Jurnal Ekononomi & Keuangan Islam
Available at https://journal.uii.ac.id/index.php/jeki

Do Islamic banks more stable than conventional banks? Evidence from Indonesia

Rahmatina A Kasri, Chairilisa Azzahra

Faculty of Economics and Business, Universitas Indonesia, Jakarta, Indonesia

Article History
Received : 23 June 2020
Revised : 7 July 2020
Accepted : 5 August 2020
Published : 10 August 2020

Keywords:
Islamic bank, Conventional bank, Bank stability, Bank's specific factors, Macroeconomic factors

DOI:
10.20885/JEKI.vol6.iss2.art6

JEL Clasification:
E43, E44, G21, G28

Corresponding author:
unirahma@gmail.com

Author's email:
ica.azzahra@yahoo.com

Paper type:
Research paper

Cite this article:
Kasri, R.A., & Azzahra, C. (2020). Do Islamic banks more stable than conventional banks? Evidence from Indonesia. *Jurnal Ekonomi dan Keuangan Islam*, 6(2), 149-164.

Abstract

Purpose – Albeit Islamic banks are often considered more stable than conventional banks, empirical evidence to support the stability view is relatively scanty. This study, therefore, mainly aims to investigate whether Islamic banks are more stable than conventional banks in Indonesia. To enrich and support the analysis, it will also compare the factors influencing the stability of Islamic banks and conventional banks in the country.

Methodology – This paper employs a dynamic panel data model using the system-GMM *(General Method of Moment)* estimator. The data used are quarterly data from 83 conventional banks and 11 Islamic banks in Indonesia during September 2015-June 2019 period.

Findings – The study did not find any significant difference in the stability of conventional and Islamic banks. This result is presumably influenced by the small size and small market share of Islamic banks, as well as many similarities between the two types of banking systems. Furthermore, the stability of the conventional bank in Indonesia is more influenced by macroeconomic factors including interest rate, exchange rate and financial inclusions, meanwhile the stability of Islamic banks is more influenced by the banks' specific factors such as financing growth, efficiency and risk management factors.

Research limitations – The data used in the study is limited to the period from September 2015 to June 2019. The variables utilized are also limited to those taken from publicly available financial statements.

Originality – This paper provides additional empirical evidence regarding Islamic banking stability in Indonesia by using the latest data. While theoretically Islamic banks are expected to be more stable than conventional banks, this study did not find strong support for the case of Indonesia during the period of observation.

Introduction

The global development of Islamic banks in the last few decades has been impressive, both in terms of number and size (Sundararajan & Errico, 2002). Nowadays, Islamic banks operate in more than 75 countries worldwide. Multinational conventional banks have also participated in Islamic banking services by establishing Islamic banking sub-divisions or Islamic bank subsidiaries (Ibrahim and Rizvi, 2018). Therefore, Islamic banks have emerged as a new major player in the financial system as an alternative to conventional banking models especially after the global financial crisis (Aysan et al. 2018). Indeed, some studies even suggested that Islamic banks are more stable than conventional counterparts during the financial crisis (Farooq and Zaheer, 2015; Ibrahim 2016).

P ISSN 2088-9968 | E ISSN 2614-6908

The importance of maintaining bank stability has become one of the hottest topics in the policymaking agenda, both in developing and developed countries (Beck et al., 2009). Policymakers and regulators have devoted much effort to reforming banking systems aimed at increasing bank stability in response to the global financial crisis (Cihak et al., 2016). Through a stable banking system, the effectiveness of monetary policy transmission mechanisms and allocation of funding sources in the economic system can run efficiently, considering that most economic activities occur through the banking sector (Warjiyo, 2006). With such an important role, the health and stability of banks are two basic things that must be maintained and require a certain regulation and supervision.

Generally, stability of banking system is reflected by the healthy condition of banks and the functioning of intermediation process in mobilizing third-party funds to be channeled in the form of loans and other financings to the business sector (Warjiyo, 2006). Hoffmann (2011) states that banks play a major role in transferring funds from savings units to investment units, where a strong and efficient financial system must show an increase in bank's profitability, increasing the cashflow volume from savers to borrowers and providing quality financial services. Therefore, to maintain the good financial intermediation function without much disruptions, banks must always healthy, stable, and profitable (Onuonga, 2014). However, in practice, banking instability and failure often occur and have become a significant problem in many countries around the world. Several studies state that bank failures or instability in the banking sector can be caused by macroeconomic factors and bank-specific or fundamental factors (see, among others, Carretta et al. (2015); Pascual et al. (2015) and Shim (2019)). Overall, excellent performance of bank fundamental factors supported by stable macroeconomics condition will undoubtedly improve bank performance, reduce bank risk, and strengthen bank stability

Along with the growth of Islamic banking, research has shown that the development of Islamic banks in countries that adopt a dual banking system can affect the stability of financial system. Broadly speaking, there are two competing views related to the stability of Islamic banks: the stability view and the skeptical view. On the one hand, the stability view generally believes that Islamic banks, with their specific characteristics such as profit-loss-sharing, can contribute positively to banking stability (Hasan and Dridi, 2010; Farooq and Zaheer, 2015; Ibrahim, 2016; Ibrahim and Rizvi, 2018). On the other hand, the skeptical view emphasizes that there are no distinct differences between Islamic banks and conventional banks. The modes of transactions, the risks faced and the other operational aspects are mostly the same. Thus, the skeptical view doubts that the existence of Islamic banks would make a difference to banking stability (Chong and Liu, 2009; Khan, 2010). However, it is notable that empirical evidence to support both views is relatively scanty.

In Indonesia context, as a Muslim country which implemented a dual banking system in which Islamic banks are operating in parallel with conventional banks, the existence of Islamic banks in Indonesia has proven to be able to contribute to the development of small and micro business loans in Indonesia (Shaban et al. 2014) whereas large conventional banks are still quite reluctant to provide credit to this sector. In line with this, Abduh and Omar (2012) showed a significant influence between the development of Islamic banking and Indonesia's economic growth both for the short and long term periods. Furthermore, in Indonesian, only few studies investigate banks' stability (see, among others, Cynthis 2016, Yusgiantoro et al. 2019, and Rizvi et al. 2019). However, these studies have not distinguished the factors that determine the stability of conventional banks and Islamic banks.

With these perspectives, considering the lack of more recent studies regarding banks' stability in Indonesia, particularly studies which include both conventional and Islamic banks' in the data set, this study is conducted with the aim to comprehensively analyse the determinant of bank stability in Indonesia. This study mainly aims to investigate whether Islamic banks are more stable than conventional banks in Indonesia which is currently the world's largest Muslim country. Prior to that, it will also compare the factors influencing the stability of Islamic banks and conventional banks in the country as this preliminary study are believed to provide important insights to the main objective of the study. To achieve the objectives, this paper employs a dynamic

panel data model using quarterly data from 83 conventional banks and 11 Islamic banks from September 2015 to June 2019. The findings and analyses are expected to provide insights for policymakers and enrich Islamic banking and finance literature especially in Indonesia.

To proceeds, this study is structured as follows. After this introductory section, section two explains the literature review and theoretical development. Section three presents the data and methods employed in this study, while section four discusses the findings and analyses of the study. The final section concludes and provides recommendations for the study.

Literature Review

Banking literature generally suggests that there are two competing views related to stability of Islamic and conventional banks, namely the stability view and the skeptical view (Ibrahim, 2016). The stability view posits that the Islamic banking sector is amiable to banking stability, which is rooted in their distinctive features of being Shariah-compliant (Farooq and Zaheer, 2015). Several empirical studies support this view and suggest that Islamic banks appear to be more stable and resilient to the financial crisis than conventional banks. Hasan and Dridi (2010) find that Islamic banks tend to be more resilient at the early stage of the global financial crisis, where Islamic banking assets could grow twice as large as conventional banks during 2007 – 2009. Beck et al. (2013) noted that Islamic banks tend to have better capitalization, asset quality, and higher intermediation ratio compared to their conventional counterparts. Furthermore, Farooq and Zaheer (2015) suggest that Islamic banks are more resilient than conventional ones, as shown by fewer deposit withdrawals during the financial crisis. Indeed, some Islamic banks even recorded higher new loans during the crisis. More recently, Ibrahim and Rizvi (2018) showed no significant reduction in Islamic financing growth during the 2008 crisis. They also revealed substantial evidence that the growth of Islamic financing is higher than the growth of conventional lending during the crisis period.

In contrast, the skeptical view doubts the Islamic banks would make a difference as there are almost no distinct differences between Islamic and conventional banks in practice (Chong and Liu, 2009; Khan, 2010). In theory, a unique feature that differentiates the former from the latter is the profit and loss sharing (PLS) paradigm. However, the reality is quite different. Research conducted by Chong and Liu (2009) shows that Islamic banking in Malaysia is not much different from conventional banking from the perspective of the PLS paradigm. On the asset side of Islamic banking, it was notable that only a negligible portion of the financing is based on the PLS principle. While on the liability side, it was found that even though Islamic deposits are not interest-free but they were pegged to a certain figure following the yield on conventional banking deposits. Furthermore, Khan (2010) states that the concept of profit-sharing ratio in Islamic banking has a high correlation with an interest rate determined by the regulator. As such, Islamic banks operating in a dual banking system has almost the same risks as those faced by conventional banks regarding the interest rate policy. It is also notable that although Islamic bank has some special characteristics that can reduce financing risks, it might face greater risks due to various factors such as complexity of certain Islamic contracts, restrictions on the imposition of penalties for late-payments and the possibility of moral hazard caused by profit-loss sharing contract (Abedifar et al. 2013). These might have an impact on the stability of Islamic banks.

In relation to bank stability, studies suggest that banks' stability is influenced by macroeconomic factors and bank-specific or banks' fundamentals factors. The macroeconomic factors influencing the banks' stability include, among others, economic growth rates, unemployment rates, interest rates and inflation (Nkusu, 2011; Chaibi and Ftiti, 2015; Ghosh, 2015). Meanwhile, several bank-specific factors commonly used to assess the banks' stability are credit growth, profitability, bank size, capital, margin, capitalization, risk management, and efficiency (see, for instance, Haq and Heaney 2012, Pascual 2015, Shim 2019). Furthermore, considering that Islamic banks have slightly different characteristics compared to conventional banks, this might influence the stability of Islamic banks. According to Yusof, Wosabi, & Majid (2009), an Islamic banking system that is interest-free and based on the real sector is considered more able to maintain economic stability due to its association with real assets compared to conventional monetary systems which are highly connected to interest rate fluctuations.

Gross Domestic Product (GDP) is one of the most critical indicators of macroeconomic and social welfare. Higher GDP is a sign of increasing in people's income, leading to increasing repayment capacity of credit borrowers (Chaibi and Ftiti, 2015). Further researches by Morgan and Pontines (2014) and Pascual et al (2015) show a positive correlation between GDP per capita and bank stability. This is in line with the findings of Shim (2019) suggested that banks operating in conducive macroeconomic conditions, as indicated by high GDP growth, would reduce the risks faced by a bank.

Exchange rate and inflation rate are other factors which potentially influence bank stability. Chaibi and Ftiti (2015) suggest that depreciation of exchange rate or deterioration in local currency significantly contributes to an increase in problem loans. In other words, an increase in exchange rate that reflects depreciation in the local currency (Klein, 2013) could affect banks that have debt in foreign exchange form (Nkusu, 2011). A study conducted by Bank Indonesia (2018) also states that depreciation of exchange rate can affect the ability customers' repayment, especially those who have credit or financing in foreign currencies, leading to increasing credit/financing risk and will affect the stability of bank. Furthermore, with respect to the inflation rate, Pascual et al (2015) and Ghosh (2015) showed a positive impact of the inflation rate on the risk of non-performing loans and a negative effect on bank stability. This is because higher inflation could decrease the ability to pay credit or debt installments if the increase is not followed by an increase in income (Ghosh, 2015).

The next macroeconomic indicator is interest rates. Chaibi and Ftiti's (2015) and Pascual et al., (2015) study showed that interest rates harmed bank risk. Economic slowdown with an indicator of rising interest rates can increase non-performing loans in banks (Espinoza and Prasad, 2010) and the unanticipated increase in interest rate increases borrowers' default rate which might lead to higher instability (Owoputi et al, 2014). Furthermore, in relation to monetary policies, Khan (2010) states that the concept of profit-loss sharing ratio and margins in Islamic banking has a high correlation with an interest rate determined by the central bank. While Alandejani et al. (2017) found empirical evidence that Islamic banks are influenced by the same policy in interest rates in determining the internal rate of return and margins for financing. This shows that Islamic banks faced interest rates risk as encountered by conventional banks.

Another factor increasingly crucial in influencing bank stability is financial inclusion, which reflects increasing ease of financial access for all society in terms of savings and borrowing. Financial inclusion is found to have a positive impact on financial stability through risk diversification (Hannig and Jansen, 2010). Other empirical evidence states that an inclusive financial service system will strengthen bank stability (Han and Melecky 2013, Morgan and Pontines 2014) and reduce the tendency of banks to carry out excessive risk-taking. Similarly, geographical diversification tends to reduce the distance between the borrower and lender and will affect the stability of the bank (DeYoung and Torna, 2013). A significant positive effect between financial inclusion and bank stability is also documented by several other studies (Neaime and Gaysset 2018; Albaity et al., 2019).

With respect to the bank's specific/fundamental factors, some indicators such as capitalization, bank size, profitability, and efficiency are commonly used to see stability in banking institutions. One of the most essential bank indicators related to risk and stability is loans (for conventional banks) or financing (for Islamic banks) channelled. A higher level of loans or financing growth will be positively correlated to income (Ogura, 2006). However, reduction in credit standards could increase the loans or financing rate default (Keeton, 1999 and Foos et al, 2010). Moreover, the increase of banks' loans portfolio will boost banks' risk resulting in lower profitability and bank capital and ultimately on bank stability (Buchory, 2015).

Return on Assets is a measure of financial performance which have been widely used as a proxy of company's profitability (see, for example, Meslie et al. 2014, Pascual et al. 2015, Kabir et al., 2015, and Imbierowicz and Rauch 2014). In principle, ROA reflects the ability of bank management to create profits from its owned assets. A study conducted by Kabir et al. (2015) and Pascual et al., (2015) show that return on assets has a positive impact on bank risk as measured using a z-score proxy. This relationship is based on the view that banks with high profitability have people with more skills in risk management, so they could generate high profits as well.

Related to this, loan loss provision is another indicator related to bank performance. It is usually referred to provisioning of losses on loans portfolios which must be used to cover a number of factors associated with potential loan losses, including bad loans, customer defaults, and renegotiated terms of a loan that incur lower than previously estimated payments (PSAK, 2006). This provisions for impairment losses is considered important because banks with poor credit quality have high moral hazard incentives by increasing their loan portfolios risk, which leading to higher non-performing loans (NPLs) and affects bank stability (Keeton and Morris, 1987). Banks with higher loan loss provisions tend to be more unstable (Ahamed & Mallick, 2017) and have a positive effect on increasing NPLs (Ghosh, 2015).

Bank efficiency, which could be proxied by using net interest margin (for conventional banks) or net return (for Islamic banks) and the ratio of operating costs to operating income, could also influence bank stability. Higher net interest margin or net return is considered as a reflection of inefficiency in the banking sector, as it is usually associated with loss efficiency in the financial system and causes distortion in savings and investment patterns (Espinosa et al. 2011). Poghosyan (2013) also suggested that the cost of financial service intermediation represented by the variable has a positive effect on bank risk and tends to reduce bank stability. Meanwhile, according to Beck et al (2013), higher cost to income ratio also indicates more inefficient operational activities carried out by banks. This could cause smaller income earned and subsequently will have an impact on the vulnerability of the bank stability (Pascual et al,(2015) and Imbierowicz and Rauch (2014)).

Bank's health could be seen, among others, from the bank's capitalization and capital adequacy ratio. A study conducted by Haq and Heaney (2012) found an increase in bank capital resulted in reduced risk, vice versa. Klein (2013) also suggested that banks with low capital have a high moral hazard by increasing the risk of their credit portfolios and leading to bank instability. Meanwhile, with respect to capitalization, it is believed that banks with high capitalization will be more careful in taking risky portfolios because it could impact on bank capital when facing credit default. In line with this, Pascual et al., (2015) and Haq and Heaney (2012) state that banks with substantial capital will be able to survive the crisis and post-crisis periods. Further research related to the stability of Islamic banking conducted by Beck et al., (2013) suggested that since Islamic banks have a higher capitalization value compared to the conventional banks, they became more resistant during crisis periods as compared to the traditional counterparts.

Lastly, bank size is usually considered as an essential factor influencing bank stability which is monitored by both bank management and regulators. According to Kunt and Harry (2010), there is a relationship between bank size with credit and funding activities which affect the risk and return of a bank. Studies conducted by Shim (2019), Pascual et al., (2015) and Berger & Klapper (2009) show that bank size has a positive influence on the stability of banks which are proxy using z-scores. This implies that large banks that are indicated with high total assets tend to be more resistant to shocks than banks with small assets. Large banks benefit from the economics of scale and economies of scope as banks with large assets are more diversified and less vulnerable to bankruptcy leading to higher profitability.

Methods

This study employs a dynamic panel data model to investigate the determinants of bank stability in Indonesia as well as to test whether there is a difference in the stability of Islamic and conventional banks in Indonesia. The data used are secondary data with an unbalanced panel data structure. The panel data consists of quarterly data from 83 conventional banks and 11 Islamic banks in Indonesia during September 2015-June 2019 period. The data is obtained from the banks' financial statements during the abovementioned period. Additionally, the macroeconomic data are taken from official publications of Indonesia Financial Services Authority (OJK), Bank Indonesia, and other relevant official publications.

The panel data is subsequently applied to a dynamic panel data model. The dynamic model is chosen because it is understood that the relationship between economic variables is a relationship that is not fixed. In other words, economic variables are not only determined from current condition of economic variables, but are also determined by time variables in the previous periods

(Baltagi, 2005). Therefore, the application of dynamic data models is considered more appropriate to be used in describing the actual conditions in economic analysis. Furthermore, the research model utilized in this study is the GMM (General Method of Moment) estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998). The use of dynamic data panels can be characterized by lagged from the dependent variable as an explanatory variable (Baltagi, 2005). This model is also referred to as the system-GMM estimator. The use of system-GMM estimator model is considered to be the most appropriate model due to endogeneity problem and possible unobserved individual specific effects that are not included in the model. Furthermore, in this study, the amount of observation time (T) used (i.e. 16 time points) is less than the number of observations (N = 94 banks), so using GMM estimates is considered to be able to produce unbiased and consistent estimates (Roodman, 2009). A two-step estimation procedure with finite-sample corrected standard errors, as proposed by Windmeijer (2005), is also employed. This method is regarded as the most suitable method that provides less biased coefficient estimates as well as more robust and efficient estimation results than GMM's one-step system (Roodman, 2009).

The empirical specification is developed from previous studies such as Bourkhis and Nabi (2013); Pascual et al., (2015), Chaibi and Ftiti (2015) and Carretta, et al. (2015). Based on the previous studies, several specific bank factors such as credit or financing growth (CFGrowth), bank size (Bsize), efficiency (proxied by cost to income ratio or BOPO), return on asset (ROA), capitalization (ETA) and loan loss provision (LLP) as well as macroeconomic factors such as GDP growth (GDPG), inflation (INF), interest rate (IR) and exchange rate (ER) were found to affect bank stability (proxied by Z-score). In this respect, the baseline equation is as follows:

$$\begin{aligned}\text{Ln Z-score}_{it} = {} & \alpha_1 \text{Lnbzs}_{i,t-1} + \alpha_2 \text{Lnbzs}_{i,t-2} + \beta_1 \text{IB}_{it} + \beta_2 \text{CFGrowth}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{lnBSize}_{it} + \\ & \beta_5 \text{CAR}_{it} + \beta_6 \text{NIM}_{it} + \beta_7 \text{ETA}_{it} + \beta_8 \text{BOPO}_{it} + \beta_9 \text{LLP}_{it} \beta_{10} \text{GDPG}_{it} + \beta_{11} \text{ER}_{it} + \beta_{12} \text{IR}_{it} \\ & + \beta_{13} \text{Inf}_{it} + \beta_{14} \text{FI}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

In the above equation, Ln Z-score is the dependent variable of this study which is also the proxy of bank stability. The use of natural logarithms of z-score variable is intended to avoid the possibility of high skewness or extreme values in the data (Pascual et al, 2015; Imbierowicz and Rauch, 2014; Carretta et al., 2015). This is considered suitable in accordance with the conditions of the banking data in Indonesia, in which there are some extreme values (outliers) that can reduce robustness of the estimation. The IBit variable is the dummy for Islamic banks (IB = 1 for Islamic banks and IB = 0 for conventional banks). Furthermore, the use of lagged periods t-n is in accordance with what was initiated by Roodman (2000) in the estimation of dynamic panel data models using Generalized Method of Moments (GMM). The use of lagged z-score periods t-1 and t-2 is adjusted to the use of an appropriate model, where there is significant autocorrelation in the first and second lagged, but in the third lagged and so on it is not significant so it is not suitable for use in the model research.

To investigate whether there is a difference between the stability of Islamic banks and conventional banks in Indonesia, one-way ANOVA test is used in addition to using dummy variables of Islamic banks as in equation 2.1 above. Analysis of Variance (ANOVA) is a multivariate analysis technique that functions to test the average difference between two or more data groups by comparing their variance (Ghozali, 2009). The empirical design model used in conventional banks is as follows:

$$\begin{aligned}\text{Ln Z-scoreBK}_{it} = {} & \alpha_1 \text{Lnbzs}_{i,t-1} + \alpha_2 \text{Lnbzs}_{i,t-2} + \beta_1 \text{Credit\_Growth}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{lnBSize}_{it} + \\ & \beta_4 \text{CAR}_{it} + \beta_5 \text{NIM}_{it} + \beta_6 \text{ETA}_{it} + \beta_7 \text{BOPO}_{it} + \beta_8 \text{LLP}_{it} + \beta_9 \text{GDPG}_{it} + \beta_{10} \text{ER}_{it} + \\ & \beta_{11} \text{IR}_{it} + \beta_{11} \text{Inf}_{it} + \beta_{13} \text{FI}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

While the empirical design model of Islamic banks is as follows:

$$\begin{aligned}\text{Ln Z-scoreBS}_{it} = {} & \alpha_1 \text{Lnbzs}_{i,t-1} + \beta_1 \text{Financing\_Growth}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{lnBSize}_{it} + \beta_4 \text{CAR}_{it} + \\ & \beta_5 \text{NIM}_{it} + \beta_6 \text{ETA}_{it} + \beta_7 \text{BOPO}_{it} + \beta_8 \text{LLP}_{it} + \beta_9 \text{GDPG}_{it} + \beta_{10} \text{ER}_{it} + \beta_{11} \text{IR}_{it} + \\ & \beta_{11} \text{Inf}_{it} + \beta_{13} \text{FI}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

Table 1 presents the summary of operational variables, which consist of bank z-scores, bank's specific factors and macroeconomics, hypotheses of the study and sources of data used in this study. It should be noted that the bank's specific variables and macroeconomic factors used for the model specifications above (equation 2 dan 3) are the same as the overall bank sample estimation model (equation 1).

Tabel 1. Summary of Operational Variables

Type of Variable	Name	Variable Definition	Hypothesis (Expected Sign)	Source of Data
Dependent	Bank Z score	Logarithm natural of bank z score . Bank z score : ((*return on asset/equity to asset ratio)/sd return on asset*)	$Lnbzs_{i,t-1}$ and $Lnbzs_{i,t-2}$ has positive influence (+)	Quarterly Published Financial Reports from the Financial Services Authority
Independent	**Bank's specific variables**			
	Credit and Financing Growth	Growth of total credit and financing ((difference between $totalCF_t$ – total CF_{t-1})/total CF_{t-} (%)	CFGrowth (-)	
	Bank Size	Logarithm natural of total asset	LnBSize (-)	
	Return on Asset	Profit before tax/Average Total Asset (%)	ROA (+)	
	Capital Adequacy Ratio	Minimum Capital Requirements (%)	CAR (+)	Quarterly Published Financial Reports from the Financial Services Authority
	Net Interest Margin or Net Return	Differences between interest income minus interest costs (%)	NIM/NR (-)	
	Capitalization	Total Equity/Total Asset (%)	ETA (+)	
	Efficiency	Operational costs/operational income (%)	BOPO (-)	
	Loan Loss Provision	(Loan loss provision of financial asset / Total asset)	LLP (-)	
	Macroeconomics variables			
	Economic Growth	GDP growth rate (%)	GDPG (+)	
	Exchange rate	Rupiah Exchange Rate against US Dollar (Rp)	ER (-)	Bank Indonesia
	Interest rate	Interest rate (%)	IR (-)	
	Inflation rate	Inflation rate (%)	Inf (-)	BPS
	Financial Inclusion	Bank Branches/100.000 adult population in Indonesia	FI (+)	Bank Indonesia

Moreover, before estimating the models, specification tests are conducted to be able to perform consistent and efficient parameter estimators. The specification tests used in the system GMM follows two stages, namely Sargan-Hansen Test and Autocorrelation Test. While the former is used to determine the validity of instrument variables that exceed the estimated number of parameters (overidentifying restrictions), the latter is employed to see whether there is no autocorrelation in the first and second orders of residuals (Ghosh, 2015). This is done by using Arellano-Bond statistics using AR (1) and AR (2) with the null hypothesis is no autocorrelation (Elitza, 2007).

Results and Discussion

Descriptive Statistics

Prior to estimating the model and test the hypotheses, descriptive statistics of the data are calculated. Table 2 presents selected descriptive statistics for all variables used in our regression model for conventional and Islamic banks separately. In general, the results show that the mean bank z-score of Islamic banks is higher than that of the conventional banks, thus provides an early

indication that financial stability of the former is relatively higher than the latter. However, in relation to banks' performance and fundamental factors, it appears that the conventional banks have a better performance as shown by higher growth of credit, profitability (return on assets), capital, and efficiency (smaller BOPO and LLP).

Tabel 2. Descriptive Statistics

Conventional Banks Only				
Variabel	Mean	Std.Dev	Min	Max
Bank z-score	10.537	15.198	-124.716	191.984
CFGrowth	13.021	1.814	7.448	18.304
ROA	1.788	1.535	-7.470	8.380
BS	81.600e+03	193.242e+06	394793	1296.898e+06
CAR	25.065	13.966	10.520	145.810
NIM	5.333	2.110	0.030	18.020
ETA	0.157	0.086	0.001	0.890
BOPO	83.718	14.959	30.170	180.620
LLP	1.6119	1.449	0.000	9.090
Islamic Banks Only				
Variabel	Mean	Std.Dev	Min	Max
Bank z-score	14.271	24.971	-2.516	181.297
CFGrowth	12.576	1.198	9.194	15.280
ROA	1.268	3.263	-8.090	12.730
BS	22.500e+03	25.621e+06	1206294	101.118e+06
CAR	20.265	6.634	10.160	40.920
NIM	7.505	8.752	0.860	37.180
ETA	0.141	0.060	0.032	0.342
BOPO	94.536	16.539	60.400	217.400
LLP	2.672	2.446	0.460	13.990

Determinant of Islamic and Conventional Banks' Stability

After analyzing the descriptive statistics and before estimating the GMM model, a separate empirical test is carried out by dividing the sample into conventional banks and Islamic banks. Results of the model specification tests are presented in Table 3. From the results, it could be suggested that the estimation model meets the model specification test on the GMM SYS method. AR (1) values of conventional banks and Islamic banks show significant results with p values of 0.035 and 0.000 respectively, which indicates that H0 is rejected. Whereas the p-value of AR (2) of conventional banks and Islamic banks are 0.249 and 0.136 respectively. The p-value of the Hansen test in conventional banks is 0.144, while the value for Islamic banks is > 0.05. These results indicate that H0 cannot be rejected, which implies that there is no over-identification and no relationship between instrument variables and errors. Therefore, the instruments used in the study could be considered as valid.

Table 3. Specification Test Results for Conventional Bank and Islamic Bank

No	Type of Test	Conventional Bank			Islamic Bank		
		Statistical Value	P-Value	N	Statistical Value	P-Value	N
1	Arrelano Bond Test:						
	AR (1)	-2.11	0.035		-3.59	0.000	
	AR (2)	-1.15	0.249	83	-1.49	0.136	11
2	Sargan/Hansen Test:						
	Sargan/Hansen	53.96	0.144		185.42	0.498	

Given these results, the research proceeds to estimate the empirical model using SYS-GMM method. Table 4 shows the results of dynamic data panel model. In general, the study found that there are several factors that affect the stability of both conventional and Islamic banks, including credit/financing growth, financial inclusion, exchange rates and banks' stability of the previous period. However, several factors are found to only affect stability of certain types of banks. Efficiency and risk management variables (BOPO and LLP) are found to only influence the Islamic bank stability, while interest rate only affect the conventional bank stability.

Table 4. Estimation Result of Conventional Bank and Islamic Bank Stability

Dependent Variable: Ln Bank Z Score				
Independent Variable	Conventional Bank (CB)		Islamic Bank (IB)	
	Coefficient	t Stat	Coefficient	t Stat
Lnbzs $_{(t-1)}$	0.270***	1.83	0.490***	8.75
Lnbzs $_{(t-2)}$	. – 0.005	-0.03	-	-
Credit Growth (CB) or Financing Growth (IB)	0.015**	2.49	0.027*	1.96
ROA	0.021	0.19	-0.125	-0.79
LnBS	0.293	1.34	0.118	0.77
CAR	0.007	0.43	-0.043	-1.39
NIM (CB) or Net Return (IB)	0.018	0.36	-0.013	-0.44
ETA	-0.82	-0.36	7.705	1.34
BOPO	-0.001	-0.08	- 0.055*	-1.66
LLP	-0.092	-0.63	- 0.155***	-3.13
FI	0.628*	1.94	2.425***	3.56
GDP	-0.451	-1.26	0.765	1.01
ER	0.000**	2.14	0.000**	2.39
IR	- 0.116*	-1.67	0.14	0.96
Inf	0.040	0.50	0.14	0.96
Observation	935		140	
Prob F – Statistic	0.000		0.000	
AR(1) (p value)	0.035		0.000	
AR(2) (p value)	0.249		0.136	
Hansen test (p value)	0.144		0.498	

Notes: CFGrowth = Credit and financing growth, ROA = Return on asset, BS = Bank size, CAR = Capital adequacy ratio, NIM/NR = Net interest margin/Net return, ETA = Equity to total asset, BOPO = Cost to income ratio (efficiency) and LLP = Loan loss provison; FI = Financial inclusion, GDPG = GDP growth rate, ER = Exchange rate, IR = Interest rate and Inf = Inflasi; *** significant at 1%, ** significant at 5% dan * significant at 10%.

More specifically, the result shows that z-score$_{t-1}$ and credit/financing growth variable have a significant positive effect on the stability of conventional and Islamic banks. The z-score variable for conventional banks and Islamic banks separately had a significant positive effect on both bank samples, indicating that the stability of conventional banks and Islamic banks was only influenced by the stability of banks in the previous period (i.e. previous 3 months). This indicates that bank management must be consistent in maintaining bank performance, so that the bank stability can be maintained over time. This result is in line with the studies of Pascual et al (2015), Carretta, et al. (2015) and Morgan and Pontines (2014) which show that variable of bank stability in the previous period had a significant effect on the bank stability variable in the future. Furthermore, credit/financing growth also has a significant positive effect on the stability of both banks. This result is different from the finding of Foos et al. (2010), which shows that credit growth will have an impact on increasing credit risk for the next 3 years. However, this result is actually appropriate with the context of Indonesia. This positive result was consistent with the increasing loans and financing growth, both by conventional banks and Islamic banks in Indonesia over the past 5 years. Credit and financing growth, accompanied by good quality, will result a high profit as well so the bank stability can be maintained over time.

Other determinants of Islamic bank stability are cost efficiency (ratio of operating costs to operating income /BOPO) and loan loss provisions (LLP). While both variables were found to

have a significant negative effect to Islamic bank stability, they did not affect conventional bank stability. This could be explained from the descriptive statistics which shows that BOPO variable of Islamic banks tend to decline during the study period, which indicates higher efficiency overtime. This would have a positive impact on the Islamic bank stability. In contrast, BOPO variable of conventional bank tend to increase over the past five years. This might be the reason behind the insignificant result of in the model. Furthermore, LLP coefficient shows a negative sign and statistically significant at Islamic banks. These results are in line with the findings of Chaibi & Ftiti (2015), Berger and DeYoung (1997) and Louzis et al., (2012). The findings indicate that poor management practices, as shown by high LLP values, in managing assets will lead to a decrease in bank stability. However, it is notable the LLP variable did not affect stability of conventional banks.

Next, the estimation results suggest that macroeconomic variables, represented by exchange rate and financial inclusion, have a significant positive effect on both conventional and Islamic bank stability, while interest rate has a negative effect on the stability of conventional banks but does not have influence on Islamic bank stability. While other macroeconomic variables, namely GDP growth and inflation rates were found to have no significant effect on Islamic banks and conventional bank stability.

Exchange rate is a macroeconomics variable that have a significant positive effect on the stability of both conventional banks and Islamic banks in Indonesia. An increasing in exchange rate shows the depreciation of local currency (Rupiah) against Dollar, which could reduce the occurrence of non-performing loans through an increasing company's export volume. This will subsequently improve the company's financial performance in paying their obligations (Beck et al, 2013). Chaibi and Ftiti (2015) also found that an increase in exchange rate could had a negative effect on bank risk because depreciation of local currency seems to improve the ability of people who borrow in foreign currency to service their debts and could increase bank stability. This seems to be what happened in Indonesia.

The other macro variable that affects positively to the stability of Islamic banks and conventional banks is financial inclusion. The result is consistent with the studies conducted by Neaime and Gaysset (2018) and Albaity et al., (2019) which show the positive influence of financial inclusion on financial stability. This shows the importance of easy access to financial service, especially banking services, on bank stability. Therefore, increasing the number of bank branches to expand the extent of financial services for all banks could have an impact on improving the banks sounds.

Interestingly, the study found that interest rates only affects the stability of conventional banks and do not affect Islamic bank stability. This result is consistent with the findings of Chaibi and Ftiti's (2015), Pascual et al., (2015) and Owoputi et al. (2014) that argued unanticipated increase in interest rate will rise borrowers' default could lead to instability. Moreover, the insignificance of interest rates in influencing Islamic bank stability might indicate that credit risk in Islamic banks is lower compared to conventional banks, which is related to the nature of Islamic banks. As argued by Yusof, Wosabi, & Majid (2009), Islamic banking system is an interest-free system which is based on the real sector. Thus, it is considered more able to maintain economic stability due to its association with real assets compared to conventional banking systems which are highly connected to fluctuation of interest rates.

Bank Stability: Islamic Bank vs. Conventional Bank

Next, to determine a difference between the stability of Islamic banks and conventional banks in Indonesia, a means difference test based on one-way analysis of variance (ANOVA) is employed. The test result suggests that there is no significant difference of stability of conventional and Islamic banks in Indonesia. This is shown by p-value of 0.508, which is more than 5% level significant. Therefore, it can be concluded that there is no significant difference between the stability of Islamic banks and conventional banks in Indonesia during September 2015-June 2019 period.

Compared to previous studies, this result seems to be in line with the opinion of Chong and Liu (2009) and Khan (2010) which support the skeptic view. Research conducted by Chong

and Liu (2009) mentions that, in practice, Islamic banking in Malaysia is not much different from conventional banking from the perspective of PLS paradigm. In terms of Islamic bank assets, it was found that only small portion of the disbursed financing was based on the PLS principle and a large portion was still dominated by the non-PLS model. Whereas in terms of liabilities, deposits which should use PLS (mudharabah) principle were found not entirely interest-free. Instead, they were pegged to a certain number following the deposit yields in conventional banking.

Tabel 5. Testing the Difference of Stability between Islamic and Conventional Banks

ANOVA			
	SS	MS	p value
Between groups	0.373	0.373	**0.508**
Within groups	0.373	0.851	

Tabel 6. Growth of Sharia Banking Financing by Type of Contract (Billion Rp)

Indicator	**2014**	**2015**	**2016**	**2017**	**2018**
1. PLS Financing	63,741	75,553	93,713	118,651	145,507
% of Total Financing	31.98%	35.47%	37.79%	41.53%	45.44%
a. Mudharabah	14,354	14,820	15,292	17,090	15,866
b. Musyarakah	49,336	60,713	78,421	101,561	129,641
2. Debt-based Financing	123,968	126,832	145,145	157,814	164,088
% of Total Financing	62.19%	59.54%	58.52%	55.24%	51.25%
a. Murabahah	117,371	122,111	139,536	150,276	154,805
b. Qardh	5,965	3,951	4,731	6,349	7,674
c. Istishna'	633	770	878	1,189	1,609
3. Fee-based (Ijarah) Financing	11,620	10,631	9,150	9,230	10,597
% of Total Financing	5.83%	4.99%	3.69%	3.23%	3.31%
Total Financing	199,329	213,016	248,008	285,695	320,192

Source: OJK (2019)

In Indonesia, the situation is not exactly the same with the condition in Malaysia. Although *murabahah* (non-PLS) financing is still dominating the Islamic banks portfolio and accounted to 51.25% in 2018, the proportion of PLS-based financing has increased gradually from 31.98% in 2014 to 45.44% in 2018 (See Table 6). Additionally, it is notable that the Indonesia Islamic banks are still small in capitalization and market share, which accounted to only around 6% by end of 2019 (OJK, 2020), compared to Malaysia. This seemed to influence the Islamic banks to 'mimic' the strategies used by the conventional banks, which sometimes not in line from the theoretical business model of Islamic banks (Bourkhis and Nabi 2013 and Greuning & Iqbal 2008), which subsequently made the differences between Islamic and conventional banks become less visible including in terms of banking stability.

Conclusions

Islamic banks are often considered more stable than conventional banks, primarily because of the profit and loss sharing nature of the banks. However, empirical evidence to support the stability view is relatively scanty. This study, therefore, mainly aims to investigate whether Islamic banks are more stable than conventional banks in Indonesia which is currently the world's largest Muslim country which also implemented a dual banking system in which Islamic banks are operating in parallel with conventional banks. To enrich and support the analysis, it also compares the factors influencing stability of Islamic banks and conventional banks in the country. In this respect, this paper employs a dynamic panel data model using quarterly data from 83 conventional banks and 11 Islamic banks during September 2015-June 2019 period.

The findings of the study found that the stability of banks in Indonesia is influenced by bank's specific factors and macroeconomic factors. It is also found that the conventional bank stability is influenced positively by the stability in previous period (lag 1), credit growth, financial inclusion and exchange rates, while interest rates have a negative influence on the conventional bank stability in Indonesia. As for Islamic banks, it is found that the stability predominantly influenced by banks specific variables. The banks stability in previous period (lag 1) and the growth of Islamic bank financing positively influenced the bank stability, while cost efficiency (BOPO) and loan loss provision (LLP) have negative impacts on the Islamic banks' stability. Additionally, financial inclusion and exchange rate are macroeconomic variables that have a positive influence on the stability of Islamic banks in Indonesia.

Despite the findings above, the study did not find any significant difference of the stability of the banks. Theoretically, this result implies that Islamic banks are not more stable that conventional banks. Therefore, the result of the study tends to support the skeptics view of banking stability. Despite that, it should be noted that the Islamic banks in Indonesia are still small in capitalization and market place. Therefore, difference between Islamic and conventional banks might become less visible including in terms of banking stability.

This study also proposes several practical implications. First, considering that macroeconomic variables (interest rate, exchange rate and financial inclusions) significantly affect banks' stability in Indonesia, it is important that the policymakers are committed to ensure stability of the variables such that the banks' stability could be well maintained in Indonesia. Second, as banks' specific factors are also influencing the banks' stability, banking regulators and market players also need to scrutinize these factors. The regulators should implement policies that could increase or at least maintain the growth and quality of credit/financing provided by the banks, so that it could contribute positively towards the stability. Taken together, the implications of the study are expected to provide insights for policy makers, market players as well as enrich literature regarding banks' stability in Indonesia. Lastly, realizing that this study has several limitations, future research could attempt to expand this study by utilizing larger sample, longer time period (distuingishing crisis and non-crisis period) and better model to estimate long run period.

Author Contributions

Conceptualization: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Data curation: Chairilisa Azzahra
Formal analysis: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Investigation: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Methodology: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Project administration: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Supervision: Rahmatina Awaliah Kasri
Validation: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Visualization: Chairilisa Azzahra
Writing – original draft: Chairilisa Azzahra and Rahmatina Awaliah Kasri
Writing – review & editing: Chairilisa Azzahra and Rahmatina Awaliah Kasri

References

Abduh, M., & Omar, M. A. (2012). Islamic banking and economic growth: The Indonesian experience. *International Journal of Islamic and Middle Eastern Finance and Management,* 5(1), 35-47. http://dx.doi.org/10.1108/17538391211216811

Aggarwa, R., & Jacques, T. K. (2001). The impact of FDICIA and prompt corrective action on bank capital and risk: Estimates using a simultaneous equations model. *Journal of Banking & Finance,* 25(6), 1139-1160. https://doi.org/10.1016/S0378-4266(00)00125-4

Albaity, M., Mallek, R. S., & Noman, A. H. (2019). Competition and bank stability in the MENA region: The moderating effect of Islamic versus conventional banks. *Emerging Markets Review,* 38 , 310–325. https://doi.org/ 10.1016/j.ememar.2019.01.003

Alqahtani, F., Mayes, D. G., & Brown, K. (2016). Economic turmoil and Islamic banking: evidence from the Gulf Cooperation Council. *Pacific-Basin Finance Journal,* 39, 44-56. https://doi.org/10.1016/j.pacfin.2016.05.017

Alqahtani, F., & Mayes, D. G. (2018). Financial stability of Islamic banking and the global financial crisis: Evidence from the Gulf Cooperation Council. *Economic Systems,* 42. https://doi.org/ 10.1016/j.ecosys.2017.09.001.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error component models. *Journal of Econometrics*, 29-51. Retrieved from https://www.cemfi.es/~arellano/arellano-bover-1995.pdf

Aysan, A., Disli, M., & Ozturk, H. (2018). Bank lending channel in a dual banking system: Why are Islamic banks so responsive? *Working Paperof Faculty of Economics and Business Administration, Ghent University*. Retrieved from http://wps-feb.ugent.be/Papers/wp_17_938.pdf

Baltagi, B. H. (2005). *Econometrics Analysis of Panel Data (3rd Ed.).* England: John Wiley & Sons, Ltd.

Baum, C. F. (2003). Instrumental variables and GMM: Estimation and testing. *The Stata Journal,* 3(1), 1–31. https://doi.org/10.1177/1536867X0300300101

Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013). Islamic vs conventional banking: business model, efficiency and stability. *Journal of Banking and Finance* 37 (2). https://doi.org/10.1016/j.jbankfin.2012.09.016

Beck, T., Hesse, H., K. T., & Von Westernhagen, N. (2009). *VOX CEPR Policy Portal: Bank Ownership and Stability: Evidence from Germany*. Retrieved from https://voxeu.org/article/bank-ownership-and-stability-evidence-germany.]

Berger, A. N., Klapper, L.F., & Turk-Ariss, R. (2009). Bank competition and financial stability. *Journal of Financial Services Research*, 35(2), 99-118. https://doi.org/10.1007/s10693-008-0050-7

Berger, A. N., & Bouwman, C. (2013). How does capital affect bank performance during finansial crises?. *Journal of Financial Economics,* 109(1): 146-176. https://doi.org/10.1016/j.jfineco.2013.02.008

Blundell, R., & Bond, S. (1998). Initial condtitions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143. https://doi.org/10.1016/S0304-4076(98)00009-8

Bourkhis, K., & Nabi, M. S. (2013). Islamic and conventional banks soundness during the 2007–2008 financial crisis. *Review of Financial Economics,* 22(2), 68–77. https://doi.org/10.1016/j.rfe.2013.01.001

Buchory, H. A. (2015). Bank profitability: How does credit risk and operational efficiency effect. *Journal of Business and Management Science,* 3(4), 118-123. https://doi.org/10.12691/jbms-3-4-3

Carretta, A., Farina, V., Fiordelisi, F., Schwizer, P., & Stentella, F. S. (2015). Don't stand so close to me: The role of supervisory style in banking stability. *Journal of Banking & Finance,* 52, 180-188. https://doi.org/10.1016/j.jbankfin.2014.09.015

Chaibi, H., & Ftiti, Z. (2015). Credit risk determinants: Evidence from a cross-country study. *Research in International Business and Finance,* 33, 1-16. https://doi.org/10.1016/j.ribaf.2014.06.001

Chong, B., & Liu, M.-H. (2009). Islamic banking: interest-free or interest-based?. *Journal Pacific Basin Finance,* 17 (1), 125-144. https://doi.org/10.1016/j.pacfin.2007.12.003

Cihak, M., & Hesse, H. (2008). Islamic banks and financial stability: An empirical analysis. *IMF Working Paper, WP/08/16*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2008/wp0816.pdf

Cynthis. (2016). *Pengaruh Risiko Likuiditas, Risiko Kredit, Kepemilikan Bank, Dan Kondisi Ekonomi Terhadap Stabilitas Bank Umum Di Indonesia (Tesis)*. Jakarta: Fakultas Ekonomi dan Bisnis Universitas Indonesia.

De Haan, J., & Poghosyan, T. (2012). Bank size, market concentration, and bank earnings. *Journal of International Financial Markets, Institutions & Money*, 22(1), 35-54. https://doi.org/10.1016/j.intfin.2011.07.002

DeYoung, R., & Torna, G. (2013). Nontraditional banking activities and bank failures during the financial crisis. *Journal of Financial Intermediation,* 22(3), 397-421. https://doi.org/10.1016/j.jfi.2013.01.001

Espinoza, R., & Prasad, A. (2010). Nonperforming loans in the GCC banking systemand their macroeconomic effects. *International Monetary Fund Working Paper, 10/224*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2010/wp10224.pdf

Farooq, M., & Sajjad, Z. (2015). Are Islamic banks more resilient during financial panics? *IMF Working Paper, WP/15/41*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2015/wp1541.pdf

Foos, D., Norden, L., & Weber, M. (2010). Loan growth and riskiness of banks. *Journal of Banking & Finance,* 34(12), 2929–2940. https://doi.org/10.1016/j.jbankfin.2010.06.007

Ghosh, A. (2015). Banking-industry specific and regional economic determinants of non-performing loans: Evidence from US states. *Journal of Financial Stability 20*. https://doi.org/10.1016/j.jfs.2015.08.004.

Ghozali, I (2009). *Aplikasi Analisis Multivariate dengan Program SPSS*. Semarang: UNDIP.

Greuning, H. V., & Iqbal, Z. (2009). Risk analysis for Islamic banks. *Journal of King Abdulaziz,* 22(1), 197-204. Retreved from https://iei.kau.edu.sa/Files/121/Files/153880_IEI-VOL-22-1-09E-BRIslahi.pdf

Han, R., & Melecky, M. (2013). Financial inclusion for financial stability in the global financial crisis. *Policy Research Working Paper 6577*. Retrieved from http://documents1.worldbank.org/curated/en/850681468325448388/pdf/WPS6577.pdf

Hannig, A., & Jansen, S. (2010). Financial inclusion and financial stability: Current policy issues. *ADBI Working Paper Series, 259*. Retrieved from https://www.adb.org/sites/default/files/publication/156114/adbi-wp259.pdf

Haq, M., & Heaney, R. (2012). Factors determining European bank risk. *Journal of International Financial Markets, Institutions and Money, 22(4)*, 696-718. https://doi.org/10.1016/j.intfin.2012.04.003

Hasan, M., & Dridi, J. (2011). The effects of the global crisis on Islamic and Conventional banks: a comparative study. *Journal of International Commerce, Economics and Policy,* 2 (2), 163-200. https://doi.org/10.1142/S1793993311000270

Hoffmann, P. S. (2011). Determinants of the profitability of the US banking industry. *International Journal of Business and Social Science,* 2(22), 255-269. http://www.ijbssnet.com/journals/Vol_2_No_22_December_2011/30.pdf

Hutapea, E. G., & Kasri, R. A. (2010). Bank margin determination: a comparison between Islamic and conventional banks in Indonesia. *International Journal of Islamic and Middle*

Eastern Finance and Management, 3(1), 65-82. https://doi.org/10.1108/17538391011033870

Ibrahim, M. H. (2016). Business cycle and bank lending procyclicality in a dual banking system. *Economic Modelling, 55(C)*, 127–134. https://doi.org/10.1016/j.econmod.2016.01.013

Ibrahim, M. H., & Rizvi, S. A. (2018). Bank lending, deposits and risk-taking in times of crisis: A panel analysis of Islamic and conventional banks. *Emerging Markets Review,* 35(C), 31-47. https://doi.org/ 10.1016/j.ememar.2017.12.003

'Imbierowicz, B., & Rauch, C. (2014). The relationship between liquidity risk and credit risk in banks. *Journal of Banking & Finance, 40*, 242–256. https://doi.org/10.1016/j.jbankfin.2013.11.030

]Kabir, M. N., Worthington, A., & Gupta, R. (2015). Comparative credit risk in Islamic and conventional bank. *Pacific-Basin Finance Journal,* 34(C), 327-353. Ihttps://doi.org/10.1016/j.pacfin.2015.06.001

Kasman, A., Tunc, G., Vardar, G., & Berna, A. (2010). Consolidation and commercial bank net interest margins: Evidence from the old and new European Union members and candidate countries. *Economic Modelling,* 27(3), 648-655. https://doi.org/10.1016/j.econmod.2010.01.004

Keeton, W. (1999). Does faster loan growth lead to higher loan losses? Federal Reserve Bank of Kansas City Econ Rev, Second Quarter, 57–75. Retrieved from https://www.kansascityfed.org/publicat/econrev/PDF/2q99keet.pdf

Khan, F. (2010). How "Islamic" is Islamic banking? *Journal of Economic Behavior & Organization* 76(3), 805-820. https://doi.org/10.1016/j.jebo.2010.09.015

Klein, N. (2013). Non-performing Loans in CESEE: Determinants and impact on macroeconomic performance. *International Monetary Fund Working Paper13/72*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2013/wp1372.pdf

Louizis, D. P. (2012). Macroeconomic and bank-specific deter-minants on non-performing loans in Greece: a comparative study of mortgage,business and consumer loan portfolios. *Journal of Banking and Finance,* 36(4), 1012–1027. https://doi.org/10.1016/j.jbankfin.2011.10.012

Meslie, C., Tacneng, R., & Tarazi, A. (2014). Is bank income diversification beneficial: Evidence from an emerging economy. *Journal of International Financial Markets*, 31, 97-126. https://doi.org/10.1016/j.intfin.2014.03.007

Morgan, P. J., & Pontines, V. (2014). Financial stability and financial Inclusion. *ADBI Working Paper Series,. 488*. Retrieved from http://www.shram.org/uploadFiles/20180116111859.pdf

Neaime, S., & Gaysset, I. (2017). Financial Inclusion and Stability in MENA: Evidence from poverty and inequality. *Finance Research Letters*. http://dx.doi.org/10.1016/j.frl.2017.09.007

Nkusu, M. (2011). Non-performing loans and macrofinancial vulnerabilities in advanced economies. *IMF Working Paper 11/161*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2011/wp11161.pdf

Ogura, Y. (2006). Learning from a rival bank and lending boom. *Journal of Financial Intermediation,* 15(4), 535–555. https://doi.org/10.1016/j.jfi.2005.10.002

Onuonga, S. M. (2014). The analysis of profitability of kenyas top six commercial banks: Internal factor analysis. *American International Journal of Social Sciences 3 (5)*, 94-103. Retrieved from http://www.ku.ac.ke/schools/economics/images/stories/research/profitabilty_analysis.pdf

Otoritas Jasa Keuangan. (2018). *Statistik Perbankan Indonesia.* Jakarta: Otoritas Jasa Keuangan.

Otoritas Jasa Keuangan. (2019). *Statistik Perbankan Indonesia.* Jakarta: Otoritas Jasa Keuangan.

Pascual, L. B., Ponce, A. T., & Riportella, C. C. (2015). Factors influencing bank risk in Europe: Evidence from the financial crisis. *North American Journal of Economics and Finance*. 34, 138-166. https://doi.org/10.1016/j.najef.2015.08.004

Poghosyan, T. (2013). Financial intermediation costs in low income countries: The role of regulatory, institutional, and macroeconomic factors. *Economic Systems,* 37(1), 92-110. https://doi.org/1016/j.ecosys.2012.07.003

Rizvi, S. A., Narayan, P. K., Sakti, A., & Syarifuddin, F. (2019). Role of Islamic banks in Indonesian banking industry: an empirical exploration. *Pacific-Basin Finance Journal*, 1-10. https://doi.org/10.1016/j.pacfin.2019.02.002

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, 9(1), 86–136. https://doi.org/10.1177/1536867X0900900106

Shaban, M., Duygun, M., Anwar, M., & Akbar, B. (2014). Diversification and banks' willingness to lend to smallbusinesses: Evidence from Islamic and conventionalbanks in Indonesia. *Journal of Economic Behavior & Organization,* 103, 39-55. https://doi.org/10.1016/j.jebo.2014.03.021

Shim, J. (2019). Loan portfolio diversification, market structure and bank stability. *Journal of Banking and Finance,* 104, 103-115. https://doi.org/10.1016/j.jbankfin.2019.04.006

Sufian, F. (2011). Profitability of the Korean banking sector: Panel evidence on bank-specific and macroeconomic determinants. *Journal of Economics and Management,* 7(1), 43-72. Retrieved from http://www.jem.org.tw/content/pdf/Vol.7No.1/03.pdf

Sundararajan, V., & Errico, L. (2002). Islamic financial institutions and products in the global financial system: Key issues in risk management and challenges ahead. *IMF Working Paper, WP/02/192*. Retrieved from https://www.imf.org/external/pubs/ft/wp/2002/wp02192.pdf.

Uhde, A., & Heimeshoff, U. (2009). Consolidation in banking and financial stability in Europe: Empirical evidence. *Journal of Banking and Finance*, 33(7), 1299–1311. https://doi.org/10.1016/j.jbankfin.2009.01.006Get

Warjiyo, P. (2006). Stabilitas Sistem Perbankan dan Kebijakan Moneter : Keterkaitan dan Perkembangannya di Indonesia. *Buletin Ekonomi Moneter dan Perbankan*, 8(4), 429-454. https://doi.org/10.21098/bemp.v8i4.144

Yusgiantoro, I., Soedarmono, W., & Tarazi, A. (2019). Bank consolidation and financial stability in Indonesia. *International Economics,* 159, 94-104. https://doi.org/10.1016/j.inteco.2019.06.002

Yusof, R. M., Al Wosabi, M., & Majid, M.S.A. (2009). Monetary policy shocks and Islamic banks' deposits in a dual banking system. Empirical evidence from Malaysia and Bahrain. *Journal of Economic Cooperation and Development 30(2),* 1-26. Retrieved from https://www.sesric.org/files/article/306.pdf