

# Malaysian Commercial Banks: Do Income Smoothing, Capital Management, Signaling, and Pro-Cyclicality Exist Through Loan Loss Provisions?

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## ABSTRACT

Existing literature argues that loan loss provisions are subject to managerial discretion and commonly associated with the issues of income smoothing, capital management, signaling and pro-cyclicality. The main objective of this study is to examine the evidence of income smoothing, capital management, signaling, and pro-cyclical behavior through loan loss provisions of Malaysian commercial banks for period 2002-2012. Using a sample of 15 commercial banks, the results indicate that Malaysian commercial banks do smooth income through loan loss provisions while on the other hand, no conclusive evidence to support that Malaysian commercial banks manage capital through loan loss provisions. As for the signaling and pro-cyclicality, no concrete evidence to support Malaysian commercial banks engages in signaling activities and pro-cyclicality through loan loss provisions. This study also controls for the effect of 2007-2009 global financial crisis on loan loss provisioning of Malaysian commercial banks. The results indicate that Malaysian commercial banks put aside more provisions during the financial crisis.

**Keywords:** *Income Smoothing, Capital Management, Signaling, Pro-Cyclical, Loan Loss Provisions, Malaysian Banks, Financial Crisis*

## 1. INTRODUCTION

Loan and advances are the largest assets of banking institutions where lending is the main activity to generate income. Foos, Norden, and Weber (2010) emphasize that loans represent an important driver of the riskiness of banks and are the main source of credit risk. Credit risk is the potential financial loss resulting from the failure of the customer or counterparty to settle the financial and contractual obligations to the bank. In this respect, banking institutions and bank regulator should monitor closely the lending activity as poor monitoring in loan activity may lead to bank failure.

To protect from severe loan losses, the banking institutions are permitted to make a reserve for the future loan losses based on their recent loan loss experience from their flows of incomes. It is called as an allowance for loan losses. Bank should maintain sufficient loan loss allowances to cover expected losses and maintain equity capital to absorb unexpected losses (Benston and Wall, 2005). The deductions of allowance for loan losses will appear on the bank's income and expenses statement as non-cash expense item called provision for loan losses.

A loan loss provision is an expense item that bank and selected financial institutions may deduct from its current income. It is charged to the bank profit and loss statements that create reserves on bank balance sheets to prevent losses. The loan loss provisions are the main accrual expenses for banks (Rose and Hudgins, 2013). Thus, banks tend to manipulate provision for loan loss as a tool for earnings management, capital management, and signaling. In addition, loan loss provisions may also

associated with the pro-cyclical behavior of the banking institutions.

The case of Bank Islam Malaysia Berhad (BIMB) in year 2006 provides a good example regarding the manipulation of loan loss provision to achieve targeted earnings. The bank was predicted to make provisions not more than RM1.5 billion on non-performing loan (NPL) for the financial year ending June 2006. However, BIMB recorded the amount of RM774 million in loan loss provisions for the previous financial year, which resulted to a surprising amount of RM2.3 billion in the loan loss provisions (LLP) in year 2006. Due to this, public confidence had dropped (Ram, 2006).

### 1.1 Problem Statement

There are rising numbers of studies that debated the manipulation of loan loss provisions for income smoothing, capital management, signaling and pro-cyclicality. Income smoothing can be defined as manipulating an accrual item in the income statement to smooth the bank's reported earnings. It occurs when bank managers understate expected loan losses to increase net income and capital in the current year (Benston and Wall, 2005).

Capital management occurs when the capital constrained, banks will use the loan loss provisions to achieve regulatory capital targets. Signaling occurs when bank managers increase current loan loss provisions to signal the future earnings power of the bank. Pro-cyclicality happens when bank managers increase their provisions during bad times and reduce them in good times. The implication of pro-cyclicality is that it may

trigger a credit crunch that could worsen the economics recession.

There are a number of literatures that investigate the use of loan loss provisions to smooth income and manage capital. Anandarajan et al., (2007), Perez et al., (2008), Chang et al., (2008), Fonseca and Gonzalez (2008) and Kanagaretnam et al., (2010) highlight that banks use loan loss provisions to smooth income and for capital management. There are also recent literature that examine the use of loan loss provision for income smoothing and capital management such as DeBoskey and Jiang (2012), Dong et al., (2012), Curcio and Hasan (2013), Bouvatier et al., (2014), and Olson and Zoubi (2014). Most of these studies employ the U.S. banks data and European banks data.

The other strand of literature associate loan loss provisions with the issue of signaling (Kanagaretnam et al., 2005; Anandarajan et al., 2007; Leventis et al., 2012; Curcio and Hasan, 2013; and Olson and Zoubi, 2014). Existing studies also highlight that loan loss provisioning is commonly associated with the pro-cyclicality (Bikker and Hu, 2002; Laeven and Majnoni, 2003; Berger and Udell, 2004; Bikker and Metzmakers, 2005; Bouvatier and Lepetit, 2008; and Suhartono, 2012).

Most of the studies on loan loss provisions are done in the United States and countries outside Malaysia. For Malaysian case, Shaharudin (2004) reviews past academic literatures on manipulating loan loss provisions for earnings and capital management and concludes that banks in Malaysia do not manage their regulatory capital and earnings through loan loss provisions. This is supported by Ismail et al., (2005), where the empirical analysis suggests that Malaysian banks do not smooth income through loan loss provisions.

This study differs from Shaharudin (2004) and Ismail et al., (2005) in several ways. First, this study provides more recent evidence on the use of loan loss provisions for income smoothing, capital management, and signaling in Malaysian commercial banks. Second, this study tests whether pro-cyclicality exists through loan loss provisions in Malaysian commercial banks, an issue that receives little attention in the existing literature. Third, this study controls for the effect of 2007-2009 global financial crises on loan loss provisions of Malaysian commercial banks. Therefore, the objectives of this study are:

- i) To examine the evidence of income smoothing, capital management, signaling, and pro-cyclical behavior through loan loss provisions of Malaysian commercial banks for the period 2002-2012.
- ii) To examine the effect of 2007-2009 global financial crisis on loan loss provisions of Malaysian commercial banks.

## 2. LITERATURE REVIEW

### 2.1 Bank Loan Loss Provisioning

Loan loss provisions are defined as estimation for probability of loan losses. This amount will be charged on income statement as an expense. The aim is to protect a portion of current earnings from taxes in preparing for default loans. Loan loss provisions play important role due to the sensitive information they convey and may reflect the deteriorations of credit portfolio quality (Curcio and Hasan, 2013). Banking institution should establish a scientific and rational system of loan loss provisions to address financial risk (Dong, Liu, and Hu, 2012). Generally, there are two categories for loan loss provisions; specific provisions and general provisions. Specific provisions refer to the expected losses for individual or specific loans that have been recognized as an impaired. While, general provisions defined as groups of loans that have not been identified as impaired but may possibility contain some.

Loan loss allowance is a contra assets accounts that represent an accrued reserve against loans losses. When a loan is considered uncollectible, the amount will be charged off by reducing the allowance for loan losses account and at the same time decreasing the asset account for gross loans. The increase in loan loss provisions will result in increase of loan loss allowance and a reduction in current net income.

### 2.2 Loan Loss Provisions and Income Smoothing and Capital Management

Income smoothing is a common form of earnings management. It can be defined as manipulating an accrual item in the income statement to smooth the firm's reported earnings. The need of income smoothing arises due to the need to reduce the information asymmetry. It occurs when bank managers understate expected loan losses to increase net income and capital in the current year (Benston and Wall, 2005). Meanwhile, capital management is when capital becomes a constrained; bank will use its discretionary accruals to achieve regulatory capital targets. Capital ratio is an important indicator that reflects the risk of the bank. It plays an important role to shows the bank's ability to endure under current capital structure and denotes the undetectable risk of default (Chang et al., 2008).

Study by Anandarajan et al., (2007) reveals that Australian banks use loan loss provisions for capital management. The result also indicate that banks in Australia use loan loss provisions to manage earnings were listed commercial banks engaged aggressively in earnings management as compared to unlisted commercial banks. Perez et al., (2008) on the other hand, examine the impact of statistical provisions on loan loss provisions of banks in Spain. The findings show that, even though strict regulations on loan loss provisions have been imposed, it appears that Spanish banks still practice income smoothing activities. However, there is no evidence to prove that they use loan loss provisions to manage capital.

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Fonseca and Gonza'lez (2008) examine the determinants of income smoothing via the manipulation of bank loan loss provision using panel data of 40 countries around the world. The findings suggest that bank income smoothing depends on investor protection, disclosure, regulation and supervision, financial structure and financial development.

In the recent study of earnings management and capital management in the banking industry, Kanagaretnam, Lim, and Lobo (2010) examine the impact of auditor reputation on banks' earnings management by utilizing samples from international banks in 29 countries. Being the first of its kind to study the impact of auditing on bank earnings management, the authors hypothesize that auditors who are specialists in the banking industry may have better assess the adequacy of loan losses and able to reduce earnings management activities through loan loss provisions. Covering period from 1993 to 2006, their tests on income-increasing abnormal loan loss provisions suggest that auditor type and auditor expertise could hinder the activities of earnings management through abnormal loan loss provisions.

DeBoskey and Jiang (2012) examine the impact of auditor specialization on banking loan loss provisions by utilizing large cross section of U.S banks. Covering period from 2002 to 2006, they suggest that bank manager use loan loss provisions to smooth earnings in the post-SOX period. Similar result obtained by Kanagaretnam et al., (2010), the audit industry expertise plays an affective monitoring role in reducing earnings management. Dong et al., (2012) provide evidence that there is relation between bank loan loss provision and earnings management and capital management in China banks. The results suggest that when bank capital adequacy is low, bank managers set aside more loan loss provision to add into capital in order to meet the regulatory requirements.

In the recent study on the impact of International Financial Reporting Standards (IFRS) on loan loss provisioning, Leventies et al., (2012) find no evidence to support capital management hypothesis in examining the impact of implementation of IFRS on the use of loan loss provision to manage bank capital. Their study focus on European listed banks for the period 1999 to 2008. In the aspect of earnings management hypothesis, the findings conclude that earnings management through loan loss provision is significantly reduced after the implementation of IFRS in 2005.

In summary, empirical evidence from earlier studies indicates that banks generally use loan loss provisions to manage earnings. Manipulating activities happen because of the need to reduce the information asymmetry. Hence, the hypotheses regarding income smoothing and capital management are developed as follows:

H1 = Malaysian commercial banks do smooth income through loan loss provisions

H2 = Malaysian commercial banks manage capital through loan loss provisions

### 2.3 Loan Loss Provisions and Signaling

Signaling occurs when bank managers intend to signal the financial strength of the banks. Signaling the earnings power of the bank has been proven to be able in absorbing future losses by increasing the current loan loss provision (Shaharudin, 2004 and Bouvatier and Lepetit, 2008). According to Kanagaretnam et al., (2005), in order to reduce adverse selection component and thus their cost of capital, bank managers with high earnings variability are more likely to engage in signaling through loan loss provision.

In relation to this, Anandarajan et al., (2007) examine the use of loan loss provisions for capital, earnings management, and signaling by Australian banks. They do not find conclusive evidence to support that Australian banks use loan loss provisions for signaling future intentions of higher earnings to investors. In contrast, Bouvatier and Lepetit (2008) find the evidence of signaling hypothesis in European banks sample for the period 1992 to 2004.

Different from others, Leventis et al., (2012) investigate whether bank managers of countries in the European Union engage in signaling after the implementation of the International Financial Reporting Standards (IFRS) in 2005. The study could not find sufficient evidence to support that healthy banks engage in signaling behavior but banks that having financial distress tend to engage in signaling. Curcio and Hasan (2013) examine the use of loan loss provisions by European banks in earnings and capital management and signaling. Covering period from 1996 to 2006, the findings suggest that non-EA banks use loan loss provisions as a tool to convey information about their future earnings to the markets. This is not found for the EA banks.

Olson and Zoubi (2014) examine the determinants of the allowance for loan losses (ALL) and loan loss provisions (LLP) of banks in the Middle East and North African (MENA) for the period 2000-2008. Using a sample of 75 banks of nine MENA countries, the results highlight that MENA banks do engage in signaling activities through ALL and LLP.

In summary, empirical evidence from earlier studies indicates that banks generally use loan loss provisions for signaling. Therefore, the hypothesis is developed as follows:

H3 = Malaysian commercial banks engage in signaling through loan loss provisions

### 2.4 Loan Loss Provisions and Pro-Cyclicality

Pro-cyclicality occurs when banks increase provisions during the bad times and reduce them in good times. In bad times, increasing loan loss provisions would

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affect bank earnings, weakening its capital, and reducing its lending to creditworthy borrowers. In relation to this, Laeven and Majnoni (2003) analyze the pro-cyclical pattern of banks around world, and as expected, the results support the evidence of pro-cyclical behavior of loan loss provisions.

In the aspect of the pro-cyclicality of loan loss provisioning and bank capital, Majnoni and Cavallo (2001) investigate the effects of weak regulation in monitoring the loan loss provisioning practices that may strengthen the pro-cyclical behavior of bank capital. Using a sample of 36 countries covering period from 1988-1999, the results show that the level of institutional development significantly affect loan loss provisioning practices across countries. In addition, they also suggest that provisioning practices should be incorporated as a component of capital regulation to help reducing the pro-cyclical effects on bank capital. The shortage of a bank capital will reduce bank lending activities, which could lead to a credit crisis that may worsen the economic downturns.

Bikker and Hu (2002) and Bikker and Metzemakers (2005) examine the pro-cyclical pattern under Basel I and Basel II. In their studies, they find that provisioning tend to be high when GDP growth is low. This reflects an increased in riskiness of credit portfolio when the business cycle turns downwards. This will also increase the risk of credit crunch. In other study, Bikker and Hu (2002) employ a sample of 26 OECD countries covering 1979-1999 period to test the relationship between banks provisioning and business cycle. Using macroeconomic variables such as GDP, inflation, and unemployment, the findings conclude that loan loss provisions are negatively related with GDP and inflation, but positively related with unemployment.

Bouvatier and Lepetit (2008) examine banks pro-cyclical behavior for 186 European banks sample covering period from 1992 to 2004. They find that credit risk management without provisioning rules may have pro-cyclical effects. They also find that non-discretionary loan loss provisions have a significant relationship with the business cycle. The recent global crisis shows the importance of the pro-cyclicality in the financial sector. It weakens the banking institutions due to the changes in economy activities that potentially affecting financial stability and economic growth (Athansoglou et al., 2014).

From the above studies, it can be concluded that bank loan loss provisioning tends to be pro-cyclical. Thus, the hypothesis is developed as follows:

H4 = Malaysian commercial banks exhibit pro-cyclical behavior through loan loss provisions

### 3. METHODOLOGY

#### 3.1 Data

This study uses bank accounting data extracted from income statement and balance sheets of the selected commercial banks operating in Malaysia. The banks financial information was obtained primarily from annual reports, where the annual reports were downloaded from the banks website. The macroeconomic data, Growth Domestic Product (GDP), was taken from the World Bank (World Development Indicators). The period of analysis covers from 2002 to 2012, which includes the global recession in 2007-2008. This could assess whether the crisis gives an impact to loan loss provisions of Malaysian commercial banks.

#### 3.2 Sample

This study utilizes a sample of commercial banks in Malaysia. There are a total of 27 commercial banks operating in Malaysia, of which 8 are local banks and 19 are foreign banks. However, only 8 local banks and 7 foreign banks were selected due to lack of data on loan loss provision and some banks have less than 10 years of accounting data. In addition, most of the foreign-owned banks do not disclose their loan loss provisions data. Therefore, the final sample comprises 15 commercial banks.

#### 3.3 Model

To test the hypotheses, with some modification, this study follows the model developed by Anandarajan et al., (2007) and Curcio and Hasan (2013). The baseline model is as follows:

$$LLP_{it} = \alpha + \beta_1 NPL_{it} + \beta_2 CHLOAN_{it} + \beta_3 EBTP_{it} + \beta_4 CHEBTP_{i,t+1} + \beta_5 LLA_{i,t+1} + \beta_6 WO_{it} + \beta_7 CAP_{it} + \beta_8 GDP_t + \beta_9 GFC_{it} + \varepsilon_{it}$$

Where:

$LLP_{it}$  = Loan loss provisions of bank  $i$  at year  $t$  / average total assets

$NPL_{it}$  = Non-performing loan ratio of bank  $i$  at year  $t$

$CHLOAN_{it}$  = Change in total loans outstanding of bank  $i$  at year  $t$  / average total assets

$EBTP_{it}$  = Earnings before taxes and provisions of bank  $i$  at year  $t$  / average total assets

$CHEBTP_{i,t+1}$  = One year ahead change in earnings before taxes and provisions of bank  $i$  at year  $t$  / average total assets

$LLA_{i,t+1}$  = Beginning loan loss allowance of bank  $i$  at year  $t$  / average total assets

$WO_{it}$  = Write offs of bank  $i$  at year  $t$  / average total assets

$CAP_{it}$  = Total equity of bank  $i$  at year  $t$  / average total assets

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$GDP_t$  = Growth Domestic Product growth rate at year  $t$

$GFC_{it}$  = Dummy for 2007-2009 financial crisis

### 3.4 Variable Explanation

#### 3.4.1 Dependent Variable

$LLP_{it}$  = loan loss provisions of bank  $i$  at year  $t$  / average total assets

Previous studies employ loan loss provisions as dependent variables to test the evidence of management discretionary which are income smoothing, capital management, signaling and pro-cyclicality (Kanagaretnam et al., 2005; Anandarajan et al., 2007; Leventis et al., 2012). Following previous studies, this study uses loan loss provisions scaled by average total asset as dependent variable.

#### 3.4.2 Independent Variables

$NPL_{it}$  = non-performing loan ratio of bank  $i$  at year  $t$

Non-performing loan is an important indicator in determining the loan default. The higher the non-performing loan, the higher loan loss provision would be (Bouvatier and Lepetit, 2008; Dong et al., 2012).  $NPL$  is expected to have a positive relationship with loan loss provisions.

$CHLOAN_{it}$  = Change in total loans outstanding of bank  $i$  at year  $t$  / average total assets

Change in total loans outstanding of bank is used as a proxy to measure default risk. The higher the loan growth, the higher the loan loss provisions would be. Thus,  $CHLOAN$  is expected to have a positive relationship with loan loss provisions (Dong et al., 2012 and Fonseca and Gonza'lez, 2008).

$EBTP_{it}$  = Earnings before taxes and provisions of bank  $i$  at year  $t$  / average total assets

$EBTP$  is used to test the evidence of income smoothing activities in Malaysian commercial banks. The positive sign of  $EBTP$  indicates that bank use loan loss provisions to smooth income, where banks will increase loan loss provisions when net incomes fall. Ismail et al., (2005) and Shaharudin (2004) do not find evidence that Malaysian banks smooth income through loan loss provisions. Therefore, using recent period of data, this study examines whether Malaysian banks do smooth income through loan loss provisions.

$CHEBTP_{it+1}$  = One year ahead change in earnings before taxes and provisions of bank  $i$  at year  $t$  / average total assets

This variable is used to test for signaling, where banks use loan loss provisions to signal for future profitability. Signaling occurs when bank managers

increase current loan loss provisions to signal the future earnings power of the bank. Therefore,  $CHEBTP$  is expected to positively related to loan loss provisions.

$LLA_{i,t-1}$  = Beginning loan loss allowance of bank  $i$  at year  $t$  / average total assets

Beginning loan loss allowance is also used to measure default risk. A higher beginning loan loss allowance will require a lower  $LLP$  in the current period.

Thus, beginning  $LLA$  is expected to have a negative relationship with loan loss provisions.

$WO_{it}$  = Write offs of bank  $i$  at year  $t$  / average total assets  
Current loan charge-offs can provide information about future loan defaults. This variable is expected to have a positive relationship with loan loss provisions.

$CAP_{it}$  = Total equity of bank  $i$  at year  $t$  / average total assets

Capital ratio plays an important role as an indicator of risk status of the bank. It indicates bank's ability to survive under current capital structure and implies the invisible risk of default (Chang et al., 2008). The negative coefficient for capital management hypothesis posit that bank managers with low regulatory capital have incentives to increase loan loss provisions (Kanagaretnam et al., 2005; Bouvatier and Lepetit, 2008; Leventis et al., 2012 and Curcio and Hasan, 2013). Therefore,  $CAP$  is expected to have a negative relationship with loan loss provisions.

$GDP_t$  = Growth Domestic Product growth rate at time  $t$

Pro-cyclicality is associated with business cycle where banks tend to increase loan loss provisions during economic downturns. In this study,  $GDP$  growth is used to measure the business cycle. The relationship between  $GDP$  growth and  $LLP$  will provide evidence for pro-cyclical behavior. A negative relationship implies that banks increase their loan loss provisions when the business cycle falls (Bikker and Metzmakers, 2005; Laeven and Majnoni, 2003).

$GFC_{it}$  = Dummy for 2007-2009 global financial crisis (1 for years 2007, 2008, 2009 and 0 for others)

Bank failure has a relationship with financial crisis due to poor loan monitoring during pre-crisis periods as bankers tend to ease their credit standards during expansion. Eng and Nabar (2007) find that the Asian financial crisis in 1997 has an effect on the loan loss variables in Malaysia, Hong Kong, and Singapore. To see the potential impact of 2007-2009 financial crisis on Malaysian banks loan loss provisions, this study adds 2007-2009 crisis dummy to see whether the recent financial crisis influence the way Malaysian commercial banks do their provisioning.

## 4. FINDINGS

### 4.1 Descriptive Statistics and Correlation Matrix

**Table 1:** Descriptive statistics

Variable	Mean	Min	Max	Std Dev
LLP	0.0026	0	0.0132	0.0020
LLA	0.0147	0.0007	0.0477	0.0076
EBTP	0.0131	-0.0025	0.0269	0.0040
CHEBTP	0.0011	-0.0202	0.0132	0.0034
CHLOAN	0.0357	-13.60	0.2327	0.0382
WO	0.0038	0	0.0238	0.0038
CAP	0.0567	0.0235	0.1379	0.0187
NPL	3.713	0.14	21.25	3.8599
GDP	5.15	-1.51	7.43	2.23
GFC	0.2727	0	1	0.4467

Table 1 reports descriptive statistics for the variables used in this study. The average value for loan loss provisions (LLP) is 0.26%, and for the loan loss allowance (LLA), the average value is 1.47%. On average, loan growth of banks in the sample (CHLOAN) is 3.57% for the entire period while the ratio of earnings before taxes and provision to total assets (EBTP) is 1.31%. The average value for one year a head changes in earnings before taxes and provisions (CHEBTP) to total assets is 0.11%. The mean for non-performing loan ratio (NPL) is 3.17%. On average, write-off (WO) for the entire period is 0.38%, capital (CAP) is 5.67%, and GDP is 5.15%. Finally, the mean value for GFC is 27.27%.

The correlation matrix in Table 2 indicates that loan loss provisions (LLP) correlate positively with LLA, EBTP, WO, CAP, and NPL. On the other hand, loan loss provisions correlate negatively with CHEBTP, CHLOAN, GDP, and GFC. The correlation matrix also shows that multicollinearity does not appear to be a problem in the analysis as the highest correlation is around 60% between LLA and NPL. To further check for multicollinearity problem, variance inflation factor was also run. The results show that the mean VIF for independent variables is 1.75, satisfying the rule of thumb less than 10 (no multicollinearity problem).

**Table 2:** Correlation matrix

	LLP	LLA	EBTP	CHEBTP	CHLOAN	WO	CAP	NPL	GDP	GFC
LLP	1.0000									
LLA	0.5118	1.0000								
EBTP	0.2163	-0.0616	1.0000							
CHEBTP	-0.0035	-0.0947	0.5096	1.0000						
CHLOAN	-0.0707	-0.0380	0.0188	0.0880	1.0000					
WO	0.4032	0.5261	-0.1658	-0.0625	-0.0925	1.0000				
CAP	0.0269	0.1183	-0.1033	-0.0013	-0.0014	-0.0204	1.0000			
NPL	0.3645	0.6011	-0.3581	-0.2866	-0.2130	0.4849	0.0380	1.0000		
GDP	-0.0680	0.0667	-0.0024	0.1647	0.1232	0.0149	-0.0235	0.1294	1.0000	
GFC	-0.0375	-0.0582	0.0886	0.0839	0.0694	0.0644	-0.0297	-0.1518	-0.0266	1.0000

## 4.2 Empirical Results

**Table 3:** Test of income smoothing, capital management, signaling and pro-cyclicality

Independent variables	Predicted sign	Dependent variable: Loan loss provisions	
		OLS	Fixed effects
LLA	-	0.0823*** (0.003)	0.0841** (0.024)
EBTP	+	0.1819*** (0.000)	0.2142*** (0.000)
CHEBTP	+	-0.0463 (0.321)	-0.0445 (0.356)
CHLOAN	+	0.0017 (0.763)	-0.0004 (0.929)
WO	+	0.1078** (0.015)	0.0572 (0.245)
CAP	-	0.0027 (0.712)	-0.0022 (0.876)
NPL	+	0.0001** (0.035)	0.0001** (0.036)
GDP	-	-0.0000 (0.140)	-0.0000 (0.116)
GFC	-/+	0.0007** (0.025)	0.0008** (0.010)
_CONS		-0.0015 (0.051)	-0.0008 (0.082)
<b>F-statistic</b>		9.57*** (0.0000)	5.59*** (0.0000)
<b>R-squared</b>		0.4060	0.3898
<b>No. of observations</b>		136	136

**Notes:** LLP is the ratio of loan loss provisions to total assets; NPL is the ratio of non-performing loan to total assets; CHLOAN is the ratio of change in loan to total assets; EBTP is the ratio of earnings before taxes and provision to total assets; CHEBTP is one year ahead change in earnings before taxes and provisions; LLA is the ratio of beginning balance of the total allowance for loan losses; WO is the ratio of write-offs to total assets; CAP is the ratio of total equity to total assets; GDP is growth domestic product; and GFC is dummy for crisis years 2007-2009.

Table 3 shows the empirical results of income smoothing, capital management, signaling, and pro-cyclicality hypotheses of Malaysian commercial banks for the period 2002-2012. Column 1 reports the results using the Ordinary Least Squares (OLS) estimation while Column 2 reports the results using the fixed effects estimation. Fixed effects estimation controls for the unobservable behavior of banks' specific characteristics,

such as management quality and banks' policies that may affect loan loss provision decisions. As shown in Table 3, for OLS estimation, only LLA, EBTP, WO, NPL and DCRISIS are statistically significant, while the rest are insignificant. This signifies that, CHEBTP, CHLOAN, CAP, and GDP do not influence loan loss provisions of Malaysian commercial banks for the entire period.

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The coefficient for beginning LLA is positively significant, indicating that banks increase the current period loan loss provisions when the previous year loan loss allowance is increased. This finding is similar to Fonseca and Gonza'lez (2008) and Kanagaretnam et al (2005). A positive and highly significant of EBTP indicates that Malaysian banks use loan loss provisions to smooth income. This finding contradicts with Shaharudin (2004) and Ismail et al., (2005). The evidence of income smoothing is consistent with Anandarajan et al., (2007), Fonseca and Gonza'lez (2008), Dong et al., (2012), and Curcio and Hasan (2013). WO shows a positive and significant coefficient with LLP, indicating that banks set higher loan loss provisions when loans write-off are high. Finally for the financial crisis dummy, the OLS results show that GFC is positively and statistically significant with the LLP, implying that Malaysian banks put aside more loan loss provisions during the 2007-2009 global financial crisis.

The results for fixed effects estimation are consistent with the OLS estimation, except for WO. The result for fixed effects analysis shows that WO is insignificant although the coefficient is positive. In summary, the overall estimations demonstrate that, Malaysian banks do smooth income through loan loss provisions but there is insufficient evidence to support that capital management, signaling and pro-cyclicality exist through loan loss provision in Malaysian banks for the period 2000-2012. The findings also indicate that 2007-2009 financial crisis has forced bank managers to increase loan loss provisions, most probably to absorb losses that are expected to arise from loans default by customers.

## 5. CONCLUSION

The objective of this study is to examine to examine the evidence of income smoothing, capital management, signaling, and pro-cyclical behavior through loan loss provisions of Malaysian commercial banks for the period 2002-2012. In addition, this study also tests whether global financial crisis in years 2007-2009 gives an impact to loan loss provisions of Malaysian commercial banks. In contrast to Shaharudin (2004) and Ismail et al., (2005), the results of this study demonstrate that Malaysian commercial banks use loan loss provisions to smooth income. As for the capital management, signaling, and pro-cyclicality, this study could not find concrete evidence to support the existence of those activities in Malaysian commercial banks. After controlling for 2007-2009 global financial crisis, the result shows that loan loss provisions of Malaysian banks are influenced by the financial crisis. This probably in line with the report by International Monetary Fund (2013); Malaysia was not immune to the 2007-2009 global economic recession and suffered from a decline in real GDP growth for the first quarter of 2009. This might explain why banks in Malaysia set higher provisions during the crisis – to absorb the high number of expected loan losses and hence, reduce the volatility in net income.

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