

-RESEARCH ARTICLE-

BANK LENDING DECISION AND BUSINESS CYCLES: ARE INDONESIAN ISLAMIC BANKS DIFFERENT?

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—Abstract—

This paper evaluates the relationship between bank lending decisions and the business cycle in Indonesia where both Islamic and the conventional banks operate side by side. Moreover, the paper also seeks to determine whether the response between the two types of banks is significantly different from each other with regards to the financing behavior observed during the business cycles. The current research paper employs a sample of 73 Indonesian banks (64 conventional and 9 Islamic commercial banks) and studies their financing behavior over a period of 16 years (2005 to 2019). The findings of the paper can be summarized as follows.

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First, bank credit in Indonesia is pro-cyclical, indicating that the financing behavior of Indonesian banks is positively correlated with the business cycle(s). In other words, during prosperous times, banks lend more while restricting the same during times of economic crisis. Overall, the findings show that the financing behavior of Indonesian commercial banks can aggravate the crisis as they reduce credit during adverse times. Secondly, and more importantly, the findings also reveal that the Islamic banks' financing is less cyclical in nature, highlighting the potential smoothing abilities of Islamic banks. Not surprisingly, these fundings are fueled by the deposits, as is the case with any developing country. The findings are found stable to the following robustness tests: a) alternate proxy of loan growth, b) inclusion of competition proxy in the regression and the c) use of HP filter to get an alternate proxy of business cycles.

Keywords: Islamic Banks, Financing, Business Cycles, Indonesia

JEL Classification: G21, G28, G32, H44

1. INTRODUCTION

The Subprime Crisis shook the economies globally and is often remembered as the Black Swan Event. The effect and magnitude of GFC is considered second only to the Great Depression. The Crisis not only highlighted the kind of financial instruments that the financial institutions have been using but also placed these institutions under the watchful purview and scrutiny of policymakers and economists. Realizing that these complexly structured financial products require strict supervision given the substantial costs attached to their failure. The Several studies have explored the banking-related variables that have the potential to protect the interests of the vulnerable during economically challenging times. Some of these variables are profitability, bank lending and bad loans (Hasan et al., 2011). With regards to pattern identification in terms of bank lending, GFC has been an ideal setting to investigate the link between banks' procyclical lending behavior and its capital holding and ownership structure. More specifically, the literature, for instance, explores which bank types (such as public vs private banks, domestic vs foreign ownership) have shown comparative stability in the lending pattern during the economic downturns (Bertay et al., 2015; Bhaumik et al., 2008; Duprey, 2018; Fungáčová et al., 2013; Huizinga et al., 2012; Lubisa et al., 2019; Pratama et al., 2019).

Islamic banks have also not been exempted from such scrutiny, given the long-standing argument that Islamic banks financing are closely tied to real sector and its underlying understanding that a viable system to the world is more stable and better equipped to promote risk sharing (Mirakhor, 2008). The scrutiny is also partially fueled by its unprecedented growth in the last decade with Islamic banking practice being established within Islamic countries and seen building towards a visible presence in countries like United Kingdom, Luxembourg etc. The current standing of Islamic banks is that they are more resilient and stable, and this stability is attributed to several key points of

differentiation between Islamic and conventional banks (Mirakhor, 2008). These distinct features are guided by the principles of Shariah (Islamic Law) and are summarized as follows: prohibition in dealing with interest rates, restriction in investing in speculative assets such as derivatives, avoiding unethical industries and using a business model which is closely tied with the real sector (Farooq et al., 2015; Lubis et al., 2015).

This paper empirically evaluates the bank lending pattern of Indonesian banks, especially during business cycles. In particular, the paper analyzes the differences between the lending decisions of both type of banks. The core aim is to ascertain the credit smoothening ability of Islamic banks, especially during bearish period. As mentioned before, Islamic banks have a distinct way of operations and are hence, assumed or expected to behave differently from their conventional counterparts.

The paper adds to the extant literature in several ways. Firstly, the paper contributes to existing literature by documenting and highlighting the varied responses of different types of banks during bearish periods. More specifically, this research is interrelated with the strand of literature that empirically evaluates the link between ownership structure and bank lending during recessions (Albertazzi et al., 2014; Bertay et al., 2015; Brei & Schclarek, 2013; Cull et al., 2013; Ferri et al., 2014; Fungáčová et al., 2013; Pratama et al., 2019; Pratamaa et al., 2020). The paper extends existing literature by bringing the implications of Islamic banks' presence on the aggregate bank lending behavior. Inevitably, this research provides a fresh perspective to the ongoing debate on the comparative stability of Islamic banks which has so far produced mixed results. The current growth of Islamic banks' assets indicates that the Islamic financial system is here to stay and is projected to gain importance in the overall intermediation function. Due to the rapid expansion of Islamic banks even in non-Muslim countries, policymakers are increasingly viewing Islamic banks to assume a more significant role in global trade and finance. Its rapid expansion across the globe further makes it important for contemporary researchers and scholars to look for more robust evidence in favor of Islamic banks as an alternative financial system.

Second, and equally important, the extant literature mostly provides evidence based on bank specific data and even this data, only reflects the situations for a limited number of economies. The traditional panel methods control for heterogeneity by including several country level variables. However, given the fact that dual banking economies are so different, be it culturally or politically, or in terms of income, natural resources, geography, etc., from each other that the use of traditional methods may be inappropriate for drawing implications for individual economies and countries (Huang et al., 2015; Sibuea et al., 2020). For instance, Brunei is a markedly different country from Pakistan or Bangladesh in terms of resources, income, political system, institutional settings etc., which implies that average findings cannot be generalized across both the countries. Additionally, presence of Islamic banks makes the situation more complex. For instance, the laws and the regulations are different and vary across the countries mainly depending

on the Islamic school of thought followed by most of the Muslim population in each country. Moreover, even Islamic accounting standards vary across regions. For instance, Malaysia, Pakistan, and the Gulf Cooperation Council (GCC) have developed their own, unique standards which are different from each other. Similarly, due to juristic differences in the opinions, there is little standardization or harmonization in this regard, and hence the interpretation of texts can vary from one country to another. To overcome the issue of country-specific heterogeneities, the current study follows a single country approach. Indonesia is chosen as a case study and the choice was not a particularly difficult one to be made given its regulatory support and innovative approaches coupled with the fact that the country is the most populated Muslim country in the world (Rizvi et al., 2020), Islamic banks are gaining significant traction and deemed to be the next big development in the world of Islamic finance. Moreover, there is a significant increase in the total value of Islamic banking assets over the last five years. For these reasons, Indonesia presents a good case for studying and analyzing the financing behavior of Islamic banks during business cycles.

Third, as identified earlier, the primary objective of this study is to investigate the cyclicity of bank financing during the business cycles (Atrizka et al., 2020; Bertay et al., 2015; Danilwan et al., 2020; Micco et al., 2006), as opposed to just focusing on financing behavior during a period of crisis. This paper studies lending behavior patterns during the business cycles as the traditional claim of comparative resilience of Islamic banks may not be due to the structure or the model within which the Islamic banking system operates. Instead, it could be due to the Islamic banks' size and their business activities. As most of these banks are smaller in size and the large proportion of their operational and business activities are limited to the domestic market, they are relatively prone to international shocks. Therefore, the authors argue that a better assessment of their silence could help investigate their financing activities during different phases of business activities.

Given the gaps in existing literature, the paper sets out to tackle an issue that remains largely unaddressed. As Islamic banks felt the shocks only when the effect of GFC spilled over to the real sector (Hasan et al., 2011), it points to how the relative cyclicity of Islamic banks could be far more intense. In contrast to the suggestion of Hasan et al. (2011), the empirical findings of Farooq et al. (2015) demonstrate the relative immunity of Islamic banks to liquidity shocks and hence, indicating their potential to be a potentially stabilizing factor. Given this completely opposing results, it imperative to investigate the matter in more detail and limit the focus to a single country.

The findings are based on the dataset covering 73 Indonesian commercial banks (64 conventional banks and 9 Islamic banks) and reveal two key findings. First, there is strong evidence of a cyclical nature of bank financing in Indonesia. Second, and more importantly, the Islamic banks' financing is less cyclical in nature. In other words, the findings show that the bank financing is less procyclical in case of Islamic banks.

The results provided in the paper have important policy implications. In a way, the present study outcomes provide justification for the introduction of Islamic banks in an economy as this kind of banking or finance system could be a stabilizing factor over the different business cycles.

In the following section, a brief literature review is provided. Section 3 outlines the data collection process and research methodology used in the study. This is followed by a discussion of the results and key findings in Section 4. The last section highlights several implications as well as recommendations for future research work on the subject.

2. LITERATURE REVIEW

There is ample literature on the relative performance, governance, risk, competition and stability of Islamic banks (Albaity et al., 2019; Bashir, 2001; Kabir et al., 2017; Mallin et al., 2014; Ridwan et al., 2020; Safiullah et al., 2018). In contrast, there is hardly any literature on the financing behavior of Islamic banks. More precisely, there is not enough evidence on whether the lending decisions of Islamic banks are cyclical or not. Even on the conventional side, there is only limited evidence for the claim, with the exception of, for instance, Micco et al. (2006), Iannotta et al. (2013), Cull et al. (2013) and a few others. More importantly, most of the existing literature on the subject examine the bank lending procyclicality with respect to bank ownership.

However, the paper can be broadly linked to the stability/fragility-themed literature on Islamic banking. The stability strand has a significant amount of empirical support from several notable scholars (Beck et al., 2013; Belanès et al., 2015; Čihák et al., 2010; Farooq et al., 2015; Hasan et al., 2011).

For instance, based on a sample of 474 commercial banks (397 conventional and 77 Islamic banks), Čihák et al. (2010) report that smaller Islamic banks are superior in terms of stability as compared to bigger Islamic banks and/or the smaller conventional banks. On a similar note, Hasan et al. (2011) argue that Islamic banks are more stable, at least at the beginning of financial crisis and as the crisis advances, Islamic banks also start to get affected as much as their conventional counterparts. They use a sample of 120 Islamic and the conventional commercial banks from 8 dual banking economies. Similarly, the results presented by Beck et al. (2013) indicate some level of stability for Islamic banks. For instance, they suggest that Islamic banks seemed to be better than conventional banks in terms of intermediation ratio, asset quality and capitalization.

Along similar lines, Belanès et al. (2015) evaluates the efficiency of GCC Islamic banks. The findings indicate that Islamic banks remained mostly efficient during the crisis event of GFC. In fact, the crisis had a very marginal impact on their operations. Similarly, Farooq et al. (2015) examine the deposit and lending behavior of Pakistani banks. They argue that Islamic banks are less prone to withdrawal risk, especially during a period of crisis. They also suggest that the market is segmented when it comes to Islamic finance

in Pakistan. More importantly, Islamic banks seem to approve and disburse more funds as compared to their conventional counterparts. Finally, the financing decision or criteria of Islamic banks are indifferent to inward and outward deposits during crisis. Collectively, the findings tend to lend credence to stability argument for Islamic banks. However, literature supporting stability view remains doubtful with new findings using alternative approaches being used. For instance, even though Islamic banks in theory are supposedly different from conventional banks their operational activities and modus operandi are not very different from those of conventional banks. This is aptly highlighted by [Chong et al. \(2009\)](#) and [Khan \(2010\)](#). For instance, both these papers argue that while risk sharing contracts are highlighted as one of the distinct features of Islamic banks, in practice, risk sharing constitutes a very small part of Islamic banks' total financing activities. This has also led to the longstanding criticism of Islamic banks as not fulfilling its promises.

Similar issues are raised by [Abdul-Rahman et al. \(2014\)](#). Correspondingly, [Azmat et al. \(2015\)](#) also questions the willingness and capacity of Islamic banks to engage in risk sharing financing. Moreover, it is also generally accepted that that the bank financing critically hinges on sources of funding. In that sense, Islamic banks largely depend on customer deposits for source funds ([Farooq et al., 2015](#)). Furthermore, due to Shariah principles, Islamic banks are limited in terms of diversification and the hedging products. These scenarios are expected to make them more fragile. Moreover, based on the empirical evidence presented by [Bourkhis et al. \(2013\)](#), there seems to be no distinction whatsoever between the stability of both types of the bank. Similarly, [Daher et al. \(2015\)](#) by demonstrating that higher capital buffers amongst the Islamic banks, raises the concerns about Islamic banks' competitiveness in today's financial market.

The aim of this research is to extend the stability argument for Islamic banks by exploring the alternate view of stability. In other words, this research explores the relative procyclicality of Islamic banks. More specifically, this research investigates into the capability of Islamic banks to smoothen the credit disbursement during business cycles.

3. DATA AND METHODOLOGY

In this section, the various data sources and definitions used as well as the data collection process are elaborated. Moreover, the section also provides an overview of used approach. Bankscope is the primary source of bank-specific data. The macroeconomic variables are collected from World Development indicators. The data used in this research is from 2005 to 2019. As mentioned above, instead of collecting data from multiple countries, the paper focus on a single country i.e., Indonesia. The data collection process closely follows the approach adopted by [Rizvi et al. \(2020\)](#) and [Azmi et al. \(2019\)](#). Following two criteria was followed for the data collection process: (a) sample bank needs to be operational for at least five between 2005 to 2019 and, (b), the bank

should be existing during the GFC, that is 2008 and 2009. While this approach has certainly limited the data sample, the procedure is still followed to ensure the data quality of the used sample.

The model specification of the paper is intended to evaluate banks' lending behavior during business cycles and determine whether financing of Islamic banks is procyclical or not. Following the specifications of Bertay et al. (2015) and Micco et al. (2006), the baseline model can be written down as follows:

$$\delta GL_{i,t} = \alpha_i + \beta \delta GL_{i,t-1} + \mu \delta GDP_t + \pi INF_t + \rho X_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

In the above equation, δGL is the growth of gross loans of bank i at time t , δGDP is the growth of real GDP at time t , INF is inflation at time t and X is a vector of lagged bank level controls. The bank level controls are introduced in equation as the lag form to avoid endogeneity and reverse causality. Finally, α refers to the bank-specific individual effects and the ε is the common error term.

The bank level controls are bank capitalization (total equity to total assets), bank size (total assets) and funding ratio (deposit to total assets). These controls are based on relevant literature; however, the controls understudy is restricted to the most used variables. This has been done to avoid loss in degree of freedom and to make the model as parsimonious as possible. This is also an effective way to remove any multicollinearity concerns arising out of several bank level variables.

In the above equation, μ is the coefficient that will determine whether the bank lending by Indonesian banks is procyclical or countercyclical. The negative coefficient implies countercyclicality whereas positive coefficient indicates procyclicality. The lagged variable of gross loans is included to control for persistence.

As the aim of this research is to analyze Islamic banks' financing behavior, interaction term of dummy of Islamic bank with that of growth rate of GDP is included. In other words, equation 1 (the baseline model) is extended to include the dummy of Islamic bank and the interaction of dummy of Islamic bank with that of GDP growth. Equation 2 can be written down as follows:

$$\delta GL_{i,t} = \alpha_i + \beta \delta GL_{i,t-1} + \mu \delta GDP_t + \pi INF_t + \rho X_{i,t-1} + \beta_0 IB_i + \beta_1 (IB_i * \delta GDP_t) + \varepsilon_{i,t} \quad (2)$$

In the above equation, IB is the Islamic bank dummy which takes the value of '1' in case of Islamic banks and '0' in case of conventional banks. The coefficient of δGDP (μ) and the interaction term of IB and the δGDP (β_1) are the main points of focus according to this model specification. In other words, $\mu + \beta_1$ reveals whether the Islamic banking financing is less procyclical or not.

Econometrically speaking, the traditional panel approaches to estimate equations 1 and 2 would be problematic given the association between individual fixed effects and the lagged dependent variables. Thus, to overcome these issues, the paper follows the methodological approach of System Generalized Method of Moments (GMM), as proposed and used by [Arellano et al. \(1995\)](#) and [Blundell et al. \(1998\)](#). These methods are argued to be more rewarding than the traditional panel methods used for dynamic panels. The first differenced GMM approach of [Arellano et al. \(1995\)](#) removes the individual effects (in this case, banks) and employ lagged level form of variables as instruments to tackle the issue of correlation between exogenous variables and the error terms. However, [Arellano et al. \(1995\)](#) and the [Blundell et al. \(1998\)](#) additionally suggest employing level as well as first-differenced estimations as a system regression. This approach helps in not only filtering out the key information available within the levelled relationship, but it also removes the likely biases and the imprecisions presence in the first differenced GMM. This method is called System GMM. In this method, the level form regressions are instrumented with the lagged form of first difference variables while the lagged form of level variables are used as instruments in the first-differenced equations. Given the superiority of System GMM over the first- differenced approach, this paper choses to employ Two-step System GMM. However, as noted earlier, in case of two-step GMM estimators', standard errors are biased downwards. The downward biasedness is corrected by using [Windmeijer \(2005\)](#).¹ Additionally, a series of robustness tests are also applied to ensure the stability of the results.

GMM methods are asymptotically normal, efficient, and consistent as compared to the other approaches that do not employ extra information. Instead, it makes use of whatever information is already available from the moment conditions.

To use the GMM approach, the below provided conditions must be fulfilled. More specifically, the below moment conditions need to be known:

$$m(\theta_0) = E[g(Y_t, \theta_0)] = 0, \quad (3)$$

In the above equation, E characterizes expectation whereas Y_t is a generic observation. Additionally, function of $m(\theta)$ is supposed to be different from '0' so that $\theta \neq \theta_0$,

The underlying concept of GMM is to essentially substitute the theoretical expectation of $E[\cdot]$:

$$\hat{m}(\theta_0) = \frac{1}{T} \sum_{t=1}^T g(Y_t, \theta) \quad (4)$$

¹Moreover, the approach of GMM is now commonly used in the banking literature ([Azmi et al., 2021](#); [Bilgin et al., 2020](#)). Even the Islamic bang literature have extensively used the approach of GMM (see inter alia, [Ali et al., 2020](#); [Chowdhury et. al., 2017](#); [Hidayat and Sakti, 2020](#); [Lebdaoui and Wild, 2016](#); [Lee and Isa, 2017](#); [Louhichi et al., 2019](#); [Safiullah and Shamsuddin, 2018](#); [Yanikkaya, and Pabuccu, 2018](#)).

Finally, the expression needs to be minimized in reference to θ . The minimized estimator of θ is the estimate of θ_0 .

4. FINDINGS AND DISCUSSIONS

Descriptive statistics of the sample data is provided in [Table 1](#). The main findings are reported in [Table 2](#). These results are the estimations of equation 1 and equation 2.

Table 1: Summary of key variables

Variable definitions	Full sample (Islamic and conventional banks)		Conventional banks		Islamic banks	
	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
Financing growth (%)	0.134	0.356	0.069	0.274	0.376	0.273
Bank capitalization (%)	0.164	0.059	0.144	0.0692	0.079	0.066
Funding ratio (%)	0.881	0.173	0.652	0.172	0.692	0.132
Bank size (log)	14.09	1.63	14.154	1.66	13.09	1.32

[Table 1](#) presents four regression models. The first two models are the baseline whereas the other two also control for several micro and macro level controls. All the independent variables are treated as weakly exogeneous, and this is the reason why the lagged values of bank-specific variables are used. The specification does not use the lagged values of macroeconomic variables as they are highly unlikely to be affected by the dependent variable as it is micro variable (i.e., bank level). The significance of lagged dependent variable justifies the selection of dynamic panel data modelling. The diagnostics reported in the [Table](#) (AR (1 & 2), Sargan & Hansen statistics) confirms the suitability of System GMM modelling for the purposes of this study. For instance, the autocorrelation tests reveals that there is an autocorrelation of order 1 but no evidence of order 2 autocorrelation. The autocorrelation diagnostics test implies that the error terms obtained from equations 1 as well as equation 2 are free from autocorrelation. Moreover, the p-values of Sargan as well as the Hansen confirm the validity of the instruments that have been used to overcome the endogeneity issues. Given the fact that this research is a single country study, the estimations are prone to the instrument proliferation issue. To avoid the instrument proliferation, the instruments are restricted.

Table 2: Main Results

P-values are in parentheses. *, **, and *** symbolize significance level at 10%, 5%, and 1% levels, respectively. All the models are estimated using System GMM approach.

Variables	(1)	(2)	(3)	(4)
<i>Loan growth (-1)</i>	0.000*** (0.00)	0.013** (0.02)	0.041*** (0.00)	0.069* (0.09)
<i>GDP growth</i>	0.022*** (0.01)	0.089* (0.09)	0.066*** (0.00)	0.015*** (0.00)
<i>Capital</i>	0.000*** (0.00)	0.004*** (0.00)	0.021*** (0.00)	0.009*** (0.00)
<i>Size</i>	-0.005*** (0.00)	-0.009*** (0.00)	-0.000*** (0.00)	-0.005*** (0.00)
<i>Funding ratio</i>		0.000*** (0.00)	0.011*** (0.00)	0.671*** (0.00)
<i>Inflation</i>		0.001 (0.91)	0.016* (0.07)	0.000* (0.06)
<i>IB*GDP growth</i>				-0.011*** (0.00)
<i>IB</i>			0.032*** (0.01)	0.021* (0.08)
<i>Constant</i>	0.000*** (0.00)	0.019** (0.02)	0.055*** (0.00)	0.691 (0.49)
<i>Additional control variables</i>	No	No	Yes	Yes
<i>AR (1)</i>	0.000	0.000	0.000	0.000
<i>AR (2)</i>	0.666	0.679	0.728	0.587
<i>Sargan (P - values)</i>	0.44	0.51	0.19	0.55
<i>Hansen (P - values)</i>	0.67	0.33	0.11	0.97

The findings presented in [Table 2](#) show that bank size, funding ratio and bank capitalization are all statistically significant. More precisely, bank size coefficient is negative and hence indicates an inverse association between the loan growth and bank size. These findings are not surprising as smaller banks may have more personalized relations with the firms and hence higher loan growth. Moreover, small banks tend to rely mainly on intermediation income, as opposed to larger banks, hence leading to

higher growth. Furthermore, it could also be the case that small banks are generally the newly established ones in contrast to larger banks and therefore, grow faster because of the lower loan base. These findings remain consistent across all the models. More importantly, similar findings have been reported by Bertay et al. (2015), Brei and Schclarek (2013) and the Brei et al. (2013) in the past.

The funding ratio's coefficient is significantly positive. The results suggest that Indonesian banks are dependent on bank deposit. This is typical of any emerging economy or developing country where the sources of bank funds are mostly limited to bank deposits. More importantly, this finding is in line with Bertay et al. (2015). Finally, the coefficient of bank capitalization is positive and significant. This is not surprising as better capitalized banks are in a better position to give out more loans (Brei, Gambacorta, et al., 2013; Brei & Schclarek, 2013).

The coefficient of the focus variable, that is, GDP growth is significantly positive. This suggests that bank lending is procyclical in Indonesia, indicating that bank lending follows the business cycle in that during good days, banks tend to lend more but become more cautious when the economy is experiencing a decline which is when banks tend to follow the contractionary approach to lending.

The coefficient of interaction term of Islamic bank dummy and the GDP growth is significantly negative. This implies that the financing of Islamic banks is less procyclical. These findings are particularly interesting and provide valuable insights. Findings indicate that Islamic banks can provide much needed stability during a crunch or recession period. In other words, the results are in support of the argument in favor of greater stability of Islamic banks.

As the findings provided are potentially valuable for the sector, especially from the stability perspective, it is highly recommended to test the stability of the results. In other words, it is imperative to test the consistency of the results through various ways. The results of first robustness reported in Table 3 uses net loan growth instead of the gross loan growth as used in the original equation. The coefficient of interaction term of Islamic banks' dummy and the GDP is negative and significant. The findings based on system GMM further substantiate the results reported in Table 2. Moreover, the other control variables carry the same sign and significant as shown in Table 2.

Table 3: Robustness test

P-values are in parentheses. *, **, and *** symbolize significance level at 10%, 5%, and 1% levels, respectively. The robustness is carried out by using an alternate proxy of bank loans. As shown in the [table](#), instead of gross loans, net loans are used. The first two models are estimated using System GMM approach whereas the last two models are estimated using First-differenced GMM.

Variables	(1)	(2)	(3)	(4)
	System GMM	System GMM	First-differenced GMM	First-differenced GMM
<i>Loan growth (-1)</i>	0.000*	0.051	0.029**	0.000**
	(0.08)	(0.13)	(0.04)	(0.08)
<i>GDP growth</i>	0.023***	0.082***	0.019***	0.099***
	(0.00)	(0.00)	(0.00)	(0.00)
<i>Capital</i>	0.004***	0.006***	0.059***	0.044***
	(0.00)	(0.00)	(0.00)	(0.00)
<i>Size</i>	-0.000***	-0.059***	-0.041***	-0.039***
	(0.00)	(0.00)	(0.00)	(0.00)
<i>Funding ratio</i>	0.001***	0.000***	0.018***	0.029***
	(0.00)	(0.00)	(0.00)	(0.00)
<i>Inflation</i>	0.000***	0.009**	0.006	0.081
	(0.00)	(0.05)	(0.12)	(0.11)
<i>IB*GDP growth</i>		-0.015***		-0.021*
		(0.00)		(0.06)
<i>IB</i>	0.001***	0.027***	0.049***	0.063*
	(0.00)	(0.00)	(0.00)	(0.07)
<i>Constant</i>	0.049***	0.083*	0.000	0.061
	(0.00)	(0.07)	(0.48)	(0.51)
<i>AR (1)</i>	0.000	0.000	0.000	0.000
<i>AR (2)</i>	0.283	0.119	0.916	0.567
<i>Sargan Test (P - values)</i>	0.39	0.54	0.71	0.12
<i>Hansen Test (P - values)</i>	0.25	0.99	0.89	0.62

In the second robustness test, the baseline model is extended to include competition in the regression. The lending decision could be driven by the competitive environment in the banking sector, especially within the Islamic banking sector, considering that Islamic banks are slightly indifferent to business cycles and keep providing financing even

during the bearish period. The paper adopts the commonly used Lerner as a proxy of competition.² The positive and significant coefficient of competition indicates that the competitiveness in the banking industry is one of the driving factors of loan growth. The other control variables are also generally like the results presented in [Table 2](#). More importantly, the main findings that Islamic banks' financing are less procyclical is robust even when we control for competition in the banking industry. This reinforces the key study findings that Islamic banks do, in fact, provide some stability during a period of economic downturn. The third and the final robustness test uses the Hodrick Prescott filter to get an alternate proxy of business cycles. It is important to note that the Hodrick Prescott (HP) filter is criticized for estimation imprecision.

Overall, the findings show that the commercial bank lending in Indonesia is procyclical in nature. Moreover, Islamic banks' financings are less procyclical and are like the results presented earlier in the paper. Finally, all the control variables are generally in line with previous findings in extant literature. Based on the robustness tests provided above, it is reasonable to argue that Islamic banks can be a crucial factor in steadying the overall credit in the economy during bearish periods. This provides a good starting point for the policymakers to justify the introduction of Islamic banking in the economy.

Besides the mentioned robustness tests, the paper also uses First-differenced GMM along with the System GMM. The results of First-differenced GMM are almost identical to that of System GMM. This provides an additional layer of robustness in addition to the robustness provided in the [Table](#).

5. CONCLUSION

Islamic financial industry is one of the fastest growing banking practices across the financial world. This growth in its popularity is attributable to its appeal the appeal it has for individual countries (and economies), even those with a minority Muslim population. This unprecedented appeal can also partially be attributed to its ethical principles. In some of the countries, the Islamic banking industry has become systematically important to be ignored. It bears to note that as the intermediation function of conventional banks is largely debt-based and thus, operates on a risk transfer basis. However, the contracts used by Islamic banks are more equity contract and asset based. Furthermore, the financing of Islamic banks is closely tied to the real sector and is hence expected to mitigate the potential risks in the market. The afore-mentioned reasons have led many researchers to investigate the relative stability of the Islamic banking system. However, within existing literature, there is no consensus or conclusive proof of the relative stability of Islamic banks.

² See Turk-Ariss (2010) for more information on Lerner.

Table 4: Additional Robustness test – I

P-values are in parentheses. *, **, and *** symbolize significance level at 10%, 5%, and 1% levels, respectively. The robustness is carried out by using an alternate proxy of bank loans. As shown in the [table](#), competition measure proposed by Lerner is used. The first two models are estimated using System GMM approach whereas the last two models are estimated using First-differenced GMM.

Variables	(1)	(2)	(3)	(4)
	System GMM	System GMM	First-differenced GMM	First-differenced GMM
<i>Loan growth (-1)</i>	0.091*** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.000*** (0.00)
<i>GDP growth</i>	0.063*** (0.00)	0.076*** (0.00)	0.045** (0.05)	0.022* (0.05)
<i>Capital</i>	0.045*** (0.00)	0.001*** (0.01)	0.058** (0.02)	0.069** (0.05)
<i>Size</i>	-0.011*** (0.00)	-0.045*** (0.00)	-0.009*** (0.00)	-0.002* (0.06)
<i>Funding ratio</i>	0.893*** (0.00)	0.000*** (0.00)	0.022*** (0.01)	0.001* (0.09)
<i>Inflation</i>	0.011*** (0.00)	0.000*** (0.00)	0.000*** (0.00)	0.000 (0.41)
<i>IB*GDP growth</i>		-0.009*** (0.00)		-0.002*** (0.00)
<i>IB</i>	0.012*** (0.01)	0.017*** (0.00)	0.019*** (0.00)	0.006* (0.08)
<i>Competition</i>	0.041** (0.04)	0.022*** (0.00)	0.009*** (0.00)	0.000* (0.09)
<i>Constant</i>	0.011* (0.10)	0.071* (0.08)	0.054 (0.53)	0.000 (0.91)
<i>AR (1)</i>	0.000	0.000	0.000	0.000
<i>AR (2)</i>	0.17	0.87	0.66	0.54
<i>Sargan Test (P - values)</i>	0.59	0.66	0.18	0.38
<i>Hansen Test (P - values)</i>	0.58	0.99	0.49	0.89

Table 5: Additional Robustness test - II

P-values are in parentheses. *, **, and *** symbolize significance level at 10%, 5%, and 1% levels, respectively. In the table, HP filter is used to get an alternate proxy of business cycles. The first two models are estimated using System GMM approach whereas the last two models are estimated using First-differenced GMM.

Variable	(1)	(2)	(3)	(4)
	System GMM	System GMM	First-differenced GMM	First-differenced GMM
<i>Loan growth (-1)</i>	0.000*** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.000*** (0.00)
<i>GDP growth</i>	0.049*** (0.00)	0.048*** (0.00)	0.029** (0.05)	0.042* (0.05)
<i>Capital</i>	0.033*** (0.00)	0.002* (0.10)	0.071*** (0.00)	0.056*** (0.00)
<i>Size</i>	-0.006*** (0.00)	-0.092*** (0.00)	-0.000*** (0.00)	-0.045* (0.06)
<i>Funding ratio</i>	0.666*** (0.00)	0.991*** (0.00)	0.048* (0.10)	0.000*** (0.00)
<i>Inflation</i>	0.000** (0.02)	0.000*** (0.00)	0.000*** (0.00)	0.029** (0.05)
<i>IB*GDP growth</i>		-0.001*** (0.00)		-0.003*** (0.00)
<i>IB</i>	0.000*** (0.00)	0.029*** (0.00)	0.049*** (0.00)	0.002* (0.05)
<i>Constant</i>	0.000* (0.10)	0.000** (0.04)	0.005** (0.03)	0.001* (0.06)
<i>AR (1)</i>	0.000	0.000	0.000	0.000
<i>AR (1)</i>	0.80	0.81	0.74	0.86
<i>Sargan Test (P - values)</i>	0.19	0.32	0.92	0.05
<i>Hansen Test (P - values)</i>	0.63	0.09	0.11	0.49

In this paper, a new and different approach is adopted to examine the stability of Islamic banks. In other words, the paper probes into the question of whether Islamic banks play any role in stabilizing the credit during different business cycles. More specifically, this paper investigates into the bank lending procyclicality of Indonesian commercial banks and tests for the differences between conventional and Islamic banks.

Following the above-mentioned criteria for the data collection process, the paper collects data pertaining to 73 Indonesian commercial banks (64 conventional banks and 9 Islamic banks) over the period of 16 years (2005 to 2019). Given the evidence of loan growth persistence in the literature, the modelling has been done based on dynamic panel modelling. Given the fact that traditional panel methods such as Fixed Effect and the Random Effect estimators are not suited to handle dynamic panel modelling, the current paper uses the approach of System GMM. The diagnostics tests presented in the tables show the results to be reliable with the significance of lag dependent variable justifying the use of dynamic panel.

The findings of this paper reveal that the bank lending in Indonesia is pro-cyclical which essentially means that the lending behavior of Indonesian banks is closely linked with the business cycles. In other words, during economically stable times, banks lend more and vice versa. Overall, these findings suggest that the lending behavior of commercial banks in Indonesia can aggravate financial crisis as they reduce credit during adverse times. However, the findings also reveal that the Islamic banks' financing is less cyclical in nature, highlighting the potential smoothing abilities of Islamic banks. Not surprisingly, these fundings are fueled by the deposits as is the case with any developing country. These results are robust to the standards of the following tests: a) alternate measure of loan growth, b) inclusion of competition proxy in the regression and the c) use of HP filter to get an alternate proxy of business cycles. Moreover, the paper also uses First-differenced GMM in Table 3, 4 (I) and (II).

To summarize, the results demonstrate that the Islamic banking system can play a crucial role in stabilizing aggregate loans over the course of business cycle. As an implication, the results lend support to the stability argument presented in favor of Islamic banks. Moreover, it provides justification to policymakers in the government who have introduced Islamic banking in the country. Furthermore, it provides incentive to the policymakers who are yet to be convinced on the benefits of Islamic banking practice.

However, there are still unanswered questions that can be tackled by the future studies. For instance, the need for an assessment of whether the lower procyclicality is due to the full-fledged banks or the subsidiary of Islamic bank.

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