

Loan loss provisions, income smoothing and loan growth: Evidence from Islamic banks

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Abstract

This paper analyses income smoothing behavior and procyclical effect of loan loss provisions in Islamic bank. The model includes the use of loan loss provisions for discretionary and non-discretionary purposes in Islamic banks and relates it to the ways of Islamic banks disburse loans. The empirical results show that Islamic banks use loan loss provisions for non-discretionary purposes, while well-capitalized banks and banks focusing on lending activities may use loan loss provisions for income smoothing to a lesser extent. Moreover, it is documented that higher non-discretionary component of loan loss provisions results in a decline in loan growth and hence, non-discretionary provisions are procyclical. In contrast, the discretionary component of loan loss provisions does not exhibit any significant impact on loan growth. Finally, the findings show that the negative link between non-discretionary provisions and loan growth does not hold for well-capitalized banks, and banks focusing on lending activities. This paper, therefore, highlights that higher capitalization and higher loan asset portfolios tend to neutralize the procyclical impact of non-discretionary provisions through their income smoothing behaviour. In this regard, the provisioning system is particularly recommended for less-capitalized banks and banks which do not focus on lending activities since they do not conduct income smoothing strategies.

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1. Introduction

In the aftermath of the 2008 global crisis, enhancing macroprudential regulation that aims to overcome systemic risk has become an important agenda across countries. One of the purposes of macroprudential regulation is to overcome the procyclicality of bank behaviour (IMF, 2013). This means that banks are expected to generate financial buffer during economic boom to prevent losses that may occur during economic downturn afterward. In this regard, it is expected that banks can still play a significant role in achieving economic recovery through their intermediation function during economic downturns. Nevertheless, Altman (2005) points out that bank credit risk management is procyclical in general. In other words, banks tend to underestimate credit risk during economic boom, but overestimate it during economic downturn. Accordingly, the current loan loss provisioning system also tends to be procyclical with business cycle.

For instance, Laeven and Majnoni (2003) document the procyclicality of loan loss provisions in banking, in which higher loan growth, loan-to-asset ratio or earnings deteriorate loan loss provisions. Cavallo and Majnoni (2002) also highlight that during economic boom, banks tend to lower loan loss provisions due to lower expected credit risk. Bikker and Metzmakers (2005) find out that the loan loss provisions are procyclical for OECD countries. The case of Austria, Arpa et al. (2001) again show that bank loan loss provisions are procyclical with business cycle. Similarly, Fernandez de Lis et al. (2001) and Pain (2003) shed

light on the procyclicality of loan loss provisions for Spanish and UK banks, respectively.

With regards to the component of loan loss provisions, Cortavaria et al. (2000) divide loan loss provisions into two components: general provisions and specific provisions. General provisions are a forward-looking component influenced by managerial discretionary purposes to deal with unexpected losses, in which bank management can generate provisions for capital management, income smoothing, or signaling purposes (Bouvatier and Lepetit, 2008; Ahmed et al., 1999; Lobo and Yang, 2001). Meanwhile, specific provisions are used to overcome expected credit risk and hence, specific provisions can also be called a backward-looking component, which is not affected by managerial discretionary purposes (Whalen, 1994; Beaver and Engel, 1996).

In order to overcome the procyclicality of bank loan loss provisions, Fernandez de Lis et al. (2001) develop a dynamic provisioning system, in which banks should generate statistical provisions, particularly during economic boom. Statistical provisions do not substitute general or specific provisions, but complement them. Total provisions (statistical, general and specific provisions) are therefore smoothed during economic downturn, since banks have generated statistical provisions beforehand or during economic boom. Bouvatier and Lepetit (2008) provide evidence on the needs of a dynamic provisioning system by examining the impact of discretionary and non-discretionary provisions on loan growth. From a sample of European banks, they show that non-discretionary provisions are indeed negatively related to loan growth. This further suggests that

moving away from the current provisioning system toward a more forward looking provisioning system is therefore necessary, allowing banks to have a discretionary motivation in generating loan loss provisions.

In spite of a growing literature analyzing the procyclicality of loan loss provisions in banking, very limited attention has been given to study Islamic banks. Islamic banks differ from conventional banks in several respects. In principle, Islamic banks cannot issue loans except interest free loans (Qarz e Hasna). Hence, Islamic banks' profit should not come from interest-based products, but from profit-loss sharing (PLS) mechanisms. In this regard, credit risk management in Islamic banks is also different from conventional banks. Besides the use of loan loss provisions, the Islamic bank can also use the special reserve PER (profit equalization reserve) and IRR (investment risk reserves) to cover loan risks associated with products that are not governed by the principle of PLS (Taktak et al., 2010).

Understanding the implication of provisioning system in Islamic banks is thus necessary, especially when Islamic banks develop rapidly worldwide. Cevik and Charap (2011) document that Islamic banks' assets throughout the world are predicted to grow by 90 percent in 2016 reaching more than USD 1.8 trillion, from USD 939 billion in 2010. Higher Islamic bank development means that the role of Islamic banks in fostering economic growth will also be more substantial. Hence, the procyclicality of loan loss provisions in Islamic banks also becomes a potential challenge to overcome, particularly during economic downturn in which the role of bank financing is essential including from Islamic banks.

To our best knowledge, only Soedarmono et al. (2016) examine the impact of economic growth on loan loss provisions to show whether or not loan loss provisioning in Islamic banks is procyclical. It is shown that Islamic bank loan loss provisioning is indeed procyclical due to the negative link between economic growth and loan loss provisions. However, shortcomings appear in their paper, because higher loan loss provisions due to a decline in economic growth is not directly associated with lower loan growth, as loan growth is affected by various factors other than loan loss provisioning. This present paper builds on the work of Soedarmono et al. (2016) to explicitly test whether loan loss provisioning system in Islamic banks is procyclical by adopting the approach undertaken by Bouvatier and Lepetit (2008, 2012). Specifically, we explicitly examine whether the component of loan loss provisions (i.e. non-discretionary and discretionary provisions) affect loan growth in Islamic banks, as a factor that can directly influence economic recovery during economic downturns. Examining the impact of different components of loan loss provisions on loan growth enables us to understand the role of non-discretionary provisions in influencing Islamic bank lending decisions, and whether or not a dynamic provisioning system is required. Our contribution in this paper is multifold.

First, this paper examines the use of loan loss provisions for discretionary and non-discretionary purposes in Islamic banks. Second, a further test is conducted to find out whether bank-specific factors matter in influencing the use of loan loss provisions for income smoothing, as a managerial behaviour that determines the capacity of Islamic banks to implement a dynamic provisioning

system. Third, it augments the analysis by examining whether there is a procyclical impact of non-discretionary provisions on loan growth. Understanding such procyclical impact is useful to gauge the needs for implementing dynamic provisioning system in general. Fourth, we further differentiate what types of Islamic banks need a dynamic provisioning system by examining the impact on loan growth of interaction terms between non-discretionary provisions and bank-specific factors.

Specifically, the implementation of dynamic provisioning system is necessary for banks that exhibit a negative link between non-discretionary provisions and loan growth. In this situation, such banks have procyclicality problems because they tend to reduce the amount of loans distributed during an increase in expected losses (economic downturn) that force them to establish non-discretionary provisions (or specific provisions).

Finally, the rest of the paper is structured as follows. Section 2 shows the literature reviews and section 3 presents data, hypotheses development and methodology. Section 4 presents empirical results and robustness checks, while Section 5 concludes the paper.

2. Literature review

Basically, the Islamic bank is a bank which is governed by Islamic principles. Islamic principles prohibit trade in speculative activities (gharar), dealing with derivative transactions and investments in sectors that are not permitted (haram) and relates to products such as tobacco, alcohol and pork.

Sharia also prohibits Islamic banks to pay or receive interest (riba) to and from the financial and commercial transactions (Chong and Liu, 2009; Antonio, 2001).

Moreover, Islamic banks differs from conventional banks due to it uses the paradigm known as PLS (profit and loss sharing). In the literature of Islamic banks, bank products that use PLS principles such as Mudharabah and Musharakah, known as "shariah-based product", whereas that does not use PLS principles such as Murabahah, Ijarah, Istisna, known as "shariah-compliant products" (Taktak et al., 2010). Mudharabah is a form of financing among banks that provide investors around the capital and act as fund manager, where business profits will be divided according to the agreement, while the losses will be borne entirely by the bank unless the investors makes deliberate mistakes. In Musharakah contract, cooperation between banks and investors for certain businesses that each party provide a portion of funds provided that the profits will be shared according to the agreement, while the losses will be borne in proportion to each fund. With the investment of funds together with bank investors, Islamic banks become partners and should share the risk.

Related to provisions and contingent liabilities, AAOIFI (the Accounting and Auditing Organization for Islamic Financial Institutions) states that Islamic banks are required to maintain an adequate level of provision against assets impairments and credit exposures by recognizing a general and a specific provision. This practice reduces procyclicality in lending and income smoothing through provision (Perez et al., 2006; Laeven and Majnoni, 2003).

3. Data, hypothesis development and methodology

3.1. Data sources

In this paper, bank-level data is initially retrieved from a sample of 146 Islamic banks around the world covered by Bankscope Fitch IBCA, in which financial ratios are generated from 1997 to 2012. Meanwhile, macroeconomic data such as real GDP (gross domestic product) growth comes from the World Bank Development Indicators dataset.

3.2. Hypotheses development

This study is conducted in several stages. The first stage is to examine the determinant of loan loss provisions in which we can assess whether Islamic banks use loan loss provisions for non-discretionary and discretionary purposes. The second stage is to investigate whether bank-specific factors matter in explaining the use of loan loss provisions for discretionary purposes, especially for income smoothing. The third stage focuses on assessing whether non-discretionary provisions are negatively related to loan growth in Islamic banks. Finally, the fourth stage is to assess whether bank-specific factors considered in the second stage also matter in explaining the negative link between non-discretionary provisions and loan growth in Islamic banks.

In the first stage, our analysis on the determinant of loan loss provisions is focused on the extent to which Islamic banks undertake income-smoothing strategies. Income smoothing behaviour is taken into close consideration because it determines the capacity of banks to implement the dynamic provisioning system

that requires the creation of statistical provisions from income smoothing strategies. From this consideration, the first hypothesis can be generated as follows:

Hypothesis 1: *Aside from non-discretionary purposes, Islamic banks also use loan loss provisions for discretionary purposes, particularly for income smoothing*

In the second stage, we examine whether bank-specific factors matter in determining the use of loan loss provisions for income smoothing. We focus on the role of capitalization and asset structure in determining income-smoothing strategies undertaken by Islamic banks. Hence, we examine whether Islamic banks with different capitalization levels and asset structure exhibit differences in terms of income smoothing behaviour.

Some studies highlight the role of bank capitalization in determining bank behaviour in creating loan loss provisions (e.g. Bouvatier and Lepetit, 2008; Parker and Zhu, 2012). Bouvatier and Lepetit (2008) show that poorly capitalized banks are less inclined to make loan loss provisions. Moreover, Parker and Zhu (2012) show that well-capitalized Japanese banks tend to adopt income-smoothing strategies, while poorly-capitalized Indian banks that adopt income-smoothing strategies. Following previous studies, we can specify the second hypothesis:

Hypothesis 2a: *The use of loan loss provisions for income smoothing is dependent on Islamic banks' capitalization*

With regards to banks' asset structure, banks with a higher ratio of securities to total assets tend to boost loan growth even in times of instability with

monetary tightening (Kashyap and Stein, 2000). Altunbas et al. (2009) also document that banks with a higher capacity in asset securitization and in generating income based on securitization activities tend to boost loan growth during monetary tightening periods. From such evidence, we may characterize that banks with a higher share of loan activities in their balance sheet and thus, a lower share of securities, tend to exhibit a higher risk aversion which in turn weakens banks' capacity to generate profit. Hence, banks focusing on loan activities may be less inclined to make loan loss provisions for income smoothing, since their capacity to generate profit from non-loan assets are limited. Accordingly, such banks are willing to generate loan loss provisions for non-discretionary purposes to cover expected credit risks from loan activities. From this argument, we may specify the following hypothesis:

Hypothesis 2b: *The use of loan loss provisions for income smoothing is dependent on Islamic banks' asset structure*

In the third stage, we initially estimate discretionary and non-discretionary provisions from the LLP equation generated in the first stage. Following Bouvatier and Lepetit (2008), we then examine the impact of discretionary and non-discretionary provisions on loan growth in Islamic banks. Hence, we can specify the third hypothesis based on Bouvatier and Lepetit's (2008) results where non-discretionary provisions are negatively linked to bank loan growth. Specifically, the third hypothesis is described as follows:

Hypothesis 3: *Higher non-discretionary provisions tend to reduce loan growth in Islamic banks*

Finally, we augment the analysis undertaken in the third stage by assessing whether bank capitalization and asset structure matter in explaining the negative link between non-discretionary provisions and loan growth in Islamic banks. As Bouvatier and Lepetit (2008) show that poorly capitalized banks are less inclined to make loan loss provisions, we expect that well-capitalized and poorly capitalized Islamic banks may consider different objectives in generating loan loss provisions, i.e. whether or not they are motivated by income smoothing purposes which may in turn maintain loan growth. On the other hand, no previous studies examine the role of bank asset structure in affecting the link between non-discretionary provisions and loan growth in Islamic banks. From these considerations, we can specify Hypothesis 4.a and 4.b to highlight whether capitalization and asset structure matter in explaining link between non-discretionary provisions and loan growth in Islamic banks, respectively.

Hypothesis 4.a: *The negative link between non-discretionary provisions and loan growth in Islamic banks is dependent on Islamic banks' capitalization*

Hypothesis 4.b: *The negative link between non-discretionary provisions and loan growth in Islamic banks is dependent on Islamic banks' asset structure*

3.3. Methodology

In terms of research methodology, we proceed in several steps by modifying Soedarmono et al. (2016). In the first step, we assess Hypothesis 1 by specifying the following equation:

$$LLP/LLR_{i,t} = \alpha_0 + \alpha_1 EBP_{i,t} + \alpha_2 EQTA_{i,t} + \alpha_3 SIGN_{i,t} + \alpha_4 GROWTH_t + \alpha_5 NPL_{i,t} + \alpha_6 LTA_{i,t} + \varepsilon_{i,t} \quad (1)$$

LLP is the ratio of loan loss provisions to total assets. To ensure for robustness, we also use *LLR* as dependent variable which is the ratio of loan loss reserves to total assets. *EBTP* is defined as the ratio of earning before tax and provisions divided by total assets. *SIGN* is an explanatory variable reflecting the signaling behaviour of Islamic banks and measured by

$$SIGN_{i,t} = \frac{EBTP_{i,t+1} - EBTP_{i,t}}{0.5 (TA_{i,t+1} + TA_{i,t})}$$

Meanwhile, *TA* is total assets and *GROWTH* is the real gross domestic product growth. *NPL* represents the ratio of non-performing loans to total loans, while *LTA* is the ratio of total loans to total assets. From Equation (1), *EBTP*, *EQTA* and *SIGN* represent the discretionary component of loan loss provisions, which is related to income smoothing, capital management and signaling behaviour, respectively. Moreover, *GROWTH*, *NPL* and *LTA* reflects the non-discretionary component of loan loss provisions.

In the second step, we assess Hypothesis 2a and 2b by specifying the following equations, respectively:

$$LLP/LLR_{i,t} = \alpha_0 + \alpha_1 EBTP_{i,t} + \alpha_2 EQTA_{i,t} + \alpha_3 SIGN_{i,t} + \alpha_4 GROWTH_t + \alpha_5 NPL_{i,t} + \alpha_6 LTA_{i,t} + \alpha_7 EBTP * EQTA_{i,t} + \varepsilon_{i,t} \quad (2a)$$

$$LLP/LLR_{i,t} = \alpha_0 + \alpha_1 EBTP_{i,t} + \alpha_2 EQTA_{i,t} + \alpha_3 SIGN_{i,t} + \alpha_4 GROWTH_t + \alpha_5 NPL_{i,t} + \alpha_6 LTA_{i,t} + \alpha_7 EBTP * LTA_{i,t} + \varepsilon_{i,t} \quad (2b)$$

In the third step, we initially construct two variables of interest : *DISC* (discretionary provisions) and *NDISC* (non-discretionary provisions) before we test Hypothesis 3. *DISC* and *NDISC* are estimated from Equation (1) and described as follows.

$$\begin{aligned} DISC_{i,t} &= \hat{\alpha}_1 EBTP_{i,t} + \hat{\alpha}_2 EQTA_{i,t} + \hat{\alpha}_3 SIGN_{i,t} \\ NDISC_{i,t} &= \hat{\alpha}_4 GROWTH_{i,t} + \hat{\alpha}_5 NPL_{i,t} + \hat{\alpha}_6 LTA_{i,t} \end{aligned}$$

In order to test Hypothesis 3, we in turn specify the following equation.

$$LOANG/DLOAN_{i,t} = \alpha_0 + \alpha_1 DISC_{i,t} + \alpha_2 NDISC_{i,t} + \alpha_3 EQTA_{i,t} + \alpha_4 LTA_t + \alpha_5 SIZE_{i,t} + \alpha_6 DEPO_{i,t} + \alpha_7 GROWTH_t + \varepsilon_{i,t} \quad (3)$$

From Equation (4), we have two dependent variables representing bank loan growth. *LOANG* is a common measure of loan growth which is the ratio of the difference between current year's total loans minus previous year's total loans divided by previous year's total loans. Meanwhile, *DLOAN* is defined as follows, where *TLOAN* is total loans and *TA* is total assets.

$$DLOAN_{i,t} = \frac{TLOAN_{i,t} - TLOAN_{i,t-1}}{0.5 (TA_{i,t} + TA_{i,t-1})}$$

DEPO is the ratio of total deposits to total assets. Finally, we augment Equation (4) to test Hypothesis 4a and 4b by specifying the following equations, respectively.

$$LOANG/DLOAN_{i,t} = \alpha_0 + \alpha_1 DISC_{i,t} + \alpha_2 NDISC_{i,t} + \alpha_3 EQTA_{i,t} + \alpha_4 LTA_t + \alpha_5 SIZE_{i,t} + \alpha_6 DEPO_{i,t} + \alpha_7 GROWTH_t + \alpha_8 NDISC * EQTA_{i,t} + \varepsilon_{i,t} \quad (4a)$$

$$LOANG/DLOAN_{i,t} = \alpha_0 + \alpha_1 DISC_{i,t} + \alpha_2 NDISC_{i,t} + \alpha_3 EQTA_{i,t} + \alpha_4 LTA_t + \alpha_5 SIZE_{i,t} + \alpha_6 DEPO_{i,t} + \alpha_7 GROWTH_t + \alpha_8 NDISC * LTA_{i,t} + \varepsilon_{i,t} \quad (4b)$$

With regards to econometric methodology, all equations presented above are estimated using the Fixed Effect models. In doing so, we initially assess whether the Fixed Effect models are better than the Random Effect model using Hausman test.

4. Empirical results

4.1. Descriptive statistics

Table 1 presents the descriptive statistics of all variables used in this study. From descriptive statistics, we notice that all variables are economically plausible and hence, they are less likely to contain outliers.

4.2. The determinants of loan loss provisions in Islamic banks

From Table 2, it is shown that loan loss provisions are used by Islamic banks for non-discretionary purposes in which higher *NPL* and *LTA* are associated with higher loan loss provisions. Our results are consistent with Bouvatier and Lepetit (2008) in which banks use loan loss provisions for non-discretionary

purposes to deal with expected credit risk. Table 2 also reveals that Islamic banks use loan loss provisions for discretionary purpose related to capital management, a result which is consistent with Soedarmono et al. (2016), although we use different methodology.

Moreover, Table 3 shows the role of capitalization in affecting banks' income smoothing behaviour using loan loss provisions. Table 3 documents that $EBTP*EQTA$ is positively linked to loan loss provisions measured by LLP . This suggests that bank income smoothing behaviour using LLP only occurs in well-capitalized banks.

In Table 4, we show whether bank activity focus also matters in explaining income smoothing behaviour by banks. It is shown that $EBTP$ is negatively linked to LLP , but the sign is reversed when we observe $EBTP*LTA$. From $EBTP$ coefficients in Table 4, Islamic banks generally do not use loan loss provisions for earning management or income smoothing, since higher profit measured by $EBTP$ does not result in higher LLP . On the contrary, we may characterize from $EBTP*LTA$ coefficient that banks focusing on lending activities tend to have a positive link between earning management variable ($EBTP$) and loan loss provisions (LLP or LLR), albeit not significant. To a lesser extent, such a positive link between $EBTP*LTA$ and LLP (or LLR) indicates that banks focusing on lending activities has the potential to use loan loss provisions for income smoothing purposes.

In the next section, we examine whether bank behaviour to smooth income is beneficial or detrimental in terms of overcoming the procyclical effect of loan

loss provisions and encouraging lending activities during economic downturn. Bouvatier and Lepetit (2012) document from a large set of commercial banks that bank income smoothing behaviour can mitigate the procyclical effect of loan loss provisions coming from non-discretionary component. Initially, such procyclical effect is shown by a negative link between non-discretionary provisions and loan growth. In the next turn, the negative link between non-discretionary provisions and loan growth disappears when bank income smoothing indicator is incorporated in estimating non-discretionary provisions.

4.3. Loan loss provisions and loan growth

Although *GROWTH* has no significant impact on loan loss provisions as in Table 2, a result that is not consistent with Soedarmono et al. (2016), it does not mean that loan loss provisions do not have a procyclical effect on business cycle. Given that loan loss provisions can be classified into non-discretionary provisions and discretionary provisions, the procyclical effect of loan loss provisions can be assessed through the link between non-discretionary provisions and loan growth. During economic downturn, non-performing loans are likely to increase and thus, increasing non-discretionary provisions to cover expected credit risk. In this regard, the procyclical effect of loan loss provisions can be seen when higher non-discretionary provisions to cover expected credit risk, which is relatively substantial during economic downturn, is associated with a decline in loan growth. A decline in loan growth may in turn exacerbate recession.

Following Bouvatier and Lepetit (2008 & 2012), loan loss provisions are initially classified into discretionary (*DISC*) and non-discretionary provisions (*NDISC*) following Equation (3.a) and (3.b). The coefficient of each variable in both equations are taken from Table 2. Since we have two measures of loan loss provisions (*LLP* and *LLR*) as shown in Table 2, then both *DISC* and *NDISC* are estimated using *LLP* and *LLR* equation obtained.

Table 5 and 6 respectively show the impact of loan loss provisions (i.e. non-discretionary and discretionary component) on loan growth (*LOANG* or *DLOAN*) where both component of provisions is estimated based on *LLP* and *LLR* equation in Table 2. From Table 5 and 6, we document that non-discretionary provisions measured by *NDISC_LL*P and *NDISC_LL*R are negatively linked to loan growth at the 1 percent significance level. These results are robust whether we use *LOANG* or *DLOAN* as a measure of bank loan growth. In the meantime, we show that discretionary provisions (*DISC_LL*P) do not exhibit any significant impact on bank loan growth (*LOANG* or *DLOAN*). As a matter of fact, discretionary provisions can be positively linked to loan growth (*LOANG* or *DLOAN*), particularly when we observe *DISC_LL*R as in Table 6. Eventually, our results support the notion that only non-discretionary provisions are procyclical because higher non-discretionary provisions exacerbate bank loan growth. Our results follow the previous literature on the procyclical impact of loan loss provisions (Bouvatier and Lepetit, 2008; 2012).

Following Section 3.2 that augments the analysis by incorporating the role of bank capitalization and activity focus in affecting the income smoothing

behaviour of banks, a closer look is also undertaken in this section to assess whether the procyclicality of loan loss provisions, i.e. the negative impact of non-discretionary provisions (*NDISC_LL*P or *NDISC_LL*R) on bank loan growth, is dependent on the level of bank capitalization and activity focus, which is related to whether or not bank focus their activities on lending. Table 7 until Table 10 present our results for such purposes.

Table 7 and 8 document that the role of bank capitalization and bank lending activities are important to neutralize the procyclical impact of non-discretionary provisions, respectively. From Table 7, we show that the negative link between *NDISC_LL*P and loan growth (*LOANG* or *DLOAN*) is no longer apparent when bank capitalization (*EQTA*) increases. Meanwhile, Table 8 also show that the negative link between *NDISC_LL*P and loan growth (*LOANG* or *DLOAN*) only holds for banks with lower lending activities (*LTA*). In other words, the procyclical impact of non-discretionary provisions disappears, if banks focus more on lending activities. Such results from Table 7 and 8 are robust because they are not altered, although we replace non-discretionary provisions (*NDISC_LL*P) and discretionary provisions (*DISC_LL*P) with non-discretionary reserves (*NDISC_LL*R) and discretionary reserves (*DISC_LL*R), respectively, as shown in Table 9 and 10.

5. Conclusion

This paper extends Soedarmono et al. (2016) to examine the procyclical issues of loan loss provions in Islamic banks by further distinguishing the impact

of discretionary and non-discretionary provisions on loan growth in Islamic banks. The empirical results show that Islamic banks use loan loss provisions for non-discretionary purposes. However, a closer look indicates that banks with higher capitalization and loan portfolio assets can be more likely to use loan loss provisions for income smoothing to a lesser extent.

In the meantime, an examination of the impact on loan growth of non-discretionary and discretionary component of loan loss provisions shows that only non-discretionary provisions are procyclical. This is because only non-discretionary provisions are negatively linked to loan growth. Eventually, we augment the analysis by investigating whether the procyclicality of non-discretionary provisions is dependent on bank capitalization and lending activities. Our results suggest that the procyclicality of loan loss provisions does not appear in well-capitalized banks and banks focusing on lending activities.

On the whole, our results have an important policy implication. Specifically, the implementation of dynamic provisioning system is more essential for less capitalized banks and banks with lower loan asset portfolios. This is because such banks exhibit the negative link between non-discretionary provisions and loan growth and hence, highlighting the procyclicality of non-discretionary provisions in less capitalized banks and banks that do not focus on lending activities.

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Table 1. Descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
<i>EBTP</i>	0.0182	0.0190	0.2611	-0.4108	0.0436	726
<i>EQTA</i>	0.2622	0.1580	1.0000	-0.5893	0.2637	1050
<i>SIGN</i>	0.0044	0.0033	0.3487	-0.3835	0.0427	587
<i>GROWTH</i>	0.0470	0.0508	0.4650	-0.4130	0.0542	1684
<i>NPL</i>	0.0888	0.0428	1.0000	0.0000	0.1404	420
<i>LLPTA</i>	0.0072	0.0042	0.1412	-0.1265	0.0149	726
<i>LLRTA</i>	0.0263	0.0173	0.4414	0.0000	0.0379	706
<i>SIZE</i>	13.7634	13.9107	18.0824	6.2726	1.9782	1052
<i>DEPO</i>	0.6378	0.7183	7.1089	0.0000	0.3435	999
<i>LOANG</i>	0.3194	0.1761	10.1566	-1.0000	0.8752	836
<i>DLOAN</i>	0.5000	0.5000	1.0000	0.0000	0.5001	2240

Table 2. The use of loan loss provisions for discretionary and non-discretionary purposes

	<i>LLP</i>		<i>LLR</i>	
	Coefficient	<i>t</i> -statistics	Coefficient	<i>t</i> -statistics
<i>EBTP</i>	-0.034413	-1.057423	0.033223	0.375508
<i>EQTA</i>	-0.028832	-2.645157 ***	-0.039015	-1.196993
<i>SIGN</i>	-0.009703	-0.410368	0.092628	1.491817
<i>GROWTH</i>	0.003343	0.162248	-0.016590	-0.308559
<i>NPL</i>	0.021653	1.746861 *	0.231355	6.975651 ***
<i>LTA</i>	0.017714	2.328409 **	0.117084	5.970247 ***
Adj R-square	0.578107		0.756545	
Number of observation	299		287	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 3. The role of bank capitalization in income smoothing through loan loss provisions

	<i>LLP</i>		<i>LLR</i>	
	Coefficient	<i>t</i> -statistics	Coefficient	<i>t</i> -statistics
<i>EBTP</i>	-0.096611	-1.798277 *	0.088615	0.555357
<i>EQTA</i>	-0.035209	-3.003138 ***	-0.032881	-0.918111
<i>EBTP*EQTA</i>	0.179914	1.452889*	-0.151515	-0.417523
<i>SIGN</i>	-0.016127	-0.672166	0.098829	1.545036
<i>GROWTH</i>	0.002024	0.098392	-0.015248	-0.282518
<i>NPL</i>	0.020500	1.654732 *	0.232476	6.972457 ***
<i>LTA</i>	0.017481	2.303298 **	0.117341	5.968252 ***
Adj R-square	0.580306		0.755551	
Number of observation	299		287	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 4. The role of bank activity focus in affecting bank income smoothing behaviour using loan loss provisions

	<i>LLP</i>		<i>LLR</i>	
	Coefficient	<i>t</i> -statistics	Coefficient	<i>t</i> -statistics
<i>EBTP</i>	-0.074693	-1.674856 *	-0.061734	-0.535470
<i>EQTA</i>	-0.031050	-2.820048 ***	-0.047410	-1.428194
<i>EBTP*LTA</i>	0.083470	1.318421	0.218303	1.281701
<i>SIGN</i>	-0.023666	-0.914820	0.060092	0.897046
<i>GROWTH</i>	0.001413	0.068531	-0.019422	-0.361504
<i>NPL</i>	0.021530	1.739885 *	0.229706	6.931681 ***
<i>LTA</i>	0.014990	1.904503 *	0.110153	5.422645 ***
Adj R-square	0.579571		0.757314	
Number of observation	299		287	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5. The impact of discretionary and non-discretionary provisions on loan growth

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	-47.60143	-1.245334	-12.23305	-0.936330
<i>NDISC_LL</i>	-121.3483	-4.493173 ***	-33.54875	-3.692188 ***
<i>LTA</i>	2.077217	3.203086 ***	0.855806	3.913932 ***
<i>EQTA</i>	-1.230122	-0.797867	-0.016886	-0.032742
<i>SIZE</i>	-0.021489	-0.182436	-0.010848	-0.276672
<i>DEPO</i>	0.325190	0.626443	0.045550	0.257876
<i>GROWTH</i>	1.240514	1.299416	0.371813	1.128379
Adj R-square	0.360206		0.418374	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6. The impact of discretionary and non-discretionary provisions on loan growth

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	45.36638	5.296406 ***	13.35114	4.428336 ***
<i>NDISC_LL</i>	-9.841328	-4.322063 ***	-2.684276	-3.412783 ***
<i>SIZE</i>	0.177292	1.571653	0.042330	1.124263
<i>LTA</i>	1.122711	2.387304 **	0.584805	3.586620 ***
<i>EQTA</i>	2.529914	3.295618 ***	1.035787	3.885975 ***
<i>DEPO</i>	0.181055	0.374464	-0.001970	-0.011738
<i>GROWTH</i>	0.342812	0.390000	0.122281	0.394773
Adj R-square	0.441701		0.471888	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7. The role of bank capitalization on the procyclicality of non-discretionary provisions

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	-43.83747	-1.164457	-10.33876	-0.797523
<i>NDISC_LL</i>	-208.4785	-4.891042 ***	-57.37206	-4.048609 ***
<i>NDISC_LL*EQTA</i>	199.7996	2.614777 ***	56.89223	2.175749 **
<i>LTA</i>	2.835837	4.044914 ***	1.048741	4.483152 ***
<i>EQTA</i>	-3.558629	-2.022669 **	-0.640299	-1.093654
<i>SIZE</i>	-0.011332	-0.097700	-0.012074	-0.311025
<i>DEPO</i>	0.529018	1.023641	0.100021	0.566196
<i>GROWTH</i>	1.597649	1.682739 *	0.464072	1.410719
Adj R-square	0.380302		0.429943	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 8. The role of bank lending on the procyclicality of non-discretionary provisions

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	-48.50597	-1.250962	-10.32329	-0.780813
<i>NDISC_LL</i>	-128.0076	-2.509727 **	-20.07875	-1.194160
<i>NDISC_LL*LTA</i>	8.808940	0.154074	-18.25315	-0.952212
<i>LTA</i>	1.980046	2.185786 **	1.064695	3.437022 ***
<i>EQTA</i>	-1.239901	-0.801351	0.012763	0.024697
<i>SIZE</i>	-0.019003	-0.159413	-0.014399	-0.365508
<i>DEPO</i>	0.316325	0.604033	0.070917	0.396897
<i>GROWTH</i>	1.232543	1.285684	0.382881	1.160953
Adj R-square	0.356717		0.418079	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 9. The role of bank capitalization on the procyclicality of non-discretionary reserves

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	44.20679	5.172369 ***	13.03342	4.304006 ***
<i>NDISC_LL</i>	-15.52805	-3.863552 ***	-3.882578	-2.842719 ***
<i>NDISC_LL*EQTA</i>	15.02318	1.712771 *	3.264622	1.072965
<i>SIZE</i>	0.174724	1.557050	0.038931	1.030765
<i>LTA</i>	1.368957	2.797366 ***	0.630853	3.743036 ***
<i>EQTA</i>	1.186433	1.083825	0.749257	1.986217 **
<i>DEPO</i>	0.320113	0.656328	0.026058	0.153473
<i>GROWTH</i>	0.419059	0.478677	0.136508	0.440478
Adj R-square	0.447635		0.472321	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 10. The role of bank lending on the procyclicality of non-discretionary reserves

	<i>LOANG</i>		<i>DLOAN</i>	
	Coefficient	t-statistics	Coefficient	t-statistics
<i>DISC_LL</i>	45.68836	5.266593 ***	13.88879	4.569710 ***
<i>NDISC_LL</i>	-8.621038	-1.662848 *	-0.744391	-0.434373
<i>NDISC_LL*LTA</i>	-1.683825	-0.262156	-2.734506	-1.273527
<i>SIZE</i>	0.173843	1.526790	0.038370	1.017322
<i>LTA</i>	1.266989	1.748273 *	0.826116	3.307114 ***
<i>EQTA</i>	2.509196	3.243112 ***	1.020518	3.831269 ***
<i>DEPO</i>	0.190212	0.391370	0.023562	0.139624
<i>GROWTH</i>	0.365301	0.412559	0.146503	0.472876
Adj R-square	0.438798		0.473667	
Number of observation	264		268	

Note: The models are estimated by controlling cross-section and period fixed effects. ***, **, * indicate significance at the 1 percent, 5 percent, and 10 percent levels, respectively.