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NHIỀU TÁC GIẢ

HỘI THẢO QUỐC TẾ LẦN THỨ 4
VỀ KINH DOANH, KINH TẾ VÀ TÀI CHÍNH
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LOAN LOSS PROVISIONS AND INCOME SMOOTHING: EVIDENCE IN VIETNAMESE BANKS

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ABSTRACT

Using a sample of Vietnamese banks, we examine the smoothing income hypothesis by testing the relationship between loan loss provisions and pre-managed earnings. Our sample includes 27 joint stock commercial banks over a 10-year period from 2010 to 2019. The empirical results show that the pre-managed earnings variable has a positive relationship with loan loss provisions as expected. The findings confirm the income smoothing behavior at Vietnamese banks and provide evidence that banks used loan loss provisions as a tool of earnings management.

Keywords: *Earnings management, income smoothing, loan loss provisions, Vietnamese banks*

1. INTRODUCTION

"Income smoothing" is the process of manipulating the time profile of earnings or earnings reports to make the reported income stream less variable" (Fudenberg & Tirole, 1995, 75). In general, earnings management to smooth income is executed as firms taking advantage of accounting policy choices to reduce reported income in years with favorable business conditions and increase reported income in years with unfavorable business conditions, which makes firms' income become less volatile over time. Firms usually used accruals to manage earnings that way. In the case of banks, "loan loss provisions, being one of the largest accruals of banks, can be used in isolation to study such smoothing behavior" (Kanagaretnam et al., 2004, 128). Researchers who support the income smoothing hypothesis suggests that banks' manager intentionally overestimate loan loss provisions to reduce reported income when banks' performance is good, and conversely underestimate loan loss

provisions to raise reported income when banks' performance is poor (Kanagaretnam et al., 2004; Curcio et al., 2014).

By smoothing earnings, bank managers would like to achieve the following purposes: (1) concealing actual income; (2) affecting the risk assessment from outsiders (e.g., investors, regulators, customers, etc.) towards banks; and (3) stabilizing their compensation and dividend flows to shareholders over time (Bhat, 1996). Like non-financial firms, bank managers can deliver a signal of good earnings quality when the income is stable, just like when a firm sustains a significant number of years of income above target (Burgstahler & Dichev, 1997). Low variable incomes could create a perception that the bank has sustainable earnings. In many cases, banks that maintain low variable incomes are easier to access financial sources (Kanagaretnam et al., 2003) or could avoid scrutiny from investors and regulators (Liu & Ryan, 2006). Moreover, it is acknowledged that the level of income fluctuation could be seen as the reflection of risk, so the larger the volatility, the higher the risk. As a result, when a bank has stable incomes, it signals that the risk of the investment (into the bank) is low. In fact, previous studies have shown that a risk premium associated with earnings variability is considered when pricing stocks (Collins & Kothari, 1989; Easton & Zmijewski, 1989; Barth, Landsman & Wahlen, 1995). Finally, according to agency theory, managers could make decisions that benefit themselves even though those decisions could harm the interest of firms' owners. Thus, the incentive to stabilize income may arise for the sole benefit of managers (Kanagaretnam et al., 2003). By shifting incomes from years when income is high to years when it is low, managers can gain personal benefits like receiving better compensations or protecting themselves from the risk of dismissal by shareholders during years of poor (unmanaged) economic results. In addition, maintaining stable dividend flows by minimizing earnings volatility to reassure and satisfy shareholders can also help to protect the positions of managers.

Though many studies are conducted to test the income smoothing hypothesis at banks over the world, the number of research on this topic for Vietnamese banks is modest. Besides the few specific-country analyses, Vietnamese banks have not appeared in any cross-country earnings

management studies, even the study on Asian banks of Parker & Zhu (2012), in which Vietnam's neighbors like Thailand, Malaysia, etc. are considered. As a result, we know little about earnings management of banks in Vietnam. Meanwhile, Vietnam is known as a bank-centric economy, which means that the economy depends heavily on banks' performance and reputation, so earnings management at banks should have received more serious attention. This urges us to fill the gap in literature not only to gain more knowledge about how banks' managers manipulate earnings in the case of Vietnam but also to raise the awareness of the authority about this problem.

Motivated by the findings in Hoang Hanh Nguyen (2022) that changes in reported income of banks over years are concentrated irregularly high around 0, we hypothesize that *banks in Vietnam do manage earnings to reduce the volatility of reported income*. Like previous studies, to test that hypothesis, we analyze the relationship between loan loss provisions and pre-managed earnings. Applying the model of Curcio et al. (2014), we find strong evidence supporting the smoothing behavior among Vietnamese banks. In addition to earnings before tax and provisions - the proxy of pre-managed earnings - used as the explanatory variable, we also examine other variables that could affect the level of loan loss provisions. Our findings contribute to the literature in several ways. First, we provide evidence that banks in Vietnam do manipulated earnings to smooth their reported income. Second, we explain how Vietnamese banks can engage in such practices, namely, through discretionary choices in recognized loan loss provisions.

2. LITERATURE REVIEW

As mentioned above, loan loss provision is known as the largest accrual in banks' accounting system; thus, many researchers have related it to earnings management, especially income smoothing behavior. By examining the relation between loan loss provisions and pre-managed earnings, they hope to find evidence supporting the income smoothing hypothesis. Literature shows mixed empirical results for the test of income smoothing. Though the use of loan loss provisions to smooth income at banks has been documented internationally in many previous studies (among others, Collins et al., 1995; Shrieves & Dahl, 2003; Anandarajan et al., 2003;

Kanagaretnam et al., 2004; Liu & Ryan, 2006; Anandarajan et al., 2007; Taktak et al., 2010; Packer and Zhu, 2012; El Sood, 2013; Kilic et al., 2013; Curcio et al.; 2014), several studies could not find the relation between loan loss provisions and earnings management (among others, Beatty et al., 1995; Ahmed et al., 1999, Ismail et al., 2005).

At initial, most of the studies were conducted in the US. Collins et al. (1995), by running a regression with within-bank means using US bank data from 1971 to 1991, have found a positive relationship between loan loss provisions and non-discretionary earnings. Examining a sample of 22,640 bank-year observations during a later period (1992-2001), Kanagaretnam et. al (2004), through a panel data model with a two-step regression, also shows that banks with high (low) pre-managed income have high (low) loan loss provisions. Consistent with Collins et al. (1995) and Kanagaretnam et al. (2004), El Sood (2013) when working with US bank data from 2001 to 2009 indicates that US banks used loan loss provisions to smooth income not only boom but also crisis periods. Liu & Ryan (2006) and Kilic et al. (2013) also provide strong empirical evidence supporting the smoothing behaviors through loan loss provision in the US. Among analyses in non-US banks, specific-country studies supporting the hypothesis of smoothing behavior include, among others, Shrieves & Dahl (2003), Anandarajan et al. (2003), Anandarajan et al. (2007) and Curcio et al. (2014), investigating respectively banks in Japan, Spain, Australia, and China. Additionally, cross-country studies like Taktak et al. (2010) analyzing banks in OECD countries and Packer & Zhu (2012) analyzing Asian banks also indicate that banks intentionally use loan loss provisions to smooth their incomes.

Nevertheless, the empirical evidence is not unanimous. Other research papers working with US banks like Beatty et al. (1995) and Ahmed et al. (1999) provided contrasted results. Even though the two studies employ different methods: estimation of a system of five equations derived from an optimal problem in Beatty et al. (1995) and multivariate regression of one linear equation in Ahmed et al. (1999), both conclude that the relationship between earnings management and loan loss provisions is not significant. There are studies outside the US like those of Ismail et al. (2005) working

with Malaysian banks, and Bouvatier & Lepetit (2008) working with European banks do not support the income smoothing hypothesis.

While income smoothing at banks has been studied for decades, the number of analyses of earnings management and income smoothing using Vietnamese bank data is still modest. Besides the few specific-country analyses, Vietnamese banks have not appeared in any cross-country earnings management analyses, even the study on Asian banks of Parker & Zhu (2012), in which Vietnam's neighbors like Thailand, Malaysia, etc. are considered. Thus, it is not wrong to say that we know very little about earnings management at Vietnamese banks.

Meanwhile, financial market of Vietnam is dominated by banks. According to IMF (2017), assets owned by Vietnamese banks account for 96 percent of the total assets in the financial sector. This domination of banks in financial markets is the result of the inefficiency of capital markets in Vietnam. For instance, the corporate bond market is worth only 2.8 percent of GDP, exceedingly small in comparison with the bank sector, which is worth 194 percent of GDP (IMF, 2017). Until 2017, bank credit remains the main source of external funding for most domestic firms (OBG, 2017). This information shows that the economy depends heavily on banks' performance and reputation, so earnings management at banks should have received more serious attention.

3. RESEARCH HYPOTHESIS

Believing that it will be helpful to analyze earnings management at Vietnamese banks and motivated by the research results of previous studies, we would like to examine whether income smoothing behavior exists and how do banks in Vietnam engage such practices if the answer to the first question is yes.

Acknowledged that earnings management is much more difficult for banks than for non-financial firms because banks are subject to stricter supervision and under more regulations, some argue that banks do not smooth their income because the cost of income smoothing may exceed its benefit. However, we have reasons to believe that earning stabilization is likely at Vietnamese banks. In general, accounting standards as well as banking legislation and state regulations on the operation of financial

institutions in Vietnam are not as updated as those in developed countries. For example, Vietnam Accounting Standards (VASs), one of the regulations that accounting practices at commercial banks are subject to, are fully released in 2005 and have not been updated since then. Though issued based on International Accounting Standards (IAS), the VASs currently deviate from the international ones (a.k.a., IFRS), which are updated more frequently. As assessed by KPMG Vietnam, "the VAS(s) lack a number of upgrades and advancements"1. The failure of accounting standards to keep up to date with changes in the market and business may make it difficult for the authorities as well as investors to accurately assess banks' performance. Moreover, based on a survey of Cho (2013), Vietnam is among the group of countries that made minimum progress in implementing Basel II. Until the end of 2019, while many developed countries have adopted Basel III, just five local banks (VIB, Vietcombank, MBBank, VPBank, and BIDV) were recognized as meeting the standards of Basel II. Failure to satisfy the stricter international regulations (i.e., Basel II as compared to Basel I) could make a credit risk assessment, supervisory review, internal assessment process, as well as information disclosure less effective. These limitations may allow managers to manipulate information and earnings more easily. Additionally, Hoang Hanh Nguyen (2022), through the earning distribution approach method introduced by Burgstahler & Dichev (1997), indicates an unusually high number of observations which have changed in reported earnings (i.e., net income) concentrated in the upper and lower bounds of 0. From that result, the study suggests that Vietnamese banks may manipulated earnings to reduce the fluctuation in their reported income.

Within the framework of this study, to test whether Vietnamese joint stock commercial banks manage earnings to reduce the volatility of earnings over years, we examine the relationship between (1) loan loss provisions and (2) pre-managed earnings. Specifically, we would like to test the following hypothesis:

H1. The relation between loan loss provisions and earnings before tax and loan loss provisions is positive.

As mentioned above, loan loss provisions could be used as a tool for earning smoothing. They are income statement's expenses, which refer to

changes in allowances for expected future losses. Because they depend on the subjective estimation of managers about risks (Kanagaretnam et al., 2004), banks' managers have considerable discretion as to provisions they recognize. In years when banks do not perform well enough, managers may reduce loan loss provisions to inflate reported earnings, while they may increase loan loss provisions to make earnings on financial reports lower than actual ones in well performing years (Collins et al., 1995; Kanagaretnam et al., 2004; Liu & Ryan, 2006; Curcio et al., 2014). Therefore, pre-managed earnings should have a positive relationship with loan loss provisions according to the income smoothing hypothesis.

4. METHODOLOGY

4.1. Regression model

Although most of the studies we have reviewed use multivariate regressions, where loan loss provisions are the dependent variable (among others, Ahmed, 1999; Anandarajan et al., 2003; Shrieves & Dahl, 2003; Ismail et al., 2005; Liu & Ryan, 2006; Anandarajan et al., 2007; El Sood, 2012; Parker & Zhu, 2012; Curcio et al., 2014) and pre-managed earnings be the explanatory variable, to analyze the relationship between them, there are differences in research specifications. After considering, we choose the model suggested by Curcio et al. (2014) due to the similarities in many aspects between Vietnamese and Chinese banks[2]. We test the hypothesis H1 in the previous section by using the following equation:

$$LLP_{it} = \beta_1 EBTP_{it} + \beta_2 GDPGR_t + \beta_3 NPL_{it} + \beta_4 \Delta LOAN_{it} + \beta_5 CAR_{it} + \beta_6 SIZE_{it} \quad (1)$$

where LLP_{it}: Loan loss provisions of bank i at year t;

$EBTP_{it}$: Earnings before tax and loan loss provisions of bank i at year t;

$GDPGR_t$: GDP growth rate at year t;

NPL_{it}: Non-performing loan ratio of bank i at year t;

$\Delta LOAN_{it}$: Change in customer loan ratio of bank i at year t;

CAR_{it}: Capital adequacy ratio of bank i at year t;

$SIZE_{it}$: Size of bank i at year t.

The dependent variable, LLP, is a proxy of the level of loan loss provisions recognized by banks, and EBTP, is used as a proxy for earnings before manipulated or pre-managed earnings. Due to their large size, loan loss provisions could have a significant impact on banks' earnings (Ahmed et al., 1999). If banks have used loan loss provisions to stabilize reported earnings, we expected that the coefficient of EBTP would be positive (Ahmed et al., 1999; Kanagaretnam et al., 2004; Liu & Ryan, 2006; Curcio et al., 2014). To control for the difference in LLP that is not the result of earnings management, we add controlling variables. These variables, which will be presented below, implicitly capture the non-discretionary component of provisions and discretion in managers' choices, whose aims are not to smooth income. If banks do not use loan loss provisions to smooth earnings, no relation should be found between LLP and EBTP after controlling for other factors.

Besides EBTP, other explanatory variables added to the model as controlling variables are GDPGR, NPL, ΔLOAN, CAR and SIZE. While NPL and ΔLOAN are supposed to capture the non-discretionary component of loan loss provisions (Kanagaretnam et al., 2003; Kanagaretnam et al., 2004; Curcio et al., 2014), GDPGR and CAR are expected to partly explain the discretionary one (Curcio et al., 2014). The last variable, SIZE, are used to control for size effects (El Sood, 2012; Curcio et al., 2014). Banks with larger size are supposed to bear less risk than smaller ones because they are easier to diversify risks, leading to lower provision for expected losses (i.e., LLP).

NPL refers to the credit risk that banks are bearing. In Vietnam, non-performing loans include loans in groups 3, 4 and 5. The loan classification system in Vietnam divides loans into five groups, numbered from 1 to 5, in which group 1 refers to the highest quality or least risky loans, and group 5 refers to the lowest quality or riskiest loans. Since a higher non-performing loan ratio means banks are at a higher credit risk, banks need to raise provision for expected loss (Kanagaretnam et al., 2004; Curcio et al., 2014). ΔLOAN refers to the growth of banks' loans. An increase in total loans will increase banks' exposure to credit and/or default risk (El Sood, 2012; Curcio et al., 2014), which may result in more expected losses. Nevertheless, the positive relationship between ΔLOAN and LLP may not be as clear as that

between NPL and LLP because banks need not make provisions for all groups of loans and make provisions at the same rate for different groups.

GDPGR, as a proxy of the state of the economy, sometimes are expected to have a negative relationship with LLP since banks are supposed to be more optimistic (pessimistic) and recognize lower (higher) expected losses from loans when the economy is expanding (declining) (Bouvatier & Lepetit, 2008; Curcio et al., 2014). However, in counter-cyclical view, if banks use loan loss provisions to protect them against the business cycle, they may increase provisions during good times and thus be able to reduce them during tough times. With such an argument, the coefficient of GDPGR may be positive.

CAR refers to banks' capital adequacy. According to the capital management hypothesis, low capital banks may want to use loan loss provisions to boost their Total capital (Ahmed et al., 1999). Under no restriction, an increase of a unit in loan loss provisions leads to a decrease of the one-minus-tax-rate unit in retained earnings – a composition of Tier I capital, and an increase of one unit in loan loss reserves – a composition of Tier II capital. In aggregate, a one unit increase in loan loss provisions increases Total capital by one-time-tax-rate unit. Therefore, banks with low capital position seem to raise their loan loss provisions to meet capital requirements. We suppose that measured by the ratio of Tier I capital, CAR is a good proxy for unmanipulated capital position, and we expect to see a negative coefficient of CAR like Ahmed et al. (1999). Moreover, we also add year dummies to the regression equation to control changes over years. Table 1 supplies detailed information on the definitions of the variables and the expected signs of their coefficients.

Table 1. Measurement of variables used in the model

Variable	Measurement	Expected sign
LLP	LLP deflated by total asset	
EBTP	Earnings before tax and LLP deflated by total asset	+
NPL	Non-performing loans deflated by total asset	+
ΔLOAN	Difference between customer loans and one-year lag of customer loans deflated by total asset	+

CAR[3]	Tier I capital ratio	–
SIZE	Natural logarithm of total assets	–
GDPGR	Growth rate of GDP	+/–

Recent studies in the field focus more on panel data models to deal with heterogeneity across banks and over time. In our research, we employ the fixed-effect model (FEM) as our main regression method. FEM is often preferred for panel data because it can control for unobserved effects from the characteristic of individuals (banks), which reduces the risk of omitting variables compared to ordinary least squares (OLS or pooled OLS) regression. Besides, we choose FEM to relax the assumption of the random effect model (REM) that there is no correlation between unobservable individual-specific effects and observed explanatory variables, which is too strong in our opinion. In this case, where most of our explanatory variables represent attributes of banks, we suppose that unobservable bank-specific effects are correlated with other explanatory variables. Further, though we prefer FEM to REM, the regression results obtained by FEM and REM are similar.

4.2. Data

The data we use in this paper are extracted from FiinGroup's FiinPro database, except for data on Vietnam's GDP growth rate, which are collected from the World Bank database. Our sample includes information from 27 joint stock commercial banks in Vietnam (traded on three markets: HOSE, HNX and UpCom) from 2010 to 2019. Initially, we have 270 (27x10) observations; however, in the process of generating variables, observations in 2010 were eliminated due to the use of a one-year lagged customer loan. Then, we must remove several observations because some banks' financial reports did not provide the necessary data for the models for some years. Finally, the sample used for testing in the above model is unbalanced panel data of 27 banks but with only 181 observations.

Table 2 provides the descriptive statistics of variables used in our research model. As indicated in the table, the mean of LLP (0.0069) is

approximately 0.3979 of EBTP's mean (0.01734). On average, the loan loss provision takes a sizable portion of earnings before taxes and provisions, supporting the view that loan loss provisions are the largest accruals of banks. Compared with earnings before taxes deflated by total assets (EBT), the volatility of EBTP is higher. Specifically, the sample standard deviation of EBTP is 0.010 while that of EBT is just 0.007. What we observe is consistent with our hypothesis that banks use loan loss provisions as the main tool to manage earnings. Further, banks in Vietnam are quite similar when considering the variability of the variables used in the model. For all variables, the standard deviation is minor compared to the mean.

Table 2. Descriptive statistics of variables used in the model

	Min	**Median**	**Mean**	**Max**	**Std.Dev**
LLP	0.0001282325	0.005751755	0.006985707	0.03628700	0.005448012
EBTP	0.0025655873	0.014886353	0.017346255	0.06365733	0.009650642
NPL	0.0000000000	0.010000000	0.013259669	0.06000000	0.007809110
LOAN	-0.1487818232	0.088906583	0.088977806	0.26538562	0.056105851
DPGR	5.2500000000	6.680000000	6.365193370	7.08000000	0.628502268
SIZE	30.3178272514	32.585897017	32.541088580	34.93752567	1.090297770
CAR	0.0000000000	0.120000000	0.107513812	0.34000000	0.069649169

Table 3 reports the correlations between variables used in the regression. LLP is highly positively correlated with EBTP, positively correlated with NPL, GDPGR, and SIZE while negatively correlated with ΔLOAN and CAR. Except for the correlations of LLP with SIZE and ΔLOAN, the signs of correlations between LLP and explanatory variables are as expected. Among the explanatory variables, the correlations are low (i.e., smaller than 0.3), so we do not need to be concerned about multicollinearity. EBTP is positively correlated with all other variables. NPL is negatively correlated with GDPGR, SIZE, and CAR. CAR is negatively correlated with all other variables except for EBTP.

Table 3. Correlation matrix of variables used in the model

	LLP	**EBTP**	**NPL**	**ΔLOAN**	**GDPGR**	**Size**	**CAR**
LLP	1.0000						
EBTP	0.6993	1.0000					
NPL	0.2849	0.1361	1.0000				
ΔLOAN	-0.0326	0.0893	0.1373	1.0000			
GDPGR	0.0989	0.1357	-0.1542	0.1425	1.0000		
Size	0.1572	0.2643	-0.1230	0.1425	0.2034	1.0000	
CAR	-0.1213	0.0285	-0.0014	-0.1252	-0.2361	-0.1894	1.0000

5. EMPIRICAL RESULTS

5.1. Regression Results

All the regression results presented in this section are obtained by using package 'plm' in R, which is popular in dealing with panel data models. Besides FEM, we also regress equation (1) using pooled OLS, with and without year dummies. Then, we use F test and Wald test for model selection.

F test can determine whether it is appropriate to use the fixed effects model compared to a pooled OLS regression. The null hypothesis of this test is that there is no individual effect. The test results show that the p-value in both tests between pooled OLS and FEM are smaller than the level of significance 0.05. Particularly, in the case of models with year dummies, p-value is 0.0002661; and in the case of models without year dummies, p-value is 0.0000412. Hence, the null hypothesis is rejected in both cases, and the FEM seems to be a better choice.

The appropriation of including year dummies in the model is tested by Wald-test. We apply this test to choose between fixed effect models with and without year dummies. The p-value of the test is 1.687e-09, making the null hypothesis rejected.

Based on tests, it can be concluded that the FEM with year dummies would be the most appropriate model. To save space, we do not present the results of all models here. Only the result of multivariate fixed effects

regression (including year dummies) is presented in Table 4. It shows how pre-managed earnings along with other bank-specific characteristics affect the level of loan loss provisions.

Table 4. Estimation Results

Variables	Coefficients	Std. Error	t-value	Pr(>|t|)
EBTP	0.42982119	0.03440883	12.4916	< 2.2e-16 ***
NPL	0.04999109	0.03617856	1.3818	0.169222
ΔLOAN	-0.01622630	0.00513339	-3.1609	0.001925 ***
GDPGR	-0.00044819	0.01446827	-0.0310	0.975331
CAR	-0.01002880	0.00446416	-2.2465	0.026225 **
SIZE	-0.00239846	0.00124992	-1.9189	0.057018*
Residual Sum of Squares				0.0011587
Adj. R-Squared				0.49683
F-statistic				16.6717
P-value				< 2.22e-16

***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively

The coefficient of EBTP is 0.4298, indicating that an increase (decrease) by one unit in this variable will increase (decrease) LLP by 0.4298 unit, holding all the other independent variables constant. The coefficient is significantly positive at 1% level as expected. This finding is consistent with what was found by, among others, Kanagaretnam et al. (2004), Liu & Ryan (2006), and Curcio et al., (2014). As explained, a positive and statistically significant relationship between LLP and EBTP is supports the hypothesis that Vietnamese banks stabilize their income over time. Banks lower loan loss provisions to increase low earnings and increase loan loss provisions to decrease high earnings in the current period. The result also suggests that loan loss provisions are used as a tool for earnings management. Overall, this finding shows that Vietnamese banks could behave similarly to banks in the world despite differences in characteristics.

Used to control for the specific component of loan loss provision, the coefficient of NPL in the model is positive as expected while the sign of

ΔLOAN is contrasted to what we anticipated. However, as discussed, the relationship between ΔLOAN and LLP is not as obvious as that between NPL and LLP. On the other hand, the negative coefficient of ΔLOAN could be explained by a cyclical view. In good times, banks may become overly optimistic that they expand lending activities and, at the same time, underestimate credit risk, leading to an increase in loans but not in loan loss provisions. On the contrary, banks may be pessimistic in tough times, so they tighten lending requirements, leading to a decrease in lending, and at the same time increasing loan risk provisions due to concerns about high credit risks. Though the coefficient of ΔLOAN is significant at 1% level, that of NPL does not have any economic significance.

Among the last three controlling variables, GDPGR has a negative coefficient, suggesting that banks reduce loan loss provisions when the economy is growing, and conversely, raise loan loss provisions in the event of an economic downturn; however, it is not statistically significant in our model. CAR has a negative and statistically significant coefficient, indicating that there is a negative relationship between the Tier 1 capital ratio and loan loss provision like Ahmed (1999) and Curcio et al. (2014). Similarly, SIZE has a negative and statistically significant relationship with LLP as expected. Small banks, who may have riskier portfolios (due to the lack of diversification), are expected to have higher loan loss provisions than bigger ones. This finding is consistent with Peterson (2018).

As shown in Table 4, Adj. R-Squared of the regression is 0.49683 while F-statistic is 16.6717 (p-value < 2.22e-16). This implies that all independent variables in the model together explain 49.683% of the variance of LLP while the remaining 50.317% is explained by other variables outside the model.

5.2. Diagnostic Tests

Here, we employed three distinct tests for cross-sectional dependence, serial correlation and heteroskedasticity.

To examine whether the residuals from a fixed effects estimation of the regression model are spatially independent, we could use Pesaran's CD test or Breusch–Pagan LM test. According to Baltagi (2005), Monte Carlo

experiments show that Pesaran's CD test performs well even for small T and large N whereas the standard Breusch–Pagan LM test performs badly for micro panels where N > T. Because our sample has N = 27 and T =10, Pesaran's CD test is used and the result is reported in Table 5. The test is performed with the null hypothesis of no cross-sectional dependence.

Table 5. Testing for cross-sectional dependence

Statistics Test	Prob.
-1.4555	0.1455

Since p-value > 0.05, the null hypothesis in Pesaran CD tests is not rejected or the residuals are cross-sectionally uncorrelated.

To test for serial correlation in panel model, in this study, we use the Breusch-Godfrey/Wooldridge test. The null hypothesis of this test is that there is no serial correlation in idiosyncratic errors

Table 6. Testing for Serial Correlation

Chi-sq Statistic	Chi-Sq. d.f.	Prob.
25.342	2	3.141e-06

Based on result in Table 6, since p-value < 0.05, the null hypothesis is rejected, which means there is serial correlation in the model.

At last, we employ Breusch-Pagan test for heteroskedasticity. The null hypothesis of the test is that the error variances are all equal (homoskedasticity).

Table 7. Testing for Heteroskedasticity

BP Statistic	BP. d.f.	Prob.
90.47	13	1.136e-13

The p-value of Breusch-Pagan test is smaller than the 5% significance level. Hence, the null hypothesis is rejected or there is the presence of heteroskedasticity in our model.

Though there is no cross-sectional dependence in the model, the serial correlation and heteroskedasticity exist which leads to bias in test results. Thus, the White-Arellano (1987) estimator has been devised for this case. This method allows a fully general structure with reference to heteroskedasticity and serial correlation. The estimation result with

consistent standard errors can be found in Table 8. Although standard errors are slightly different from those obtained with former regression, the significant levels of all variables are still the same.

Table 8. FEM with heteroscedasticity and autocorrelation consistent standard errors

Variables	Coefficients	Std. Error	t-value	Pr(>|t|)
EBTP	0.42982119	0.09125379	4.7102	5.864e-06***
GDPGR	-0.00044819	0.00631167	-0.0710	0.943491
NPL	0.04999109	0.03282448	1.5230	0.130003
ΔLOAN	-0.01622630	0.00596476	-2.7204	0.007342***
CAR	-0.01002880	0.00479226	-2.0927	0.038167**
TA	-0.00239846	0.00124992	-1.9189	0.057018*

***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively

6. CONCLUSION

This study aims to examine the income smoothing behaviors of Vietnamese commercial banks. Specifically, we would like to test the hypothesis that there is a positive the relationship between loan loss provisions and pre-managed earnings. A sample of 27 joint stock commercial banks in Vietnam from 2010 to 2019 was used to test that hypothesis. After running the regression equation with FEM, we find evidence to support our income smoothing hypothesis.

Earnings before taxes and loan loss provisions (EBTP) are employed as the proxy for pre-managed earnings. In addition to EBTP, GDP growth rate (GDPGR), non-performing loan ratio (NPL), change in customer loans (ΔLOAN), capital adequacy ratio (CAR) and size of the bank (SIZE) were added to the model as factors that could affect loan loss provisions. The coefficient of EBTP is significantly positive as expected. We also find that changes in customer loans, capital adequacy ratio and size have a negative relationship with loan loss provisions, but neither GDP growth rate nor non-performing loan ratio has a statistically significant influence on our dependent variable. The result not only indicates the smoothing behaviors at Vietnamese banks but also suggests how they manipulate the earnings to stabilize their incomes. By using managerial discretion in loan loss

provisions, managers could inflate reported earnings in years when banks do not perform well enough and reduce reported earnings in well performing years, keeping the volatility of income low over time. However, our study has not explained yet what are determinants of the smoothing behavior through loan loss provisions and only focuses on the largest accruals of banks. Therefore, in future research, we would like to examine which factors affect the level of using loan loss provisions to smooth income as well as analyze other methods that could be used to manipulate earnings.

Last but not least, since the existence of earnings management at banks could create a negative effect on bank performance (Alhadab & Al-Own, 2017; Shen & Huang, 2013; Abbas, 2018) and on the economy, especially in the case of Vietnam, the government should have specific methods to identify, control and sanction earnings management behavior. Furthermore, the government and central bank must promulgate more detailed regulations on the recognition of loan loss provisions to prevent managers from taking advantage of the discretionary of loan loss provisions. Meanwhile, investors should be more careful when investing in banks because it is obvious that looking at only the reported income is not enough.

ENDNOTES

[1] According to the article "Vietnam on cusp of financial reporting standards upgrade" of the Vietnam Investment Review magazine on March 16th, 2022. [Access: https://vir.com.vn/vietnam-on-cusp-of-financial-reporting-standards-upgrade91924.html?fbclid=IwAR1ZOZRKz1s2LkQHzmy8y5d0WRR46CAnag31-d6H1udReGIiEkEj_VkXLJs]

[2] Banking systems of Vietnam and China have many characteristics in common such as central bank dependence, domination of SOBs and restrictions on interest rate, credit allocation and foreign investment, leading to state intervention despite recent reforms toward liberalization (Nguyen Thanh Pham Thien, 2015).

[3] According to FiinPro's Ratio Methodology, the data of CAR that FiinPro provides are defined as Tier 1 Capital Ratio and collected from the financial reports of banks.

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