsilon.$$

Table 1 specifies variable definition and measurement.

3. RESEARCH FINDINGS

3.1. Descriptive statistics

Table 2 shows that the RISK variable has the highest value of 18.2947 and the lowest value of –0.3780, with the average of 3.4058 and the standard deviation of approximately 3.4069. Regarding independent variables, loan loss provision (LLP) fluctuates significantly with the highest amount

Table 1. Variable definition and measurement

Source: Authors summary.

Symbol	Name	Measurement	Expected sign
Dependent variable			
RISK	Business risk is adjusted to the ratio of provision for credit losses	$\dfrac{LLP / LOAN_{t-1}}{\sigma_{LLP/LOAN_{t-1}}}$	
Independent variables			
BSZ	Bank size	Logarithm of total assets	–
LEV	Financial leverage	Debt to equity ratio	+
ROE	Profitability	The average rate of return on equity (ROE)	–
LIQ	Liquidity	Ratio of total liquid assets of a bank to total assets	+/–
OCF	Cash flows from operating activities	Net cash flows from operating activities divided by total assets	–
LLP	Loan loss provision	Provision for credit losses	+

Table 2. Descriptive statistics for variables included in the model

Variable	Observations	Mean	Median	Minimum	Maximum	Std. dev
RISK	150	3.4058	2.6072	−0.3780	18.2947	3.4069
BSZ	150	8.1260	8.0951	7.2492	9.1732	0.4607
LEV	150	12.9349	12.6202	4.2342	33.1029	4.8319
LIQ	150	0.2406	0.2338	0.0000	0.5557	0.0873
LLP	150	1,889,409	551,188	−50,392	20,131,916	3,405,646
OCF	150	0.0138	0.0185	−0.2227	0.1464	0.0497
ROE	150	0.0906	0.0739	−0.0918	0.2773	0.0784

of VND 20,131,916 million belonging to BIDV bank in 2019, while that of the banking industry during five years is averagely VND 1,889,409 million. Also, standard deviation is VND 3,405,646 million, which is higher than the average value. Leverage (LEV) also has a very high standard deviation of 4.8319, with the highest value of 33.1029 belonging to Saigon Commercial Bank in 2019, which is 2.56 times higher than the 5-year industry average. Bank size (BSZ) has a standard deviation of 0.4670 with the highest value of 9.1732 belonging to BIDV in 2019, which is 12.89% higher than the 5-year industry average. The remaining independent variables, including liquidity (LIQ), cash flow from operating activities (OCF), and profitability (ROE), have no significant differences among banks. The highest liquidity ratio of 0.5557 belonging to Maritime Bank in 2015 and the average value is approximate to the median value, 0.2606 and 0.2338, respectively, while the standard deviation is 0.0873 less than the medium value. Similarly, the average value of cash flows from operating activities is approximate to its median value, respectively 0.0138 and 0.0185, with standard deviation of only 0.0497 and the highest value of 0.1464 belonging to Vietcombank in 2017. ROE also has a low standard deviation of 0.0784 with the highest

value is 0.2773 belonging to ACB bank in 2018, which is three times higher than the 5-year industry average (only 0.0906).

3.2. Correlation analysis

The correlation analysis of variables presented in Table 3 shows the coefficients with appropriate correlation between variables. Moreover, most correlation coefficients between the independent variables are less than 0.8, indicating no collinearity in the model.

3.3. Assessing the overall significance of the model

Table 4 shows that the adjusted R-squared is 0.5046 (the F-test has significance less than 0.01), which means that 50.46% of the variation of the RISK variable is explained by the independent variables. It can be seen that the level of explanation of the selected research model is relatively high.

Table 4. The overall model significance

Model	R-squared	Adjusted R-squared	Prob. (F-statistic)
RISK	0.5246	0.5046	0.0000

Table 3. Correlation matrix for variables included in the model

Variable	RISK	FSZ	LEV	LIQ	LLP	OCF	ROE
RISK	1	–	–	–	–	–	–
BSZ	0.3091	1	–	–	–	–	–
LEV	0.2998	0.5118	1	–	–	–	–
LIQ	−0.1386	−0.0427	0.0106	1	–	–	–
LLP	0.6192	0.6916	0.2556	−0.2356	1	–	–
OCF	−0.0542	0.0468	0.1197	−0.1372	0.0028	1	–
ROE	−0.0528	0.5274	0.0170	−0.2109	0.4028	0.1173	1

3.4. Regression results

The OLS regression results show that there are four out of six variables that are statistically significant, including bank size (BSZ), financial leverage (LEV), profitability (ROE), and loan loss provision (LLP), with significant levels less than 5%. These findings are quite similar to that of Shen (2016) and other studies such as Gombola, Ho, and Huang (2016), Moghaddam and Abbaspour (2017) and Alhadab and Al-Own (2017).

Table 5. Regression results of the model

Variable	Coefficient	t-statistic	Prob.
C	15.1555	2.6332	0.0094
BSZ	−1.7287	−2.1755	0.0312
LEV	0.1534	2.9638	0.0036
ROE	−11.5374	−3.5415	0.0005
LIQ	−0.6878	−0.2826	0.7779
OCF	−2.9338	−0.7221	0.4714
LLP	0.000000829	9.7883	0.0000
Observations		150	
R-squared		0.5246	
Adjusted *R*-squared		0.5046	
F-statistic		26.2980	
Prob. (F-statistic)		0.0000	

Accordingly, the regression model results are as follows:

$$RISK = 15.1555 - 1.7287 \cdot BSZ + \\ + 0.1534 \cdot LEV - 11.5374 \cdot ROE + \\ + 0.000000829 \cdot LLP \ . \qquad (3)$$

3.5. Policy recommendations

Given the research results, this paper proposes recommendations to support the State Bank, CBs and investors in recognizing and restricting EMB of CBs.

First, the State Bank should pay more attention and strictly control small banks. The reason is that most of these banks do not have sufficient financial capacity and have not achieved high management efficiency. Thus, management boards will have more incentives to beautify financial information to increase enterprise value or to gain self-benefits. Second, more favorable mechanisms and policies for small-scale banks should be put in place so that such banks will gain more opportunities to develop and expand capital. Third, stricter measures should be taken to ensure that CBs comply with limits and prudential ratios in their operations, as well as to control CBs' use of financial leverage at a reasonable level. Accordingly, periodic inspections and more appropriate sanctions should be carried out. Fourth, CBs with low ROE for subsequent years should be paid more attention. The reason is that most of these banks have failed to achieve high efficiency in management, planning and supervision, leading to inefficiencies in their operations. Thereby, more favorable mechanisms and policies to assist ineffective banks in improving their current situations should be timely provided. Last but not least, to assist CBs in controlling credit risks and resolving bad debts, the State Bank should promote debt trading and impose stricter regulations in this regard.

For CBs, first of all, managers in CBs need to be fully aware of the detrimental consequences of committing earnings management. This behavior is only beneficial in the short term but its consequences can last for many years and, more importantly, it will damage the reputation of CBs. Secondly, to expand the bank's scale, it is necessary for CBs to implement a clear strategy to increase investment capital from domestic and foreign sources. Furthermore, due to an increase in scale leading to stricter requirements on the management and operational mechanism, it is recommended for CBs to establish a sufficient internal control and internal audit mechanisms to ensure the effectiveness of operational activities. Accordingly, regulations on internal control and internal audit of the State Bank can be considered as a basic measure to establish and evaluate the internal control effectiveness of CBs. Another important suggestion is the need for the CBs to implement strategies on mobilizing investment to limit the use of debt. To do so, in conjunction with establishing an effective business strategy, brand development strategy, as well as periodic reassessments and improvements in the quality of current banking services, should be carefully considered. In addition, regular reassessment of the quality of the financial management mechanism is a prerequisite for the timely identification of deficiencies

and wastes. The result of this is to ensure the benefit for banks to take advantage of available capital and maintain financial stability. Fourth, to enhance operational efficiency, an effective internal supervision and control mechanism, in compliance with the regulatory frameworks of the State Bank, should be timely implemented. By this way, operational activities can be well controlled so that proper adjustments or improvements can be timely put in place and planned targets can be more achievable. Fifth, improving and/or developing current services can be timely to meet customer satisfaction, and this can be considered as a key measure to increase CBs' income. To do so, CBs shall periodically conduct market surveys to acknowledge more about the changing customer needs. Lastly, establishing an effective internal control mechanism is extremely necessary for good credit risk control. Accordingly, CBs need to regularly review the financial management mech-

anism and perform specific debt classification according to each specific criterion. By this way, credit risk can be accurately assessed so that proper responses can be taken. In addition, it is necessary to develop and maintain a strict lending process along with regular trainings for credit officers on customer appraisal.

Investors need to be cautious with small banks and banks with low ROE because it is most likely that the numbers of profit disclosed of these banks have been manipulated. This is also a similar case for CBs with high levels of debt use and loan loss provision. However, the foremost importance is that investors need to equip themselves with solid knowledge of financial analysis so as to be able to make appropriate economic decisions. Relying solely on profit figures or financial information is not a wise choice unless other non-financial factors are also considered.

CONCLUSION

Information on financial statements plays an important role in connecting CBs and information users. Therefore, the reliability of published information has a great impact on the financial decisions of information users. To meet market expectations, financial information is often manipulated by managers or influential entities according to their subjective objectives. By employing Shen's EMB model (2016), this paper uses the risk adjusted loan loss provision rate to measure EMB in Vietnamese CBs and selects 150 samples of 30 Vietnamese CBs in the period of 2015–2019. The OLS regression results show that there are four out of six variables that are statistically significant, of which two variables – financial leverage and loan loss provision – have a positive impact on EMB, the other two variables with the negative impact are bank size and profitability. In particular, the results also show that bank size (BSZ) and profitability (ROE) significantly influence EMB. Based on the research results, many recommendations are proposed to assist the State Bank, CBs and, especially, investors in recognizing and limiting EMB in CBs. Accordingly, the State Bank should impose strict supervision mechanisms and conduct periodic inspections to control CBs' operational activities. Along with this, in order to raise the awareness of their management boards, the CBs need to establish and maintain an effective system of internal control and internal audit. As for investors, along with expanding knowledge of financial analysis, they should also consider other non-financial factors to assess the development potential of a bank and, accordingly, make more rational judgments.

AUTHOR CONTRIBUTIONS

Conceptualization: Tran Ngoc Anh Thu.
Data curation: Tran Ngoc Anh Thu.
Formal analysis: Tran Quoc Thinh.
Funding acquisition: Tran Ngoc Anh Thu.
Investigation: Tran Ngoc Anh Thu.
Methodology: Tran Ngoc Anh Thu.
Project administration: Tran Quoc Thinh.

Resources: Tran Ngoc Anh Thu.
Software: Tran Ngoc Anh Thu.
Supervision: Tran Quoc Thinh.
Validation: Tran Ngoc Anh Thu.
Visualization: Tran Ngoc Anh Thu.
Writing – original draft: Tran Quoc Thinh.
Writing – reviewing & editing: Tran Quoc Thinh.

REFERENCES

1. Akerlof, G. A. (1970). The market for lemons: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics, 84*(3), 488-500. Retrieved from https://www.jstor.org/stable/1879431

2. Alhadab, M., & Al-Own, B. E. (2017). Earnings Management and Banks Performance: Evidence from Europe. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 7*(4), 134-145. Retrieved from http://hrmars.com/hrmars_papers/Article_14_Earnings_Management_and_Banks_Performance.pdf

3. Brigham, E. F., & Ehrhardt, M. C. (2005). *Financial Management: Theory and Practice* (11 ed.). USA: Thomson South-Western.

4. Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review, 70*(2), 193-225. Retrieved from https://www.jstor.org/stable/248303

5. Foster, G. (1978). *Financial Statement Analysis*. New Jersey: Prentice-Hall Inc.

6. Gitman, L. J. (2009). *Principal of Managerial Finance*. New Jersey: Pearson Prentice Hall.

7. Godfrey, J., Mather, P., & Ramsay, A. (2003). Earnings and impression management in financial reports: the case of CEO changes. *Abacus, 39*(1), 95-123. https://doi.org/10.1111/1467-6281.00122

8. Gombola, M. J., Ho, A. Y.-F., & Huang, C.-C. (2016). The effect of leverage and liquidity on earnings and capital management: Evidence from U.S. Commercial banks. *International Review of Economics and Finance, 43,* 35-58. https://doi.org/10.1016/j.iref.2015.10.030

9. Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365-383. https://doi.org/10.2308/acch.1999.13.4.365

10. Jesen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

11. Khan, M. I., Riaz, S., & Iqbal, A. (2019). Re-Classification of Financial Ratio. Proceedings from *The 2018 International Conference on Business Sustainability and Innovation*. https://doi.org/10.15405/epsbs.2019.08.4

12. Leuz, C., Nanda, D., & Wysocky, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics, 69*(3), 505-527. https://doi.org/10.1016/S0304-405X(03)00121-1

13. Levitt, A. J. (1998). The Numbers Game. *The CPA Journal, 68*(12), 14-15.

14. Moghaddam, A., & Abbaspour, N. (2017). The Effect of Leverage and Liquidity Ratios on Earnings Management and Capital of Banks Listed on the Tehran Stock Exchange. *International Review of Management and Marketing, 7*(4), 99-107. Retrieved from https://ideas.repec.org/a/eco/journ3/2017-04-14.html

15. Rahman, M., Moniruzzaman, M., & Sharif, J. (2013). Techniques, Motives and Controls of Earnings Management. *International Journal of Information Technology and Business Management, 11*(1), 22-34. Retrieved from https://www.academia.edu/24737844/Techniques_Motives_and_Controls_of_Earnings_Management

16. Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons, 3*(4), 91-102.

17. Shen, L. (2016). Research on Industry Competition, Ownership Structure and Earnings Management: Empirical Analysis based on Listed Bank. *International Journal of Smart Home, 10*(3), 221-230. http://dx.doi.org/10.14257/ijsh.2016.10.3.31

18. State Bank of Vietnam. (2019). *Annual Report 2018*.

19. Staubus, G. (2000). *The Decision Usefulness Theory of Accounting. A Limited History*. New York: Routledge. https://doi.org/10.4324/9780203055533

20. Tran, Q. T., & Nguyen, D. P. (2018). Testing the relationship between ownership structure and profit management behavior at Vietnamese commercial banks. *Journal of Accounting and Auditing, 178,* 35-40.

21. Watts. R. L., & Zimmerman, J. L. (1978). Towards a Positive Theory of the Determination of Accounting Standards. *The Accounting Review, 53*(1), 112-134. Retrieved from https://www.jstor.org/stable/245729

APPENDIX A

Table A1. List of Vietnamese commercial banks for the period of 2015–2019

Source: State Bank of Vietnam.

No.	Bank name	Notes
1	Asia Commercial Joint Stock Bank	
2	An Binh Commercial Joint Stock Bank	
3	BAC A Commercial Joint Stock Bank	
4	Joint Stock Commercial Bank for Investment and Development of Vietnam	
5	Bao Viet Joint Stock commercial Bank	
6	Vietnam Joint Stock Commercial Bank of Industry and Trade	
7	DONG A Commercial Joint Stock Bank	Excluded due to lack of data
8	Viet nam Export Import Commercial Joint Stock	
9	Ho Chi Minh city Development Joint Stock Commercial Bank	
10	Kien Long Commercial Joint Stock Bank	
11	LienViet Commercial Joint Stock Bank	
12	Military Commercial Joint Stock Bank	
13	The Maritime Commercial Joint Stock Bank	
14	Nam A Commercial Joint Stock Bank	
15	National Citizen bank	
16	Orient Commercial Joint Stock Bank	
17	Petrolimex Group Commercial Joint Stock Bank	
18	Public Vietnam Bank	
19	Sai Gon Commercial Joint Stock Bank	
20	Southeast Asia Commercial Joint Stock Bank	
21	Saigon Bank for Industry & Trade	
22	Saigon-Hanoi Commercial Joint Stock Bank	
23	Saigon Thuong Tin Commercial Joint Stock Bank	
24	Viet Nam Technological and Commercial Joint Stock Bank	
25	TienPhong Commercial Joint Stock Bank	
26	Viet A Commercial Joint Stock Bank	
27	Viet Nam Thuong Tin Commercial Joint Stock Bank	
28	Viet Capital Commercial Joint Stock Bank	
29	Joint Stock Commercial Bank for Foreign Trade of Vietnam	
30	Vietnam International Commercial Joint Stock Bank	
31	Vietnam Commercial Joint Stock Bank for Private Enterprise	

APPENDIX B. ANALYTICAL RESULTS FROM EVIEWS 10

Table B1. Descriptive statistics for variables included in the model

Variable	RISK	BSZ	LEV	LIQ	LLP	OCF	ROE
Mean	3.4058	8.1260	12.9349	0.2406	1,889,409	0.0138	0.0906
Median	2.6072	8.0951	12.6202	0.2338	551,188	0.0185	0.0739
Maximum	18.2947	9.1732	33.1029	0.5557	20,131,916	0.1464	0.2773
Minimum	−0.3780	7.2492	4.2342	0.0000	−50,392	−0.2227	−0.0918
Std. dev.	3.4069	0.4607	4.8319	0.0873	3,405,646	0.0497	0.0784
Skewness	2.5882	0.3168	1.0233	0.4970	3.1447	−1.2252	0.7175
Kurtosis	10.8148	2.5023	5.2071	3.8586	13.8603	7.5316	2.7283
Jarque-Bera	549.1664	4.0564	56.6266	10.7836	984.3906	165.8749	13.3308
Probability	0.0000	0.1316	0.0000	0.0046	0.0000	0.0000	0.0013
Sum	510.8683	1,218.9006	1,940.2345	36.0897	283,411,419	2.0715	13.5969
Sum Sq. dev.	1,729.4492	31.6200	3,478.7830	1.1347	1,728,165,603,777,920	0.3683	0.9159
Observations	150	150	150	150	150	150	150

Table B2. Regression results and overall significance of the model

Dependent variable				RISK
Method				Panel least squares
Date: 04/14/20				Time: 19:43
Sample				2015–2019
Periods included				5
Cross-sections included				30
Total panel (balanced) observations				150

Variable	Coefficient	Std. error	t-statistic	Prob.
C	15.15548	5.755605	2.633168	0.0094
BSZ	−1.728650	0.794599	−2.175500	0.0312
LEV	0.153363	0.051746	2.963767	0.0036
ROE	−11.53744	3.257742	−3.541545	0.0005
LIQ	−0.687822	2.434069	−0.282581	0.7779
OCF	−2.933840	4.062796	−0.722123	0.4714
LLP	8.29E-07	8.46E-08	9.788298	0.0000

R-squared	0.524582	Mean dependent variable	3.405789
Adjusted R-squared	0.504634	S.D. dependent variable	3.406911
S.E. of the regression	2.397860	Akaike information criterion	4.632573
Sum squared resid.	822.2120	Schwarz criterion	4.773070
Log likelihood	−340.4430	Hannan-Quinn criterion	4.689653
F-statistic	26.29795	Durbin-Watson stat	2.341688
Prob. (F-statistic)	0.000000		